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Index

Product & Solution

January 30, 2018

LG Targets the North American HVAC Market with HVAC Solutions Specialized for the Region

LG Electronics demonstrated its products specialized for the North American market at the world's largest HVAC exhibition, AHR Expo 2018 (The International Air-Conditioning Heating Refrigeration Exposition), held in Chicago from January 22 to 24.

LG Electronics opened 3 exhibition booths in a 556m2 area with a 'control exhibit' featuring connectivity based HVAC control solutions, a 'product exhibit' featuring various system air conditioners and a 'component exhibit' featuring compressors and other components. This is LG's first time to dedicate a booth entirely to HVAC control solutions.

LG introduced its BMS (Building Management System) MultiSITE solution in its control exhibit. This solution was developed based on North American standard Niagara technology and makes it possible to connect and manage equipment and devices in a building such as lighting and security systems. LG also exhibited an array of IoT devices that connect with system air conditioners in the home. These devices included the AI based Google Home, Amazon Echo, Next and Honeywell.

In the Product exhibit, LG introduced various products such as the Multi V and Multi F solutions that maximize heating and cooling depending on the size, characteristics and uses of a building.

The Multi V is embedded with LG's own high-efficiency inverter compressor that simultaneously delivers high performance and energy efficiency and is allowing the LG brand to become a leader in the industrial HVAC market. LG supplied its Multi V solution to the CBS Columbia Square shopping mall in Hollywood, California in November of last year and are receiving acknowledgement for the performance of its products.

LG Electronics is also a leader in heating solution product specialized for cold climates that are suitable for the frigid weather in the Northern United States and Canada. The Multi F solution was developed to operate in -25°C (-13°F) and has received Energy Star certification from the US Environmental Protection Agency for high energy efficiency.

LG Electronics also exhibited components especially designed for installation in HVAC products. LG is planning to target the US system air conditioner market with components such as its Two-Stage Scroll Compressor and Unitary Duty Rotary Compressor that are improving the performance of products with LG technology.

LG Electronics H&A Business Department director, Daehyun Song reinforced, "Based on LG's own technology, we are committed to the foundation of 'benefit based growth' in the North American HVAC market with specialized products and solution that meet customers' need in the region."

February 5, 2018

Fight the Cold this Winter with Heating Solutions from LG

Winter is upon us and for most of us, the coldest months are yet to come. Keeping homes, offices, hotels or shopping centers warm during the frosty winter can be a challenge and a strain on our wallets. LG offers innovative and efficient heating solutions that keep us cozy and warm through the bitter cold. Here are some solutions from LG that can provide efficient heating this winter and for winters to come.

■ Therma V

Therma V is a air-to-water heat pump solution that provides hot water for radiators, underfloor-heating and domestic use. The 9kW 12kW, 14kW or 16kW solutions can be implemented in new building developments or retrofit to provide competitive COP values for a cost and energy efficient source of heat. The inverter technology in Therma V delivers a more fuel-efficient offering that does not burn fossil fuels or emit CO2 and uses LG's innovative heat pump technology for more efficient heating than electric heaters. LG inverter technology is the core strength of Therma V and provides an economical, efficient and powerful heating solution for the home.

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THERMA V PRODUCT FILM
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■ Heat Pumps

LG's energy efficient heat pumps offer heating and hot water solutions for screw, scroll and centrifugal chiller applications. These heat pumps offer next generation technology for heating solutions that improve efficiency, lower operation costs and reduce greenhouse gas emissions. LG solutions are easy to install and can easily be customized for a wide range of system configurations for the ultimate in efficient heating solutions.

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■ Multi V Heat Recovery

The Multi V 5 is LG's state-of-the-art flagship VRF air conditioning system that performs both heating and cooling simultaneously. The solution is ideal for shopping centers or hotels with guest rooms on multiple floors and unique spaces create for a wide range of uses. The Multi V 5 Heat Recovery system provides efficient heating and cooling, reduced operational costs, no need for duct work, increased comfort across diverse individual spaces and a sleek form factor for maintaining the integrity of a building's architecture and design. When implemented with the Hydro Kit, the Multi V Heat Recovery system is able to provide an efficient source of hot water for applications such as radiators, spas and underfloor-heating.

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■ Hydro Kit

The LG Hydro Kit works similarly to the Therma V and is an efficient method of recovering larger volumes of waste heat from LG Multi V VRF air conditioning systems for hot water supply to applications in places such as kitchens, bathrooms or radiators. The heat pump in the Hydro Kit extracts heat from heat pumps in Multi V or Heat Recovery Systems and redirects the heat using less energy than a gas boiler while eliminating CO2 emissions and external exhaust. The Hydro Kit is compact, easy to install and requires no additional routing or piping for exhaust. The solution can also be fitted to multiple heat pumps for even greater savings.

■ GHP

LG GHP is a VRF system driven by a gas engine suited for developments where gas is economically viable and convenient power source and eliminates the need for expensive electricity supply systems. The system boasts a powerful and efficient engine that reduces gas consumption and reduces CO2 emissions. LG GHP offers a powerful heating solution without degradation of efficiency in even the coldest of environments.

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■ Absorption Chiller Heating

LG absorption chillers provide competitive COP ratios with a high performance heat transfer tube that reduces heat loss. The solution is ideal for large buildings using gas as an energy source and works well to provide an efficient source of hot water to boiler systems. When implementing an absorption chiller system, overall capacity can be improved with an advanced absorption pump and innovative inverter technology control.

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February 23, 2018

LG's Advanced Inverter Scroll Chillers Provide a Look at the Future of Climate Control

An American proverb states, "A penny saved is a penny earned," and savvy businessmen are constantly on the lookout for ways to put this into practice. While investing in efficient, eco-friendly solutions has long been a priority for building owners, sky-high costs, solution size and installation requirements are a consistent challenge. After all, it is difficult to pay up front for future savings when present day budgets remain a priority.

Fortunately, breakthroughs have made high-performance, energy-efficient solutions cheaper and more accessible. In addition, a growing number of managers are beginning to understand that the dilemma of balancing environmental protection and human progress is a false choice and that today's consumers are in fact able to experience the best of both worlds. Designed to save users money, space and time all while protecting the environment, the LG Air Cooled Inverter Scroll Chiller is an excellent example of a modern solution that manages to improve eco-friendliness and boost comfort while also cutting down on energy expenses.

LG Inverter with HiPOR™ technology

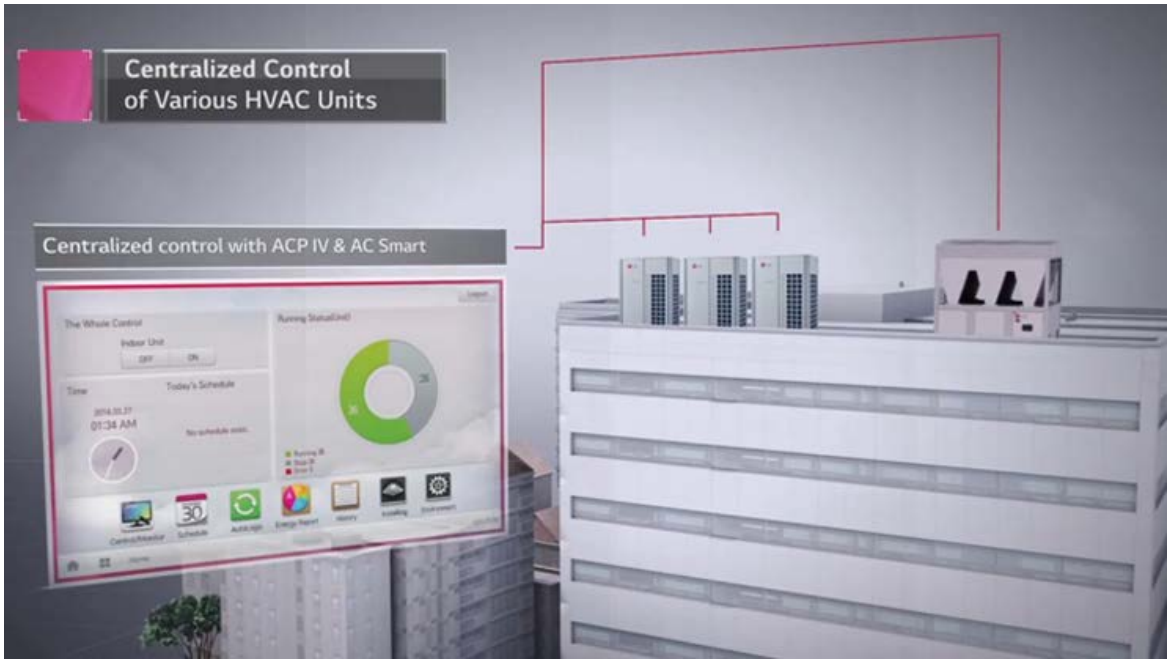
Decreasing energy consumption is a key component of any solution looking to reduce expenses. Responding to this challenge, the LG Inverter Scroll Chiller employs an advanced inverter compressor that allows it to function efficiently at a range of capacities. This stands in stark contrast to competing chillers that are only capable of operating at a constant speed. By constantly

turning on and off in order to provide adequate climate control, these solutions waste valuable energy. However, the Inverter Scroll Chiller functions at a range of frequencies, allowing output to remain closely aligned to the load. This increases efficiency and cuts energy costs.

Moreover, LG's patented HiPOR™ technology significantly improves the efficiency of all LG Inverter Scroll Compressors. In conventional solutions, oil returns through the refrigerant suction pipe, meaning that refrigerant and oil are forced to share limited pipe space, which leads to energy loss. However, LG's patented HiPOR™ technology prevents refrigerant loss in the suction pipe by returning oil directly into the compressor.

Despite the clear appeal of energy-efficient climate control solutions, actual building conditions are not always suited to the latest technologies. Everything from a building's architectural style to its layout (and even year of completion) impacts the types of solutions that can be installed. These concerns make it challenging for compact buildings, as well as those in areas with strict building codes, to receive the climate control that they need. Fortunately, unlike water-cooled solutions that are often complex, the streamlined Air-cooled Inverter Scroll Chillers from LG allow for far more efficient space utilization. In addition to simplifying installation and decreasing the solution's footprint, its modular design allows for easy extension at a later date.

LG Inverter Scroll Chiller



Centralized control makes the Inverter Scroll Chiller more convenient and more efficient

While user-friendly solutions are nothing new, the Inverter Scroll Chiller breaks with convention by establishing itself as a true green leader. With its impressive Integrated Part Load Value (IPLV) and Coefficient of Performance (COP), the Inverter Scroll Chiller stands alone as a well-rounded solution. Its incredible green potential makes it a natural fit for building owners that prioritize efficiency but refuse to compromise on performance. By offering the best of both worlds, the groundbreaking versatility of the Inverter Scroll Chiller is changing the conversation around how best to protect the environment while still offering performance on par with modern comfort expectations.

https://youtu.be/Cco4qlP-hgo

Bringing together modern innovation with the latest in design insights, LG is able to offer a solution crafted to appeal to those that refuse to compromise on comfort or efficiency. Instead of forcing building owners to prioritize the planet over their pocketbook, the Inverter Scroll Chiller represents the next stage in consumer-centric climate control. In addition, its straightforward design makes it easy to use and even easier to install. The Inverter Scroll Chiller's unrivaled ability to combine efficiency with performance makes it a natural fit for those looking to save money, protect the environment and improve comfort in their buildings.

March 28, 2018

From the Mind of the Creator: A Team Leader of LG Product Planning Shares his Experience in Developing Inverter Compressor Technology

Compressors are vital components that provide cool air to a wide array of products such as air conditioners, refrigerators, water coolers and humidifiers. They are also the core component of motors that go into vacuum cleaners and lawn mowers. You could even consider them to be as vital to these types of products as a heart is to a human or an engine is to a car. Compressors are components that drive the efficiency, noise emission, vibration and durability of the products they go into and determine the performance and longevity of the products as well. At LG, the path that brought us to the forefront of inverter compressor technology wasn't always easy but we continuously strive to ensure our components deliver the cutting-edge solutions that define who we are to the industry. Our inverter compressor technology is at the core of many of our products and the team responsible for developing this technology is the driving force behind our business. We took the opportunity to talk with one of our head developers and hear first-hand what goes into our inverter compressor components

COMMENT

Jong-Yoon Choi
Senior Manager,
Component Solution Product Planning Team,
LG Electronics

Jong-Yoon has worked in the Research Institute at LG since 1997 and has been concentrating on compressor development since 2001. He is now a leader of the Component Solution Product Planning Team.
Let's hear what Jong-Yoon had to say about the inverter compressor development experience at LG:

Please give us a short introduction

I finished graduate school in 1997 and joined LG that same year. After working for 4 years at LG PRI (LG Production Engineering Research Institute), I worked in compressor development from 2001 to 2016 and I have been a leader of the product planning team since 2017.

What has been your main role at LG?

My main responsibilities have been device design, including improving efficiency, mass production design and improving the dependability of products.

> “
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> ...Because it is a fiercely competitive market, a company has to **keep up with the competition by creating technology that sets them apart**
>
> ”

What's the main difference between a traditional compressor and the LG Inverter compressor?

In the compressor and motor industry, inverters are already being used and because it is a fiercely competitive market, a company has to keep up with the competition by creating technology that sets them apart. LG's components such as the refrigerator linear compressor, HVAC linear compressor and HVAC scroll compressor are really what set us apart in the market. We are also concentrating on planning for more products that will make us stand out with reciprocating and rotary compressor technology as well.

LG's diverse line up of inverter compressor components

In what products were the LG inverter compressors first implemented?

In 2004, AC inverter technology was first implemented in our first-generation VRF scroll compressor. After that, the SynRM inverter compressor was implemented in our second-generation VRF solution in 2006 and the high-compression inverter compressor was developed for our third-generation VRF solution. Inverter technology was also added to our linear compressor in 2006, to our rotary compressor in 2008 and to our reciprocating compressor in 2010. LG compressors are also implemented in a wide range of customer products. In fact, 40% of our compressors are actually used as components in products manufactured by our B2B clients.

What was the most difficult product to manage throughout the development process?

All of our products have been difficult to develop at one time or another. If I was pressed to say which was the most difficult, I would have to say the linear compressor and scroll compressor were the biggest challenge. These are the products we are focusing on primarily; however, prioritizing our efforts between the linear and scroll compressors and the reciprocating and rotary compressors has been very tough. The typical development cycle for our compressors is about 1 year and 3 months (3~4 years including development in the R&D lab), during that time, a lot can change and projects can be dropped or altered at any time depending on an array of different factors.

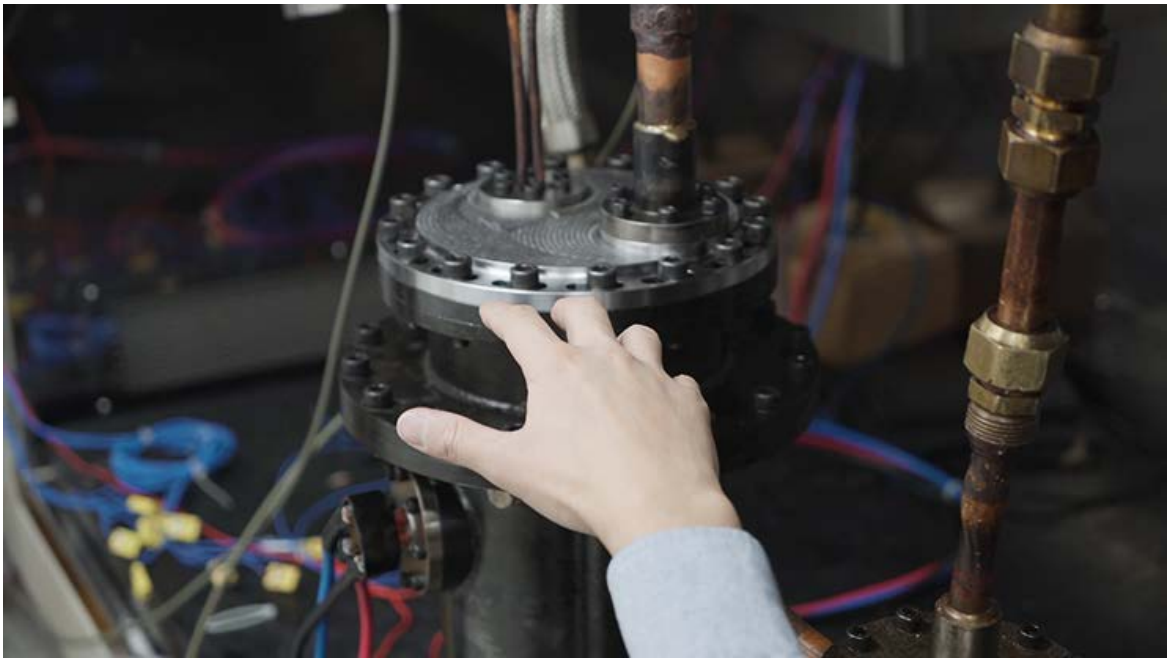
Inverter technology is at the heart of LG's diverse motors

https://youtu.be/iwmZkcJD_8w

> We are able to take technology implemented in one compressor type and apply it to other compressors and that allows us to remain a **leader in the industry**

Are there any secrets that you might be able to share with us that only you in the LG Compressor Business Department would know?

Well, it's not really what you would call a secret, but I think that one of the strength of our Component Solutions Business Unit is that since we are simultaneously developing 4 different compressor types (scroll, rotary, reciprocating and linear) together, we are able to take technology implemented in one compressor type and apply it to other compressors and that allows us to remain a leader in the industry. For example, we can apply new plastic materials used in a linear compressor to other compressors, or take data from new refrigerant technology used in refrigerators and apply it to compressors in heat pump dryers.



LG developers ensure the quality of LG's defining inverter technology

When talking to developers, are there any things that you would emphasize as most important or rules that should always be followed?

If you think about products that have become global standards, product planning for making product USPs (performance, quality, design etc.) dominant in the market is important, but the most important task is creating market leading products that no one else is creating and that give your company its own identity. Continuous research and understanding of this point is certainly necessary.

We would like to thank Jong-Yoon Choi for taking the time to talk to us and provide interesting insight in to our inverter compressor technology. The next time you see a product, whether it be a refrigerator, air conditioner, dish washer, washing machine, vacuum or lawn mower, take time to reflect on what goes into making that product one of the top in its class on the market!

https://youtu.be/udbAVQxD_Mw

May 4, 2018

Don’t Let Your Heat Go to Waste

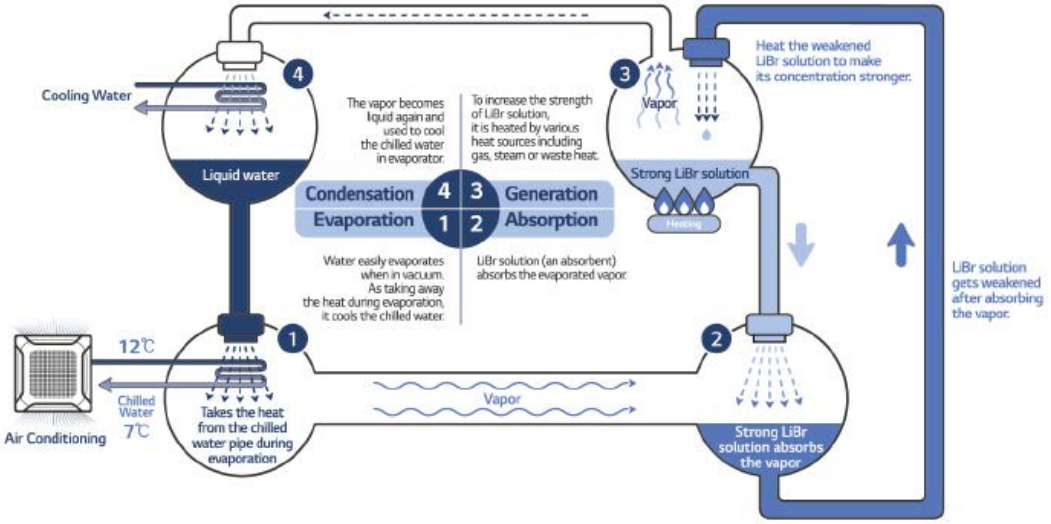
LG’s Absorption Chillers Expand the Possibilities of Recycling

Everyone knows the virtues of recycling. From a young age, we are taught how every little bit that we do helps the planet. We’re told that every bottle we return, every paper we re-use plays a small part in making the world a better place. These days it seems like almost anything can be recycled, but our focus on physical recycling causes many to neglect important breakthroughs that take recycling to the next level.

The advanced absorption chillers pioneered by LG Electronics are an excellent example of how recent innovations are opening up new frontiers in recycling. By repurposing heat and energy, these devices have the potential to offer profound benefits to both users (in the form of lower electricity bills) and the environment (by decreasing power consumption). LG’s absorption chillers offer the best solution to the dilemma presented by increased demand for energy at a time when growing environmental consciousness is causing many to look for ways to scale down consumption.

Though all of this may sound too good to be true, absorption chillers actually operate on a very straightforward principle. Anyone familiar with the water cycle will understand the basic tenets, while those with a background in AC solutions will see fundamental similarities to vapor compression chillers. This is in part because they depend on both the condensation and evaporation of the refrigerant within the system.

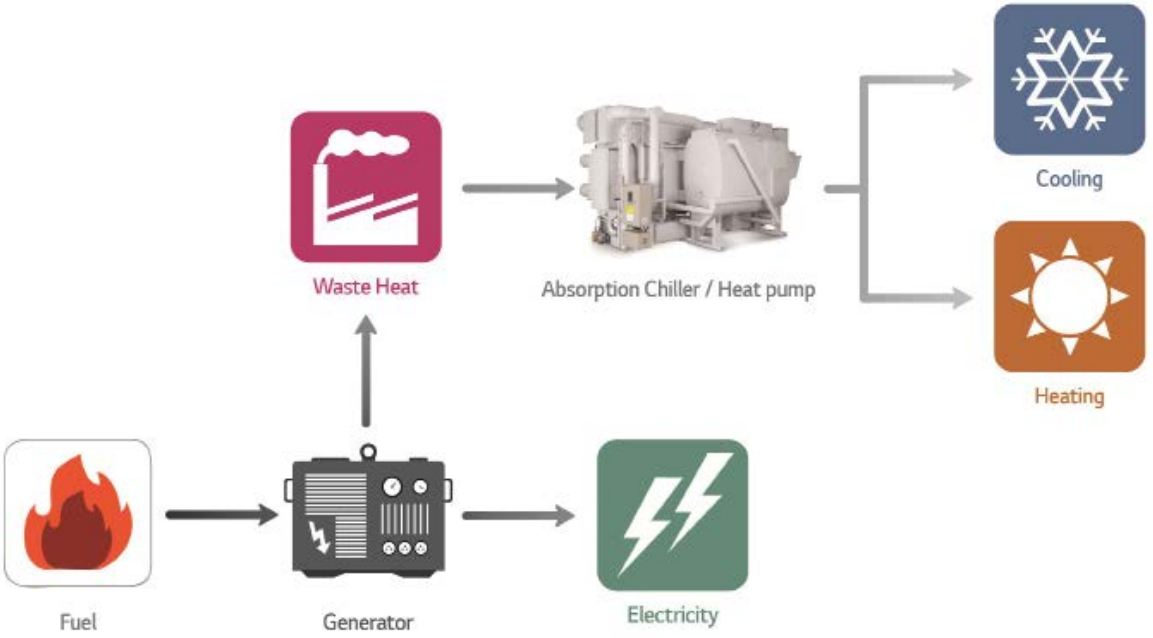
Basic Principle of Absorption Chiller



While electric-driven chillers rely primarily on mechanical energy, absorption chillers instead implement an advanced thermo-chemical process. This process uses LiBr (Lithium Bromide) to absorb the vapor that is formed after liquid water evaporates. LiBr is an advanced chemical compound combining bromine extracted from salt water and lithium extracted from lithium ore which forms crystalline hydrates. The absorption liquid is then created by dissolving LiBr – which has salt-like chemical properties – in water. This LiBr solution is heated and exposed to cool vapor to recreate liquid water. Operating much like the water cycle in the natural world, absorption chillers are a testament to how advanced technology can be used to reduce our environmental impact. Its incredible efficiency is made possible because absorption chillers utilize a wide range of energy sources, such as hot water, exhaust gas, or LNG. They also give users the option to use not just one heat source, but multiple heat sources.

By leveraging these multiple heat sources, absorption chillers can be combined with a co-generator – also known as CHP – to harness heat generated during electricity production to provide heating and hot water. This method of generating electricity, heat, and cooling energy by combining a CHP with the absorption chiller is called CCHP (Combined Cooling, Heating, and Power) or Trigeneration. This wide range of applications gives CCHP the ability to fill a variety of roles.

Architecture of the CCHP System



For example, CCHPs convert CHP waste heat into cooling energy, making them particularity effective in power plants as the average power plant loses more than half of the heat it generates producing electricity. Instead of letting this energy go to waste, CCHPs repurpose the heat to deliver even higher energy savings to buildings which require consistent cooling as part of their climate control regimen.

The LG Hybrid Absorption Chiller uses heat sources such as steam, hot water and exhaust gas to increase the overall energy efficiency of the CCHP system. In addition, it comes equipped with emergency backup direct gas heating that keeps the solution running in the event that CHP operation is interrupted. Ideal for users looking to reduce electric consumption via renewable energy sources, the Hybrid Absorption Chiller can even be powered by solar cells on sunny days and direct gas firing when weather turns cloudy. It is perfectly designed to provide a variety of efficient and stable cooling options.

To allow for maximum flexibility, LG gave each Absorption Chiller the ability to be easily customized according to its specified role. Solution design varies based on heat source and generator range, meaning there is a perfect chiller for every situation. This allows LG Absorption Chillers to support a wide range of temperatures – from 95 to 72 degrees Celsius – for hot water.

An optimal design that is tailored to individual generator specifications significantly raises the overall efficiency of the CCHP system. LG Absorption Chillers offer the world's highest level of efficiency, with a coefficient of performance (COP) of 0.81 based on hot water temperature of 95°C. This incredible energy efficiency is made possible by LG's unique high-efficiency heat transfer tube, plate-type heat exchanger, and exhaust gas fin tube.

By applying the latest engineering breakthroughs to LG's already advanced systems, LG Absorption Chillers are able to meet the most pressing consumer needs while reducing power consumption and increasing eco-friendliness. Recycling is typically imagined as an active pursuit, something that requires participants to make sacrifices in order to reduce consumption, decrease their ecological footprint or both. Now, LG is changing this paradigm by allowing for energy and heat to be reused in a manner that requires no sacrifices on the part of the user. This represents a fundamental shift in how we think about recycling, illustrating the way forward at a time when environmental concerns vie with practical realities to determine how we design the buildings that millions of people rely on every day.

May 18, 2018

Cleaning your Filters, the Number One Priority in Preparing for Summer

Summer is approaching and many of us are in the process of spring cleaning and preparing our homes and offices for the warm months ahead. While preparing the spaces we occupy everyday for the warm summer season, it is also necessary to properly prepare one of the most important items we use throughout the summer: the air conditioner!

There are a few simple, yet invaluable steps to ensuring that your air conditioner keeps the air cool and clean all summer long. Let's discuss one of the most important and often overlooked steps in preparing your air conditioner for summer, which is **cleaning the filters.** Lucky for us, the LG 1 Way Cassette and Moving Panel (Window) type air conditioner unit filters are so easy to clean, anyone can do it!

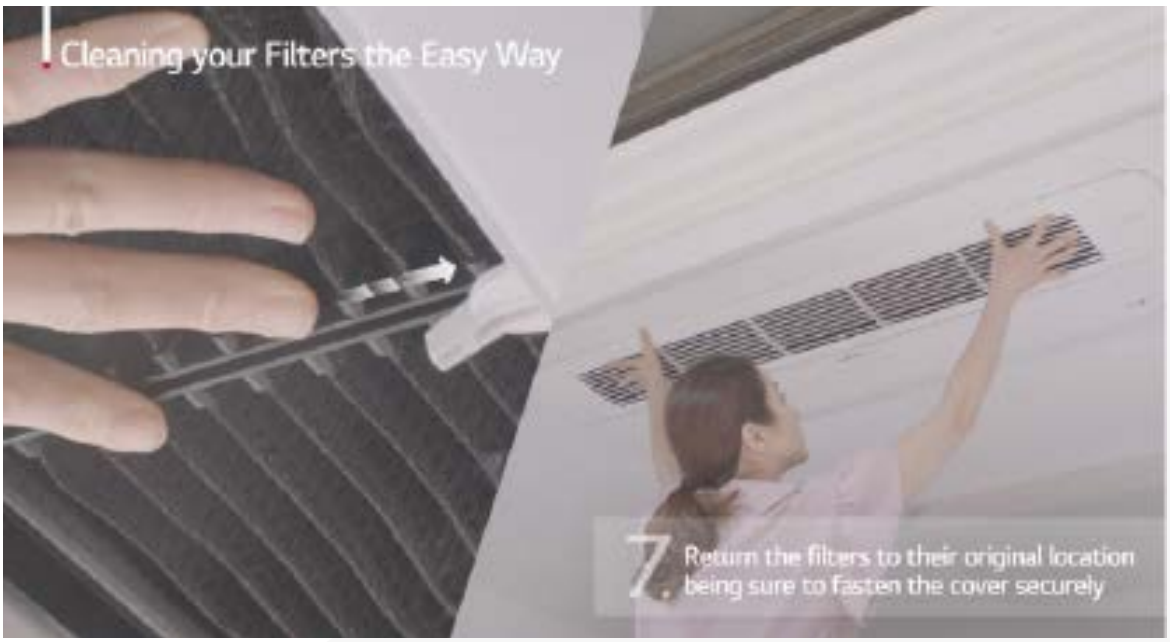
> "When we look to turn on our air conditioners at the beginning of summer, **cleaning the filters** should be one of the first things that come to mind"

What's in a Filter?

Air conditioners play an important role in keeping us comfortable and keeping the air in our homes and offices clean during the summer. When we look to turn on our air conditioners at the beginning of summer, cleaning the filters should be one of the first things that come to mind. Clogged or broken filters block airflow and cause added strain on your air conditioner that negatively impacts the unit's performance and efficiency. Blocked airflow will not only hinder efficiency but also prevent the air conditioner from properly dispersing cool air throughout your home or office. Dust or dirt in the filter will also cause bacteria and allergens to be distributed into the air, which can be harmful to your health. To keep your air conditioner running strong all summer long, we recommend that you clean the filters once a month during the peak summer months.

Cleaning your Filters the Easy Way

We have prepared a short list of pointers to show you how it's done



https://youtu.be/Snq8LYHSA5I

1. First, turn off the mains supply to the air conditioner for safety
2. Remove the outer casing from the air conditioner and remove the filters
3. Use a soft brush to carefully brush dust and grime from the filters
4. Fill a basin or tub with a solution of water and a neutral detergent and wash the filters in the solution to disinfect from bacteria and allergens (don't use water over 40°C)
5. Rinse the filters thoroughly with water to remove all dirt and detergent
6. Set the filters out to dry completely, preferably outside just out of direct sunlight. Water remaining on the filters can cause damage to the air conditioner.
7. Return the filters to their original location being sure to fasten the cover securely

Cleaning air conditioner filters is a simple yet necessary step to keep your air conditioner running efficiently and ensure that the air in your home or office is cool and clean. We recommend performing this simple task regularly to maintain top performance in your air conditioner and to maintain your health.

May 25, 2018

LG Multi V Technology is Helping Building Owners Achieve Efficiency, Savings and Environment Conservation

In today's hyper-competitive property market, building owners and managers are constantly on the lookout for ways to increase tenant satisfaction while reducing overhead. This constant tension has had a profound impact on the way that buildings are designed, staffed and maintained. But now, the rise of advanced HVAC solutions is even helping to protect the planet. How can this be? How can technology designed primarily to meet the key needs of building owners (durability, flexibility, efficiency and effectiveness) yield benefits on such a wide scale?

Multi V 5 offers building owners the tools they achieve efficient building operation

■ The Value of Efficiency

First, we need to take a step back and examine how energy efficiency took on such a degree of importance, particularly in the most developed economies. Building owners have long flocked to efficient solutions for their ability to reduce operational costs, but in recent years another justifying reason has emerged. More than any other design trend, the desire to reduce a building's environmental footprint has become an important cultural signifier. While once seen as simply a way to save costs, an increasing number of building owners now view effective energy consumption as a moral issue. This rise in interest has financed a new generation of innovation in energy efficient solutions specifically designed to bring down operational costs. Headlining this fresh wave of user-centered solutions is the LG MULTI V 5, which offers the streamlined functionality necessary to both optimize energy efficiency and maximize user comfort.

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>
> Balancing **eco-friendly credentials with impressive performance specs,** the MULTI V 5 emerged as the right solution at the right time.
>
> ”

Multi V 5 Dual Sensing Control Maximizes Efficiency and Comfort

Its innovative Dual Sensing Control monitors temperature and humidity levels, allowing the MULTI V 5 to expertly combine advanced software and smart sensors with engineering knowledge.

■ Better Control Provides Better Operation

In addition to keeping energy costs down via its array of efficiency-boosting features, the MULTI V 5 is also equipped with advanced software that allows users to set predefined limits on energy consumption. These smart operational guidelines serve to increase efficiency by analyzing and comparing usage patterns on a month-by-month basis. The information gleaned from these tests helps reduce energy use, lowering operational costs for the benefit of the building owner and the environment.

■ Durability and Longevity

Like energy efficiency, durability has long been a key criteria for building owners looking to invest in a new HVAC solution. While not generally regarded as a threat to advanced solutions, salt, sand and other elements brought in by strong sea winds (as well as industrial pollution) can reduce the lifespan of even the most sophisticated units. LG's exclusive Ocean Black Fin heat exchanger is specially designed for durable and long-lasting performance even in corrosive environments.

The small footprint of the Multi V 5 makes it the ultimate versatile solution

■ The Versatility of Multi V 5

This ability to thrive in any environment testifies to the versatility and flexibility of the MULTI V 5. The solution's sleek appearance combines with its slim profile to diminish is impact on the building's external appearance. In addition, the compact nature of the VRF helps to speed up the installation process while also freeing up additional floor space. For building owners looking to get the most out of their properties, these space-efficient solutions allow for a greater degree of freedom in floor design. Whether clearing space for large atriums or creating additional storage nooks, savvy building owners will be sure that none of their newfound space goes to waste.

The MULTI V 5 also boasts incredible flexibility with its integrated system which offers both Heat Pump and Heat Recovery Systems. Even if the site has been previously installed with a Heat Pump System, users can easily replace it with a Heat Recovery System or Hot Water Solution when necessary, making renovation and remodeling much easier for building owners.

While the MULTI V 5 is ideal for building owners, in the end we all benefit from the advancing capabilities of modern HVAC solutions. Seamlessly combining features that improve energy efficiency, boost durability and strengthen flexibility, the MULTI V 5 is delicately crafted to provide everything that building owners prioritize in their solutions. These benefits and more make it clear that the MULTI V 5 is the ultimate solution for building owners precisely because of its ability to reliably create comfortable environments for occupants. Everything from modern offices and loft apartments to open public buildings can benefit from what the MULTI V 5 can offer.

May 31, 2018

We're Ready for Summer!
But what About Our Air Conditioners?

We can't wait for summer and the warm season will be on us before you know it. While we're planning summer vacations and looking for ways to enjoy the outdoors, there is something we should do before the summer starts that many of us are neglecting: preparing our air conditioners! Before we start trying to beat the heat with the air conditioners in our homes and offices, prepping them for a full season of work is imperative to keep them running efficiently and keeping us cool. Let's take a look at a few simple steps we can take to ensure our air conditioners run at top performance all summer long.

For HVAC manufacturers like LG Air Solution, with the summer comes our busiest time of the year. The demand for new installations and maintenance is at its peak as we work to satisfy our customers' needs. However, with our busiest season in full swing, deliver times for installations and maintenance tend to take longer than during other parts of the year. That's why it's important to test your air conditioners before summer begins to be sure you receive assistance as quickly as possible. Let's take a look at a few simple operational tests that you can run to ensure your air conditioners run at top performance all summer long.

Cooling Performance

1. Turn on the air conditioner and set it to the desired temperature.
2. Be sure that the indoor unit is running properly and cool air is coming from the unit.
3. Check the outdoor condenser unit to make sure the fan is running properly and check that the air coming from the unit is warm. Also, clear debris from on or around the unit
4. Let the system run for at least 20 minutes and check the indoor and outdoor unit again to be certain that they are running smoothly

System Connectivity

1. Look at the power plug to be sure that it is connected to the outlet properly and there is nothing obstructing it
2. Check that the remote control is working properly and change the batteries

Check!

Filters and Clean

https://youtu.be/Snq8LYHSA5I

1. Open the air conditioner and remove the filters

2. Remove dirt from the filters with a soft brush

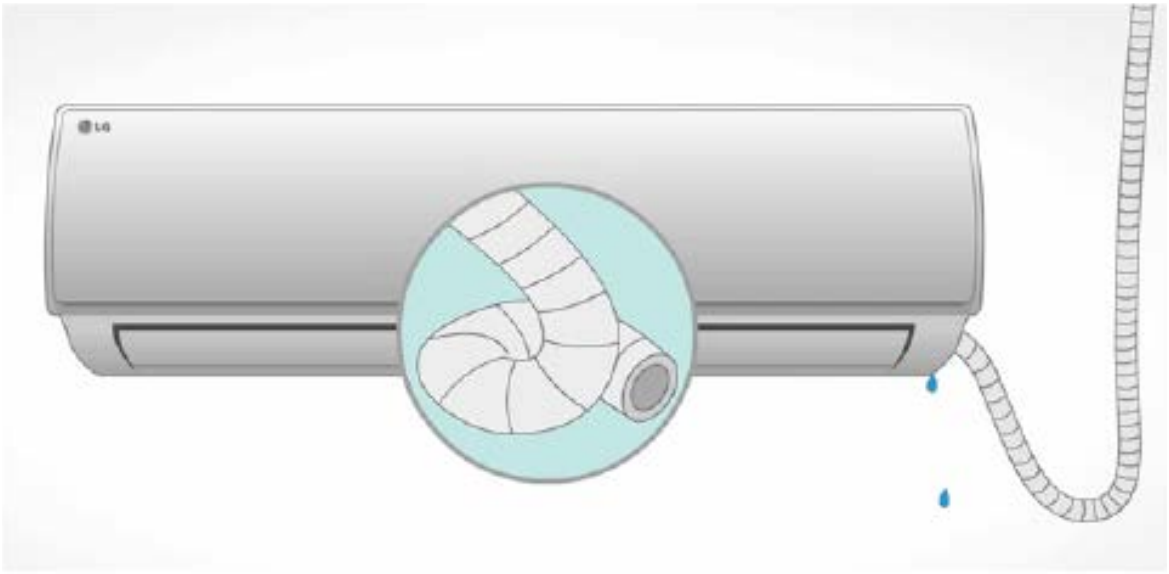
3. Wash filters with a non-astringent detergent

4. Dry the filters and replace them while being sure to firmly replace the cover panels

Click here for our in-depth filter cleaning guide

Check!

Drainage Pipes



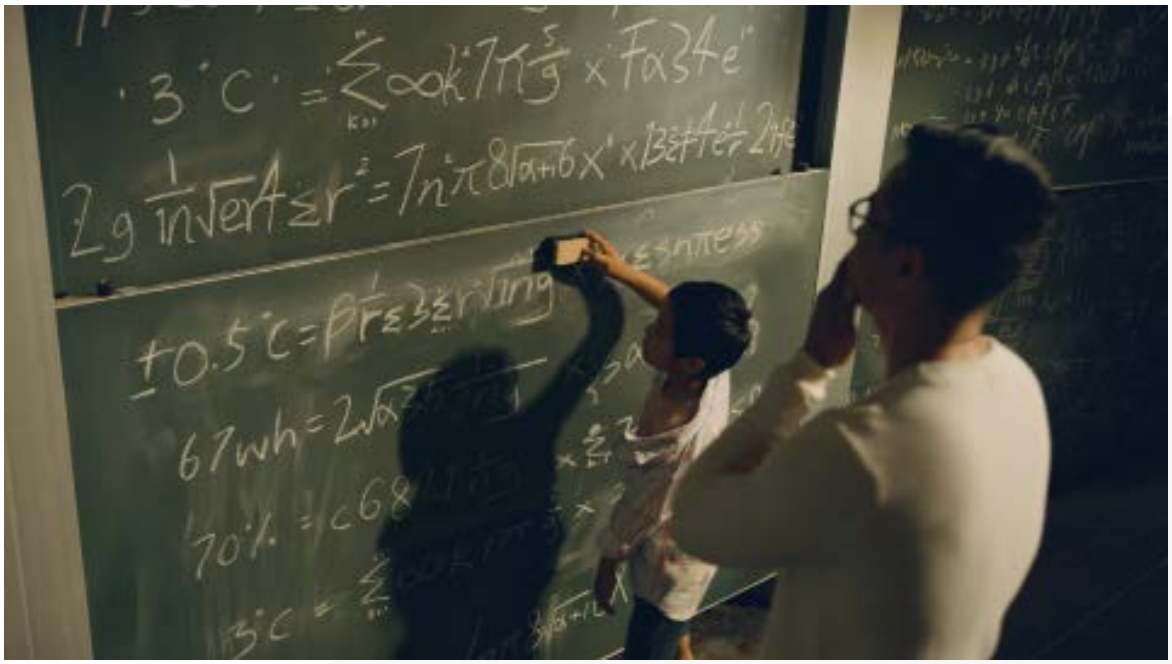
1. Check that the pipe is firmly connected to the air conditioner unit and is not coiled or bent
2. Be sure that there are no leaks in the pipe or objects blocking the pipe
3. Make sure that the end of the pipe is properly situated below the drainage port on the unit

We imagine you're as excited for summer as we are and these simple tests should ensure a cool home and a worry free summer. Examine your air conditioners early so that we can assist you with any issues faster and more effectively. LG is always ready to help. Have a cool and happy summer!

June 15, 2018

LG Inverters at the Core of Human Progress

Throughout time, there have been 17 equations that have changed the course of history. Equations such as Pythagoras's Theorem, Newton's Law of Gravity and Einstein's Theory of Relativity changed the way we understand our world and allowed us access to new trains of thought and progress.



The LG Inverter Equation is the formula that allows LG refrigerators to keep food fresher for longer so that you can cook for your family with the freshest of ingredients. It allows LG washing machines to deliver clean clothes with as little as 67Wh of electricity so that you can lower your electricity bill. LG air conditioners can reduce energy consumption up to 70% while cooling 40% faster. LG ovens are also able to provide precise temperature control within 3°C for food that is cooked evenly inside and out.

Check out this video we have created to highlight the impact of the LG Inverter on nearly every facet of our lives!

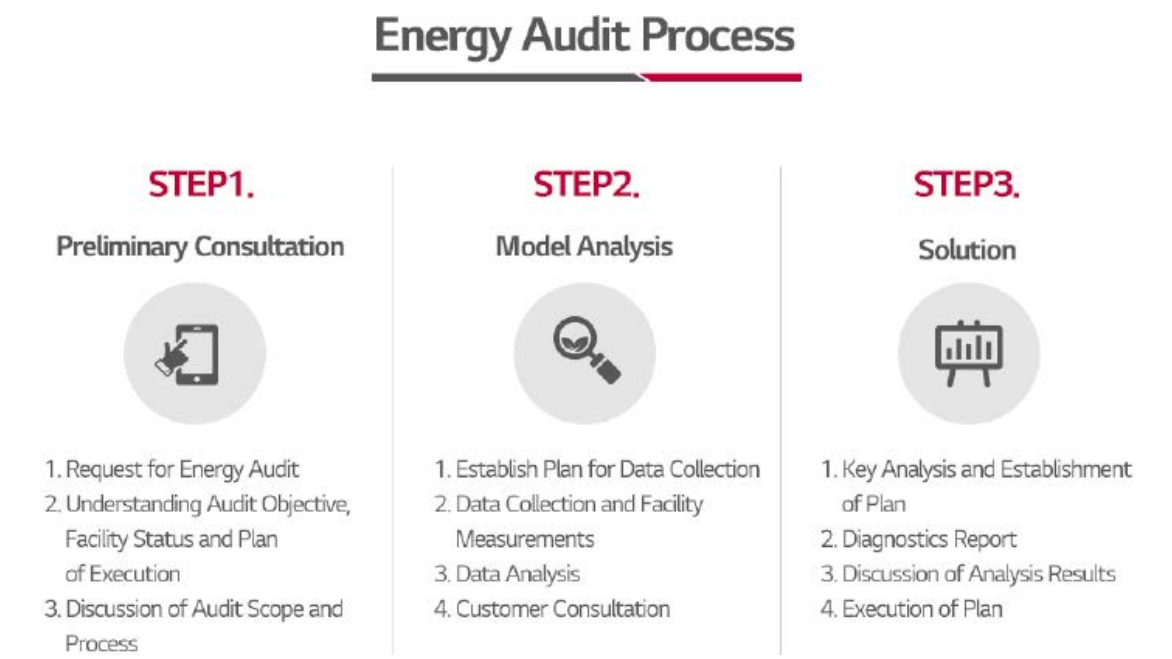
https://youtu.be/CC0I0C87D74

June 19, 2018

It may not be Tax Season but it's Time for an Audit... an Energy Audit?

In finance, an auditor is responsible for scouring financial records to determine the flow of money and assets belonging to a corporation or individual. But there is another type of auditor that examines the flow of something different: energy! Running a cost and energy efficient building is at the forefront of every building administrators mind, but simply picking efficient equipment for your building leaves a lot of stones unturned in finding the most efficient way to plan or refurbish a building. The LG Energy Auditing Team uses its knowhow to ensure that customers reduce energy costs while conserving energy and reducing greenhouse gas emissions for an environmentally friendly building.

What is Energy Auditing?



There are 3 main phases to an energy audit and each step of these phases is crucial in creating the most efficient environment:

A wide range of data are collected including water pressure and water temperature

■ Preliminary Consultation

When energy auditors receive a request for an audit, there are a few things they must do initially to ensure they get the proper results for the facility. Auditors work in conjunction with facility administrators to understand elements of the project such as the objective of the audit, the current state of the facility and how the audit will be executed. They then can further discuss the scope of the audit and define the process. The energy auditors and facility administrators then finalize a contract to execute the energy audit. Information is collected about a facility's operation including how much energy the facility uses and how much money the facility is spending on energy. Data is collected using a diverse set of instruments with sensors for acquiring accurate readings such as energy flow, temperatures, vibrations as well as air and waters pressure. Once the data has been collected, the energy auditors must analyze the data.

Elements such as water flow can be measured to determine if vibrations or the vacuum seal in pipes is inhibiting operations

■ Solution

The energy auditors next perform key data analysis and establish a plan for improvements to the facility. Once this has been accomplished, a diagnostics report is provided and the results are discussed with facility administrators. Finally, the plan can be executed to implement improvements to the facility system and the system is tested again to ensure improved energy performance.

LG Energy Auditing

■ LG Energy Auditing

Since 2010, LG has been focusing on energy auditing to bring a new level of efficiency and to their clients and keep them in accordance with government environmental policies. LG uses a wide array of devices and sensors such as anemometers, airflow meters, digital pressure gauges and ultrasonic sensors to obtain data on a facility for analysis. Information such as cold water and refrigerant flow rates, fluid temperatures, pump pressure, power consumption and boiler CO2 emissions to determine the status of existing equipment and assess the appropriate HVAC solutions for each individual environment. Once the appropriate equipment has been determined and a plan has been proposed to facility administrators, the plan is implemented to start delivering savings and reducing excess energy consumption. After Energy Actions Plans are implemented in conjunction with the right HVAC solutions, LG performs measurements again and the data is analyzed to ensure energy conservation, improved COPs and overall efficiency is achieved

Just as an auditor can help assess finances and provide and financial plan that is best for the fiscal future of an entity, energy auditing provides insight and proper implementation of energy management. LG Energy Auditors are ready to find the best solutions for customers to make the most of our money and energy!

June 25, 2018

Like a Camper Van, Multi Split Offers All From one Source

When it comes to planning a family trip to a mountain, forest or river bank under a flexible schedule, using a camper van is the best idea. Compared to traveling in a car, this option offers a family of four to six optimal logistics in allowing more flexible and energy-efficient activities. A well-designed vehicle of this type can carry food, household equipment and living space without the need for separate vehicles, thus saving energy. The family can enjoy their own space in the van for a truly relaxing experience, rather than uncomfortably riding in a small car or sport-utility vehicle that does not offer the same convenience, and that often wastes resources and energy.

For residents of multi-room villas or owners of light commercial buildings, this case study of the optimal family outing can help select the best heating, ventilation and air conditioning (HVAC) system. Like the streamlined family activities available from a more versatile vehicle, the Multi Split solution from LG Electronics is designed to deliver the greatest efficiency and flexibility to those working or living in small- to medium-size buildings or multi-room housing.

LG Multi Split: Optimal A/C Solution for Multi-room Housing

The Multi Split system provides unparalleled benefits for multi-room buildings over those of a Single Split air conditioner. This highly effective solution requires just one high-performance outdoor unit to simultaneously run up to nine indoor units. A Single Split outdoor unit, however, can power just one indoor unit, limiting the efficiency of space usage and variation of indoor units at multi-room facilities. Offering versatile A/C operations, the Multi Split system combines the technical strengths of both the Single Split and relatively larger air conditioning systems.

Unlike the Single Split solution, the Multi Split offers operational flexibility that allows the addition of indoor units at any time.[1)] Multi-room houses typically do not run air conditioners at full capacity every day because different spaces are used differently depending on the time of day. This means your villa may not need an outdoor unit that constantly supplies full power to every indoor unit at all time. The outdoor unit of the Multi Split runs several indoor units by supplying refrigerant alternately, while the Single Split sends power solely to one indoor unit.

The Multi Split was designed with both cost-efficiency and energy usage in mind. Users can select which rooms to equip with indoor units, adding additional units as needed without spending extra on an outdoor unit. This efficiency allows users to utilize their building space far more effectively and eliminates the need to install outdoor units cluttered around a terrace or veranda. Additionally, family members or tenants can choose the type of indoor unit from among those wall mounted or one- to four way-cassette systems. All these applications guarantee maximum HVAC performance for an apartment or other housing unit and commercial spaces such as restaurants or boutiques.

The Multi Split also features LG's Smart Inverter technologies that raise HVAC performance to another level. Considerably enhancing energy efficiency and reliability, the Smart Sensor detects refrigerant pressure and temperature to constantly optimize compressor operation.[2)] Thanks to this convenience-boosting function, users can enjoy cooling up to 30 percent faster and heat-

ing up to 44 percent quicker.[3] The Smart Sensor also boosts the durability of outdoor units by controlling the compressor with precise sensing on refrigerant pressure, enabling the lowering of the LG Multi Split's field failure rate 22 percent more than those of conventional models.

LG Multi Split: Optimal A/C Solution for Multi-room Housing

The Smart Load Control is also designed to maximize the energy efficiency of the Multi Split, detecting outdoor temperature to adjust the refrigerant temperature supplied to the indoor unit. This results in 48 percent more energy savings than in conventional models.[4] In addition to these benefits, the Multi Split boasts a state-of-the-art Internet of Things technology powered by the LG SmartThinQ home automation platform. This enables devices connected via Wi-fi to access the A/C system from anywhere, allowing users to turn the air conditioner on or off or adjust cooling or heating temperatures remotely.

For a more flexible and effective air conditioning system at small to medium-size spaces used for a variety of purposes, LG's Multi Split is the best solution. Like a hassle-free and comfortable family trip on a well-equipped camper van, this solution offers diverse functions and space and energy efficiency in one package.

1) The number of additional indoor units varies depending on the capacity of the outdoor unit.
When an outdoor unit runs the maximum number of indoor units at full capacity, the performance of indoor air conditioners can be limited depending on the rated capacity of the outdoor unit.
2) Available on outdoor unit models with certain capacity specs
3) Based on internal test data
4) Tested data when indoor unit runs cooling operation with thermostat setting of 20°C

July 18, 2018

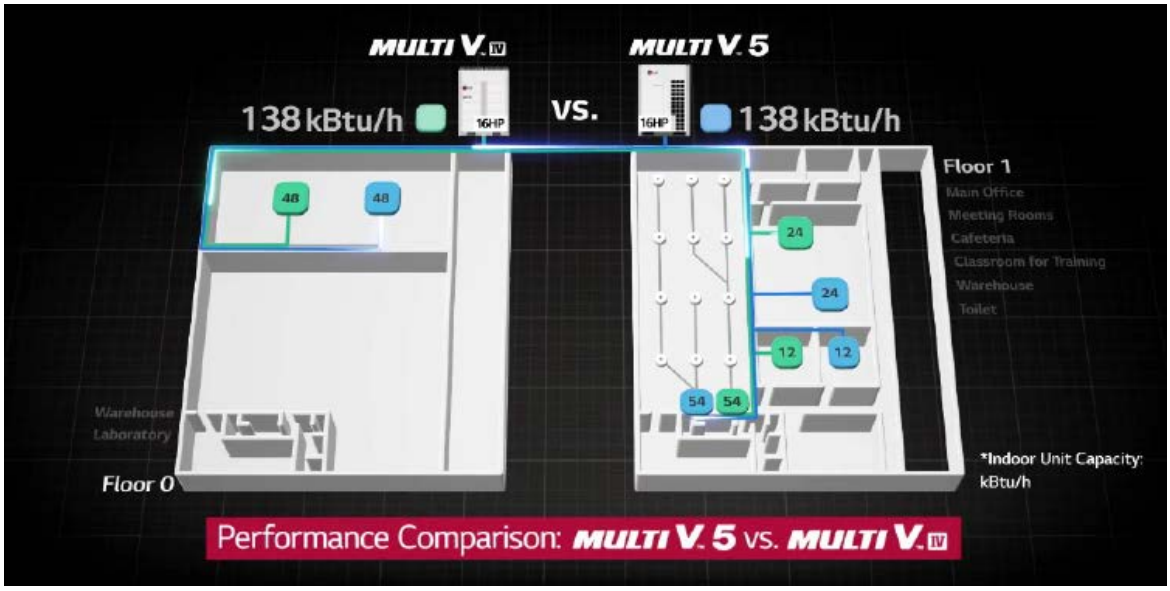
Advanced but Simple Tech Sets Higher Standard for Cooling Environments

It is our ambition to help our customers get the most out of their HVAC systems, and with the LG Multi V 5, we are now confident that we are accomplishing just that! For us at LG, the Multi V 5 VRF solution with Dual Sensing Control is more than just an HVAC system, it is a symbol of our dedication to innovative and energy efficient technology that provides comfort and convenience to our customers around the world.

We set out to demonstrate the advancements in our technology and the improved performance attained through our commitment to innovation.

■ Dual Sensing Control at the Core of our new VRF Solution

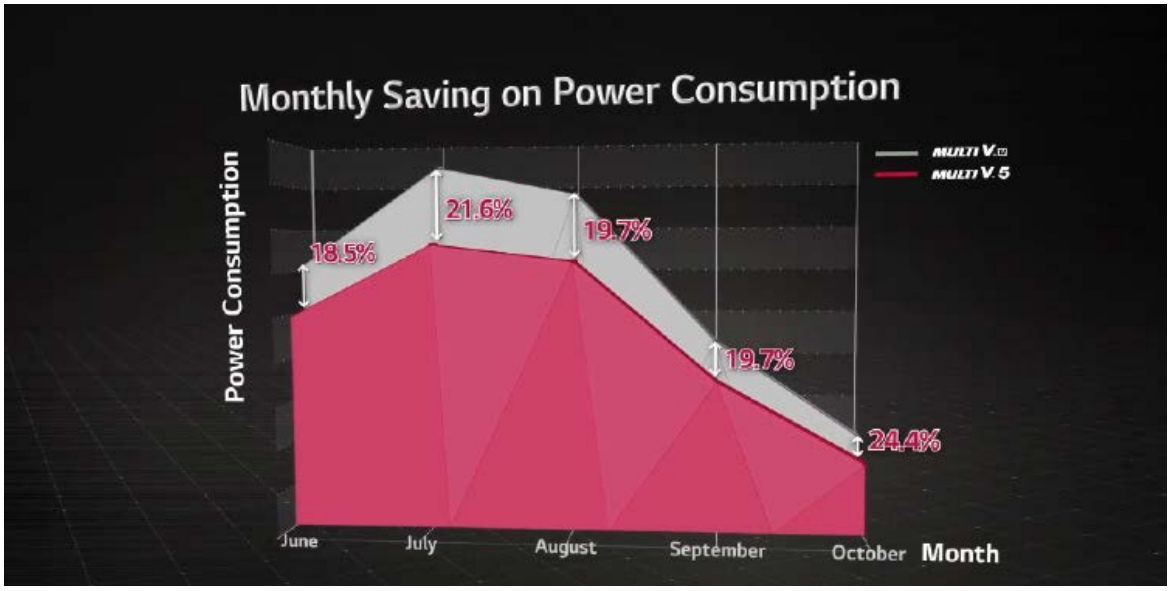
Our own Dual Sensing Control is one of primary factors that sets the Multi V 5 apart from other VRF solutions. The technology is the first of its kind on the market with simultaneous detection of both temperature and humidity for more efficient management of heating and cooling. Dual Sensing Control maximizes comfort while eliminating overcooling in low humidity and preventing unnecessary energy loss. With this in mind, we wanted to witness the actual results of the Multi V 5 and Dual Sensing Control in action.



We installed a Multi V 5 and the previous model VRF system for comparison

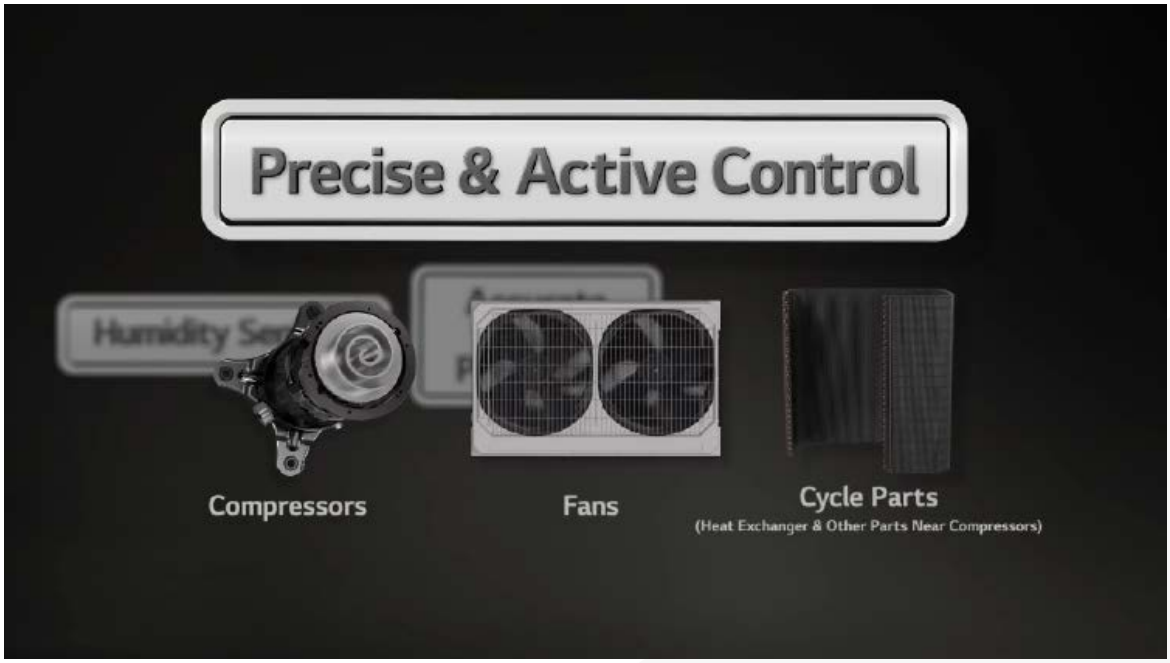
■ Putting the Multi V 5 to Test

We set out to demonstrate the innovation behind our Dual Sensing Control and other Multi V 5 technologies by conducting a series of tests comparing the performance of the Multi V 5 and the previous generation VRF solution in a two-story facility in Valencia, Spain. The facility hosts a laboratory on the first floor and office space, a meeting room and a classroom on the second floor. Our goal was to present accurate comparisons of both VRF systems. In order to accomplish this task, we simultaneously installed indoor and outdoor units from both the Multi V 5 and the previous system in separate spaces. We were responsible for the installation of the HVAC units while our R&D lab in Korea monitors the results of the tests. We implemented a PDI system to control and compare energy consumption and used the opening of an IP port to monitor all aspects of the installation. Through these tests, we conclusively established the superior energy efficiency and functionality of the Multi V 5 over our previous VRF systems.



■ Dual Sensing Control Delivers Savings

Dual Sensing Control truly lived up to the hype with a 20.4% reduction in power consumption. We were also able to show a 36% reduction in power consumption under conditions of 40% humidity or less. With the ability to detect temperature and humidity together, we were able to accurately measure the required heat load between high and low humidity conditions. Refrigerant temperatures were lowered in high humidity conditions to improve overall cooling capacity and refrigerant temperatures were raised in low humidity conditions to prevent overcooling and improve efficiency.



■ Core Components Deliver Precise Control

The innovative core components in the Multi V 5 make all the difference. The sensors that make Dual Sensing Control possible provide more accurate reading of conditions and factors such as

compressors, fans and cycle components (e.g., heat exchangers etc) deliver more precise and active control. But the Multi V 5 is more than just a technical marvel, it also provides unrivaled comfort across environments in any facility. The intuitive sensing capabilities of Dual Sensing Control makes the Multi V 5 a more flexible and comprehensive system for all environmental conditions.

The Multi V 5 is an eco-friendly solution achieving ultimate comfort and system stability in all environments. Dual Sensing Control and other core components make the Multi V 5 a demonstrably advanced solution and a representation of our commitment to quality, innovation and comfort.

To learn more about our tests in Valencia, check out the video below.

https://youtu.be/h_5VwODCTpM

August 16, 2018

From Where the Wind Blows: LG Air Handling Units

On our blog, we discuss many innovative technologies that are revolutionizing the HVAC industry. Inverter compressors, indoor units, outdoor units, chillers, control systems – you name it, we've covered it all. But when it comes down to it, it's all about the air! Getting the air to occupants in a facility is most important, and in large facilities with our Multi V and chiller solutions installed, it's the air handling units (AHU) that take charge. Let's find out more about LG AHUs and the important role they play in keeping us comfortable.

An LG AHU on display at an LG chiller plant in South Korea

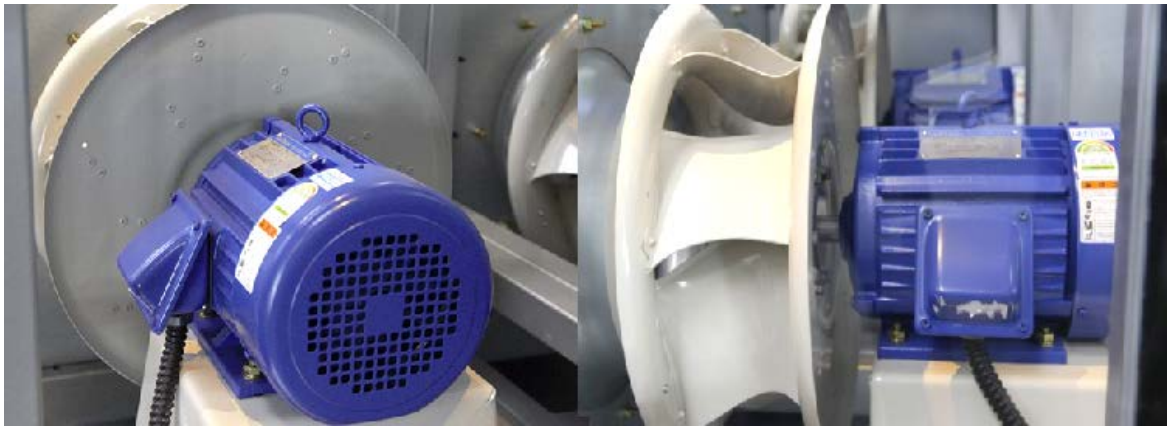
What is an AHU?

We're glad you asked. In short, an AHU is an integral part of an HVAC system that circulates and regulates air. AHUs are typically implemented in chiller or boiler systems, but they are also used in standard air conditioning or heat pump systems as well. They house the equipment that moves the air throughout a facility and if you've never seen an AHU before, you might not recognize what it is. Often used for ventilating stale air from spaces, they are also able to recycle warm air with a heat recovery mechanism. AHUs not only direct air through a facility but also mix air from outdoors and from return ducts before re-circulation.

AHUs control airflow in HVAC systems

But what goes into an AHU to make it all work? First, we have the outer casing or housing. This essentially looks like a large box that houses all the other components. Inside the housing is a powerful fan or fans that blow the air from the chiller or HVAC condenser in the outside unit to the desired location. The coil is responsible for cooling and dehumidifying the air distributed by the AHU. Humidifiers can also be implemented in AHUs to add humidity to the air in low humidity conditions such as during winter. Filters in AHUs remove contaminants from the air to provide quality air for healthy and safe environments. Finally, we have the mixing box where outdoor and return air are combined for proper humidity and temperature distribution. Temperature and humidity sensors are also implemented for a precise mix of air.

> **LG AHU**s provide **advantages** to HVAC systems that you won't find with other solutions.



LG 3D Plug fans blow air through the AHU for distribution throughout a building

■ The LG AHU Difference

LG AHUs provide advantages to HVAC systems that you won't find with other solutions. Our 3D Plug Fan is an innovative technology that produces up to 13% more wind power than its contemporaries and allows the motor to consume less energy. This technology also sharply decreases noise emission, which makes the overall environment more comfortable as well. Speaking of environments, LG AHUs are also flexible solutions that are compatible in a wide range of installation environments. Of course, LG units work seamlessly with our various chiller and Multi V offerings. However, our AHUs are also compatible with 3rd party chillers as well as other HVAC solutions and fit into any environment without a hitch. Our AHUs allow for easy scalability as well, making it possible to expand or reconfigure systems when needed. So, no matter what type of HVAC solution you have implemented, LG AHUs will have your facility running at the high level of performance you would expect from our HVAC solutions.

LG 3D Plug fans blow air through the AHU for distribution throughout a building

As AHUs are tasked with moving the air in a building, control and configuration of these units is important. Our AHUs can be conveniently managed with third-party HMI controllers and building management systems or with our own LG BECON HVAC Manager system. When coupled with these control systems, the AHUs can be controlled and monitored remotely for precision performance and maximum efficiency. They can also be configured for automatic operations that not only make system management more convenient but further improve the overall efficiency of HVAC and energy management systems.

LG 3D Plug fans blow air through the AHU for distribution throughout a building

■ LG AHUs in Action

LG AHUs are hard at work all around the world and in many different building types to ensure that occupants are comfortable and our customers' needs are met. Let's look at a few examples of where these units are having an impact:

Hannam Starfield, Korea

Hanam Starfield is a large-scale multiplex shopping theme park that houses a department store, wholesale warehouse, theater, water park and restaurants all under one roof. The 44,000m² facility opened in 2016 and required a comprehensive HVAC system that could service a diverse set of unique spaces. In order to accommodate the specific needs of each space in the complex, LG installed 5 ice energy storage chillers, 4 centrifugal chillers, 3 absorption chillers, geothermal heat pumps, Multi V 5 outdoor units and, of course, LG AHUs for the job.

Lotte Mart Vung Tau, Vietnam

This 30,000m² shopping center in Vietnam required an efficient HVAC solution that could provide fresh healthy air while maintaining an environment that would keep shoppers comfortable. LG delivered a chiller system tailored to the Lotte Mart requirements while performing with a COP of 6.7. The LG AHUs are able to fill the shopping center with the perfect amount of fresh air and effectively cool the space with high ceilings and narrow aisles.

IberEspacio, Spain

IberEspacio is an office and laboratory complex with a total area of 6,770m². The facility presented a unique challenge as it required consistent and effective climate control for both office spaces and laboratories for testing advanced aerospace technology. The LG Multi V IV solution was coupled with a flexible LG AHU system that is able to keep office workers comfortable while simultaneously maintaining perfect climate control for sensitive materials and providing peak energy efficiency.

AHUs can be considered the workhorse of certain HVAC system configurations as they are the muscle that moves the air around a facility, but they do more than just heavy lifting. LG AHUs are the backbone of many of our systems and they can work just as hard in your facility as well, whether you're using LG equipment or not.

August 29, 2018

Designers Dreams Made Reality with LG Multi Split

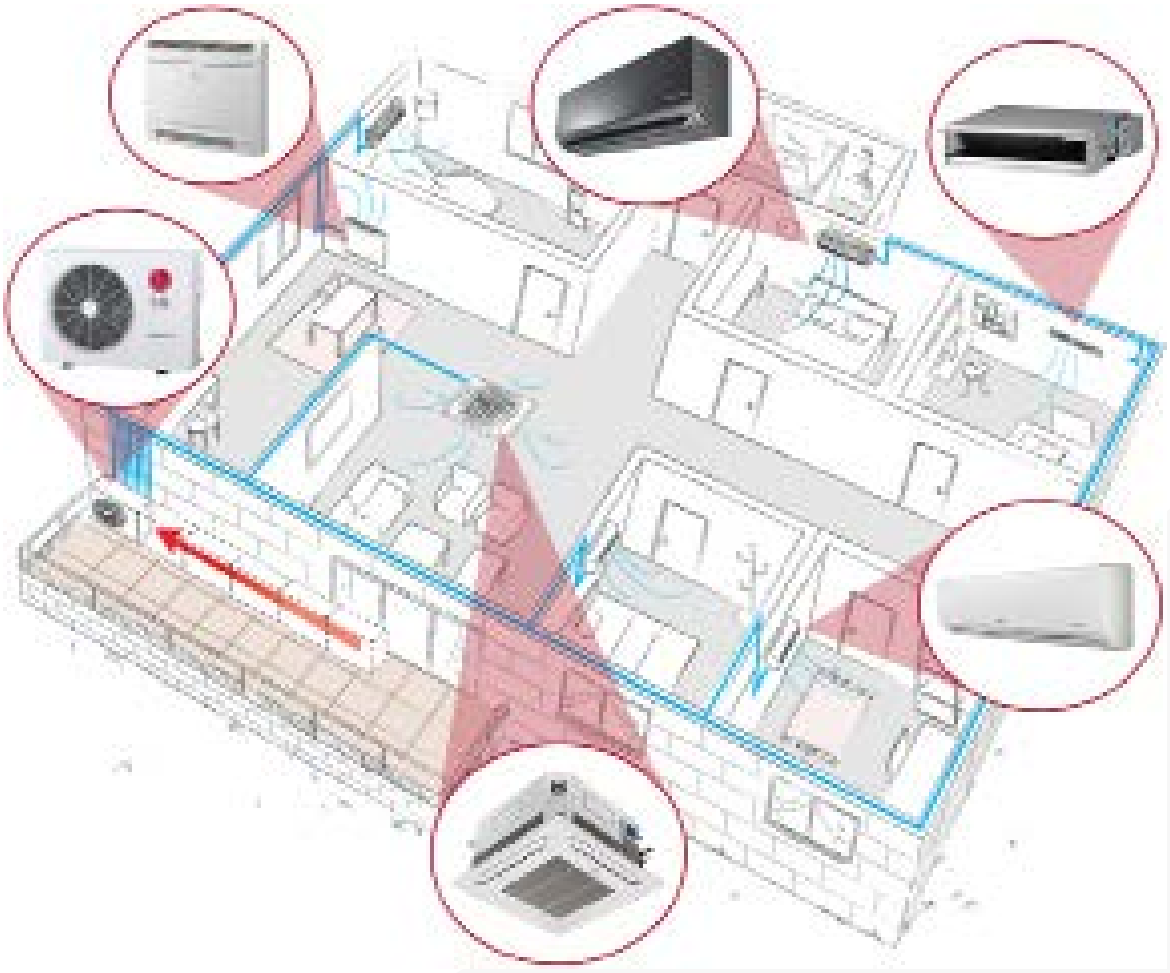
For a designer, freedom and flexibility in system and space designs are paramount. Flexibility gives architects and interior designers the ability to change the shape, size and applications of space along with the economic impact of a building. HVAC systems are an integral part of a building and system configurations and requirements can dictate the designs of a building or space. But, LG Air Solution multi split systems are freeing designers of the restrictions in design commonly experienced with HVAC systems. In addition to this flexibility in design, LG multi split solutions also offer economic benefits that can afford more freedom for budget and planning while keeping occupants throughout the environment comfortable.

LG multi split solutions greatly reduce the footprint of outdoor units

> LG's **flexible design options** add unique aesthetic possibilities due to **efficient use of space** for both interior and exterior installations

■ The Freedom of Multi Split – Configuration and Aesthetic

Multi split systems make a world of difference when designing a home, office space or light commercial space. Single split systems require an outdoor unit for each indoor unit, which unnecessarily takes up an excess amount of space for installation. **Multi Split systems are able to operate up to 9 indoor units with one outdoor unit** depending on unit capacity. The system can also be easily expanded by installing additional indoor units when needed without additional outdoor units.



LG multi split systems give designers freedom across multiple rooms

The flexibility in design makes for more efficient use of space both in outdoor unit installation and in the aesthetic of the interior. The wide range of indoor units offered by LG provides nearly endless interior design options and each unit can be controlled independently from a single outdoor unit. Any combination of 4-way cassettes, single cassettes, concealed ceiling ducts and wall mounted units is possible for a fully flexible and expandable HVAC system.

LG ArtCool wall mounted units add sophistication to any environment

■ How Multi Split Improves Our Designs

LG multi split solutions including concealed ducts and LG ArtCool work in **home applications** and are ideal for premium or high-end homes with unique spaces and challenges such as limited space, refined curves or angles, luxury environments and multiple levels. With a single outdoor unit, the exterior of a luxury home is free from the clutter of multiple cumbersome outdoor units. Designers in **small, multi-floor offices** can also benefit from LG multi split solutions due to the challenges presented by the diverse spaces in an office. Open floor office space, large and small meeting rooms and offices each require different indoor unit applications and diverse indoor unit designs. A single outdoor unit allows designers the liberty to keep exterior designs free from the clutter of multiple units and unnecessary piping. **Light commercial spaces** such as retail shops and restaurants also have unique functional and aesthetic requirements that create challenges for designers. The flexibility of LG multi split systems allow designers to freely combine indoor units to match each required application while adding to the aesthetic in any environment. The exterior of a complex can be kept clean without multiple noisy outdoor units and improve the overall design of the building can be left much more refined.

Combinations of indoor units can be run from one outdoor unit to suit the needs of retail spaces

Concealed ceiling duct applications help create elegant designs for offices as well

■ Economical Advantages

The economical advantages and convenience of LG multi split solutions also afford additional budget and time that can be dedicated to design and installation. The high-efficiency Smart Inverter Compressor translates to higher cost efficiency and unparalleled durability eliminates unexpected maintenance costs. The improved heat exchange performance of LG systems can improve the COP as much as 6% and smart load control produces excellent power savings in milder temperatures. LG Smart ThinQ compatibility creates a more convenient control environment allowing for smart control of any indoor unit from virtually anywhere.

Freedom in design is a designers dream and a system with the advantages provided by LG multi split solutions make that dream a reality. Experience the freedom and flexibility for yourself with LG multi split.

September 7, 2018

Another Look at Energy Auditing: LG Energy Auditor Young-Hoon Oh and the Energy Auditing Process

Previously on our blog, we took a look at Energy Auditing consulting to learn about what it is and how resources are used to reduce energy costs and excess energy consumption. Depending on the region, many facilities are required to undergo energy consumption analysis at regular intervals while some facilities are looking to curtail energy loss and streamline processes internally. But, **how does Energy Auditing really impact a facility?**

In 2014, LG was commissioned to diagnose the energy flow in 60,000m² semiconductor cleanroom plant in Shanghai with the goal to reduce energy consumption while minimizing the strain of initial investments. **This plant is a classic case of how LG Energy Auditing can m**aximize **the effectiveness of a facility** and allow the facility to recoup costs through more efficient operation. We sat with Young-Hoon Oh from the LG Energy Audit Team who helped us in understanding the steps that went into assessing the factory energy flow and the impact LG Energy Auditing had in making it the efficiently running plant that it is today.

COMMENT

Young-Hoon Oh
Supervising Director
Energy Audit Team,
LG Air Solution Biz Uni

"Because of the high-level engineering support that goes into Energy Auditing, it is more suitable for a large-scale facility than ordinary businesses."

■ 60,000 Square Meters of Cleanroom

This plant is the world's largest outsourced semiconductor manufacturer and test services provider. The Shanghai plant is their second largest factory with nearly 60,000 square meters of cleanroom space. In such a massive facility, it is a challenge to manage the temperature environment and the unique cleanroom requirements make energy management an even more complicated task. **LG was delegated to perform an Energy Audit to help assess the energy requirements in the facility** and implement an energy plan to reduce spending and overall energy consumption.

LG engineers were able to provide accurate data for analysis at the semiconductor plant

Initial assessment of the plant electricity usage showed that the facility was consuming over 147MWh of electricity a year to operate 6 out of a total of 9 centrifugal chillers, costing approximately 18.7M USD. Measurements were obtained over a 10 day test period during which **it was determined that 32% of the total power used in the facility was consumed by chillers and air compressors used to cool the plant**. LG then set out to take detailed measurements of the energy flow related to cooling and environment management and analyze the data to offer a sound energy plan and improve plant energy efficiency.

■ Mr. Oh Takes us Back to the Start

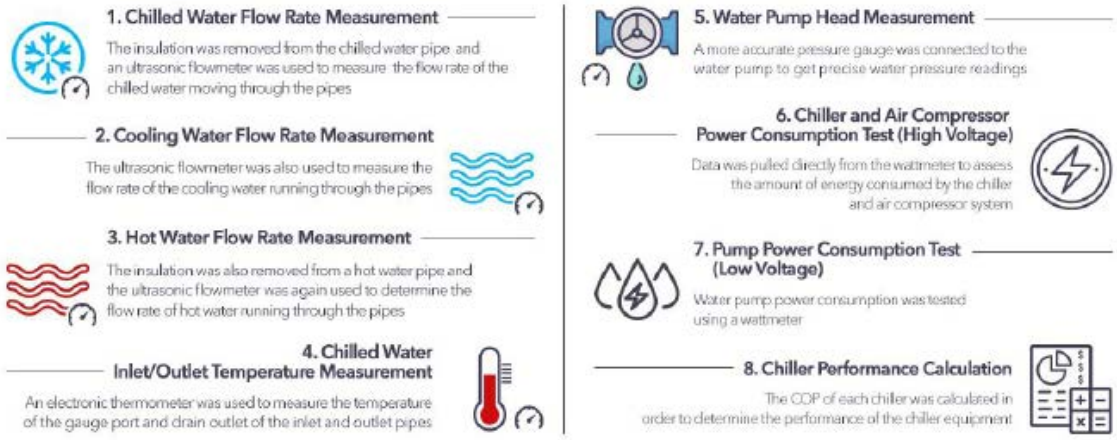
As with this facility, requests for energy auditing typically come from facility administrators. **To start the Energy Auditing process, LG received a detailed list of equipment installed** at the plant administrators including chillers, heat recovery chillers, MAUs (Makeup Air Unit), air compressors and the PCW (Process Cooling Water) system in order to plan their approach to the project. Requests for energy auditing often come from facility administrators as opposed to building owners, and LG then performed efficiency tests on each item. Typically, chillers and other equipment installed on site include analog gauges that are inspected and replaced at regular intervals, but precise measurements are required for proper efficiency testing, and **LG engineers use specialized devices for more accurate readings.**

Special instruments allow LG Energy Auditors to obtain precise measurements

Likewise, when a building is designed, Energy Auditing rarely factors into the equation and as much as 50% of the data can be inaccurate due to overestimations for safety precaution. **Energy planning based on data that is off even by very small amounts can have a major impact** on the energy efficiency of a facility. This type of inaccuracy in design and planning results in massive losses and is the reason that **many chillers run at only half of their potential capacities.** Precision measurements in the Energy Auditing of the plant were equally important and accuracy certainly proved invaluable. Let's take a look at how LG conducted their Energy Audit step-by-step.

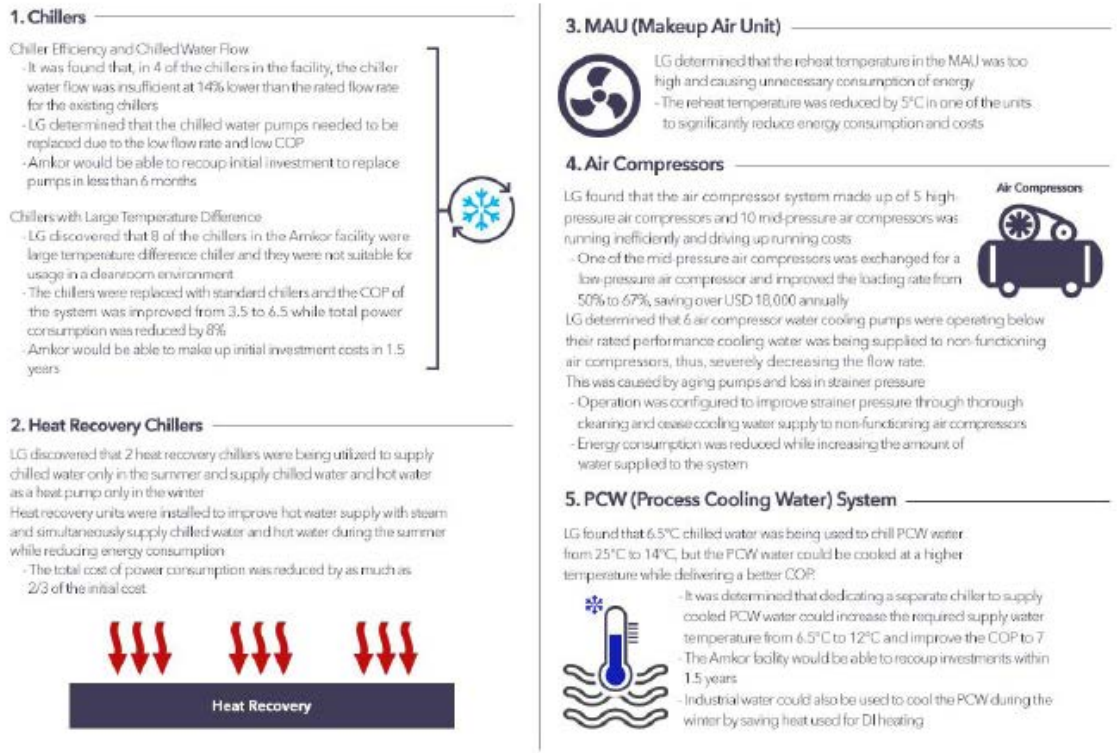
■ The Numbers Don't Lie

LG took precise measurements of each system component to be used in their detailed analysis.



■ Putting the Numbers to Work for the Plant

A plan for improving efficiency and reducing excess energy consumption was then implemented to make the most of their facility.



With comprehensive Energy Auditing performed by LG, the plant was able to achieve a more efficient system that saves them over USD 1.2M annually. **The system improvements paid back initial investment in approximately 1 year and the facility will be able to benefit from these savings year after year.** The Energy Audit also allowed the factory a more comprehensive understanding of how their facility consumes energy. Imagine the difference Energy Auditing could make in your building or facility.

We'd like to thank Young-Hoon Oh for taking the time to walk us through the Energy Editing process at the plant and showing us how the LG Energy Auditing Team is helping LG customers. LG is not only delivering efficient HVAC systems that save energy and money, but they also provide energy planning that makes all the difference in the world! Stay tuned for more about Energy Auditing and how it is benefiting our clients' businesses.

Related Post

Learn more about the basics of Energy Auditing
https://www.lghvacstory.com/it-may-not-be-tax-season-but-its-time-for-an-audit-an-energy-audit/

September 21, 2018

The Test of Honor : Follow us Through our Chiller Inspection Process

When it comes to any product or service, quality control can be as important as the product or service itself. At LG, we endeavor to not only deliver quality products but to make certain our products are meeting our clients' needs. LG offers a diverse line up of chillers that suit a wide range of facilities and environments and we host a special inspection program where we allow our customers to take part in the chiller testing process. We took the opportunity to visit one of our chiller testing facilities to learn more about the testing process and see how LG ensures customers get the most from their chillers.

https://youtu.be/8kme1HVLfVM

■ The Process

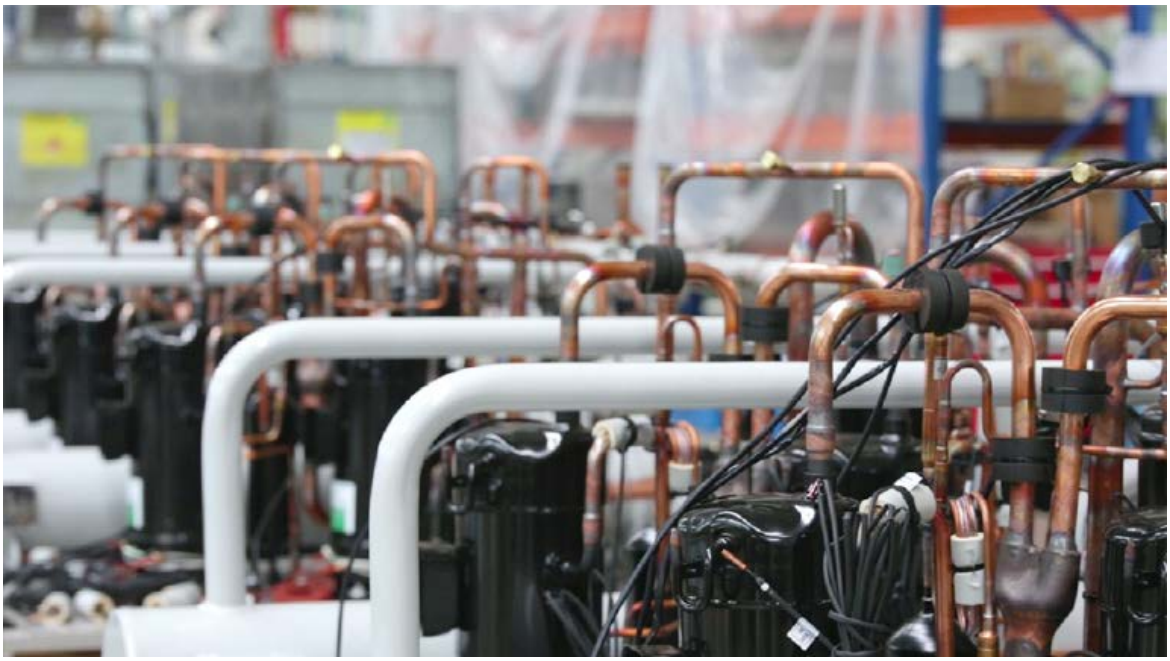
If you've never seen a large-scale chiller up close and personal, they're quite impressive both in size and complexity. We were fortunate enough to have one of our engineers walk us through the testing process step-by-step and observe the precision testing of a centrifugal chiller first-hand.

The Process

Materials used in manufacturing LG Chillers

The materials used in chiller manufacturing are the core of a chiller's quality. Each material is inspected by the material makers themselves to be sure it is in proper condition and ready for action. **Materials** used for elements such as steel plates, flanges, pipes, heat exchangers and compressor parts **are inspected for proper electrical charge, chemical composition and other factors.** The materials are also checked for defects and measured to proper specifications.

Compressor Motor Test



LG compressor motors are one of our core components

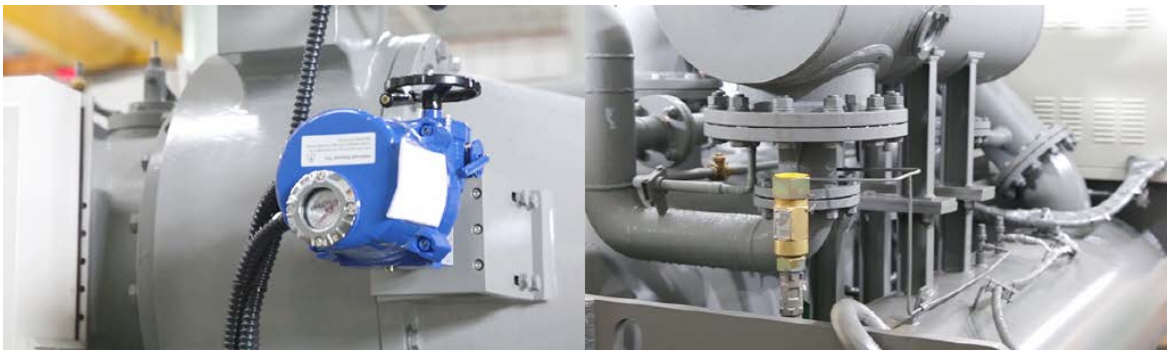
The compressor motor is inspected by the motor production team to ensure the proper performance and efficiency of the motor, which is one of LG's core technologies. **The dimensions of the compressor motor are inspected and internal surfaces are checked** to be clear of rust, chips or other defects. Vibration of the motor is also carefully measured for peak performance.

Performance Test

Engineers carefully observe product performance

Stringent performance testing is conducted for each major component and performance factor on each chiller. Water temperatures and flow rate are inspected for evaporators and condensers. Power supply and distribution are also inspected for the compressor motor and other electrical components. The cooling capacity of the chiller is then verified and the COP calculated to ensure the true performance of the chiller is up to LG standards.

Visual Inspection



Components are visually inspected for abnormalities

After the performance inspection has been completed, **a visual inspection of all surfaces and components is performed** to check for abnormalities such as rust or scale. The chiller is then sent to the paint shop. Engineers then look for abnormalities or contaminants such as cracks or bubbles in the paint and plastic components are checked to be clear from paint.

Dimension Inspection & Verification

Engineers verify all dimensions of the chillers

At this point, the chiller is nearly ready for service, but there are still more important tests that need to be performed. **All dimensions of the chiller must be verified to specifically meet the product designs** as approved by the customer. Adhering to the exact dimensions specified is necessary to guarantee peak performance and proper installation.

Vibration Test

Special gauges are utilized to ensure minimal vibration in each chiller

Vibration testing is performed from 4 separate points on the housing of the chiller to be sure vibration levels are maintained at a minimum. **Vibration testing allows engineers to determine that all components are functioning properly** and ensuring minimal vibration levels will improve the durability of the chiller.

Noise Emission Test

Noise volume is measured precisely before the chillers are shipped

As the inspection process is completed, engineers closely test the chiller for noise emission. Noise testing also provides indicators of how well a chiller is operating. In addition, **keeping the noise levels to a minimum will help create an environment that is safer for people's hearing and more comfortable** when the chiller is installed.

Pressure Monitoring

Overall pressure inspection ensure the quality of all major components

The production team tests the pressure of each chiller that comes off the production line. **The pressure test is an important indicator of the performance of major components** in a chiller. Hydrostatic pressure in components such as condensers and evaporators are inspected with special gauges and the system is checked for leaks and surface distortion. Pneumatic testing is also performed to ensure that gaskets and weld points are up to specification.

Our customers are encouraged to experience the testing process firsthand at our facility

■ The Customer is Always Right

This testing process is carried out to ensure our customers are satisfied with their products. We encourage our customers to visit our testing facilities and experience the process in person to see how efficiently and accurately we test our chillers. As customers walk with us through inspection, they can rest assured they will be receiving a chiller of the highest quality while learning more about their product.

We encourage customers to join in our chiller inspection program

As LG continues to deliver world-class chiller solutions, the demand is on us to ensure our products meet the highest of standards. After experiencing the testing process, we're convinced! Experience the quality and performance of LG chillers yourself.

September 27, 2018

LG Customers are Taking the LEED

Previously on our blog, we have discussed LEED certification and the significant role it plays as a global standard for building efficiency. LG performs energy auditing and provides a well rounded line of efficient **HVAC products that help our client achieve LEED certification** through the performance of our services. We have worked with customers around the world to help them obtain varying levels of LEED certification, but what did these customers require to so vastly improve the efficiency of their buildings and what role did LG products play in delivering the solutions they needed?

LEED Certification is the global standard for building efficiency

■ LEEDing the Way

If you're not familiar with it already, **LEED is an internationally recognized system for green building certification** that is used for highly comprehensive ratings of all metrics of a building's performance. The LEED certification system is able to apply to all building types and includes the entire lifecycle of a building from design and construction to operation and maintenance. LG HVAC solutions improve a building's performance for all metrics of LEED certification. There are 3 categories for accruing point towards LEED certification and each category holds different weight for grading. 'Energy and Atmosphere' carries 30%, 'Indoor Environment and Quality' holds 15% and 'Innovation' weighs in at 5%.

■ The LG Factor

There are many ways in which **LG VRF solutions can assist in obtaining LEED certification.** Let's look at some case studies where LG has helped our clients achieve their goals.

CASE

Bouygues Challenger, France
-67,000m²
-Renovated in 2014
-Renovation, Expansion, Environment

LEED Requirements
Required the most energy efficient solution to reduce energy footprint

U.S. GREEN BUILDING COUNCIL
LEED PLATINUM
USGBC

LG Solution

Multi V Water II and BMS control solution delivered a 70% decrease in water consumption through a 56 days field test that lowered overall energy use. The 3 reversible tube system capable of managing hot and cold temperature simultaneously also **generated 10kWh/m²/year in energy savings.** These improvements garnered 'Water Efficiency' credits from reduced water consumption and 'Energy & Atmosphere' credits for optimized energy performance.

CASE

The Pravda Building, Russia
-19,609m²
-Completed in 2013
-First LEED certification in Russia

LEED Requirements
Complex floor plans required precise efficiency and control that offered the utmost in comfort

LG Solution

Multi V VRF solution provided heating and cooling across all spaces along with a high COP and 35% better efficiency than other buildings with similar specifications. Additional energy savings were delivered through the air handling units, circulation pumps and automation system to ensure reductions in carbon emissions. With a high COP and improved energy efficiency, The Pravda Building acquired 'Energy & Atmosphere' credits for optimized energy performance, enhanced commissioning and refrigerant management.

As LEED certification moves to become the global standard for all buildings, some of our customers are taking advantage of LG offerings to benefit from the energy efficiency and saving that come along with the prestigious certification. LG aims to help our customers get the most out of their facilities while doing what we can to also help the environment. Maybe, it's time for you to take advantage of LG Air solutions as well.

Learn more about LEED Certification

LG HVAC Solutions Provide the Technology for LEED Certification

October 4, 2018

LG Electronics Paves the way for Amorepacific LEED Certification

At LG Electronics, we recognize the importance of environmental conservation and are continuing to expand the scope of our eco-friendly operations and business. As a part of this initiative, **we are providing innovative consulting to maximize the efficiency of our clients' facilities** and pursuing our goal to offer services that protect the earth. We worked along with global company Amorepacific to assist them in designing and constructing a LEED Gold certified, state-of-the-art building that is now a landmark in Seoul.

Seoul maintains a unique balance of traditional with modern

vSeoul is a bustling and vibrant city that balances the elegance of traditional architecture with modern design. In 2018, a new landmark was opened as an addition to the Seoul skyline that continues this unique balance. This new landmark is the Amorepacific headquarters building located in central Seoul. Amorepacific is a leading beauty company that was founded in 1945 in Korea. Amorepacific has strived to remain connected to the community in which it began and is continuing to connect with the neighborhood and its residents. In a show of community and cultural revitalization, **Amorepacific put their heart into the construction of their new headquarters and reached out to LG for consulting in this endeavor.**

Source: http://www.apgroup.com/int/ko/misc/news/2018-01-09.html
The Amorepacific Headquarters is truly an eye-catching landmark in Seoul

■ More Than Just a Pretty Face

Plans for the Amorepacific headquarters building were initiated in 2010 and construction was completed with much anticipation in 2017. **The eye-catching structure is a sight to behold but there is much more to the building.** The Amorepacific building is 188,759m^2 in total area with 22 stories above ground and 7 floors located underground. The exterior of the building is encased with an installation of vertical louvers inspired by the beauty of traditional Korean white porcelain moon jars. While these louvers provide a captivating aesthetic that intrigues those outside the facility, they also act as shades that evenly distribute light to create a calming environment and provide protection to occupants from harmful UV light coming from the Sun. Beyond the elegance of the minimalist design, lie functional communal spaces with such as a 450 seat conference hall, conference rooms for meeting and events and even a cafe and cafeteria that seats 800 people. On the first through third floors, visitors are greeted by an open atrium and can access an art museum that provides the community with exposure to cultures from around the world.

> **We were able to provide** the intuitive consulting necessary to ensure **LEED Gold certification** for the Amorepacific headquarters

One of the highlights of the structure, and a point of pride for us, is that the building received LEED Gold certification, which is the highest LEED certification in Korea. For those of you unfamiliar with the LEED standard, **LEED is recognized internationally as a green building certification standard that ranks performance of buildings using a comprehensive set of metrics.** LEED certification is applicable to all building types and encompasses all facets of a building's lifecycle including design, construction, operation and maintenance. We were able to provide the intuitive consulting necessary to ensure LEED Gold certification for the Amorepacific headquarters building. In addition, the Amorepacific headquarters used LED lighting exclusively and also features a photovoltaic panel system installed on the roof. The beautiful structure is also able to reduce energy costs by 26% according to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standards.

Source: http://www.apgroup.com/int/ko/misc/news/2018-01-09.html
Features such as LED lights, energy efficient designs and
solar panels helped the building obtain LEED Gold certification

■ Environment, Health and Aesthetic

The new Amorepacific headquarters not only saves energy and reduces costs, but also provides other environmentally friendly, health and aesthetic advantages. Local and recycled materials make up 20% of the total materials used in the construction of the building to reduce the overall use of fossil fuels consumed during transportation and processing of construction materials. Amorepacific's new building also has water-resistant faucet and sanitation infrastructure to improve durability. Furthermore, systems were installed for reusing waste-water and rainwater in order to reduce water consumption on site. Water is further conserved with the planting of wild, native plants that thrive without consuming excess water. Rainwater is repurposed to provide nourishment to the plants and the LEED certified integrated water management plan helps to curtail more than 50% of water use throughout the building.

Source: http://www.apgroup.com/int/ko/misc/news/2018-01-09.html
The Amorepacific headquarters provides occupants with open views and nature-friendly places to relax

Also, the use of materials composed of harmful chemicals such as VOCs (Volatile Organic Compounds), which can cause sick building syndrome, was significantly reduced to provide a healthy and safe indoor environment for the occupants in the building. To provide a more comfortable and efficient work space for employees, office spaces were designed to encourage open communication and communal work spaces has been provided through the office. With ample open space, occupants can enjoy comfortable and relaxing spaces throughout the facility including 3 open gardens on the 5th, 11th and 17th floors. The building's façade is designed to offer open, outdoor views for those inside and the interior features sensors that make it possible to balance artificial light inside with natural sunlight from outdoors.

As part of our continued effort to offer environmentally and economically sound consultation, LG is proud to be a part of this magnificent project and look forward to providing consulting that benefits our environment and our lives in the future. If you're ever in Seoul, be sure to take the opportunity to visit the Amorepacific headquarters and experience the next generation in energy efficient design.

October 25, 2018

LG Air Solution Strikes Big at the Korea Energy Show 2018

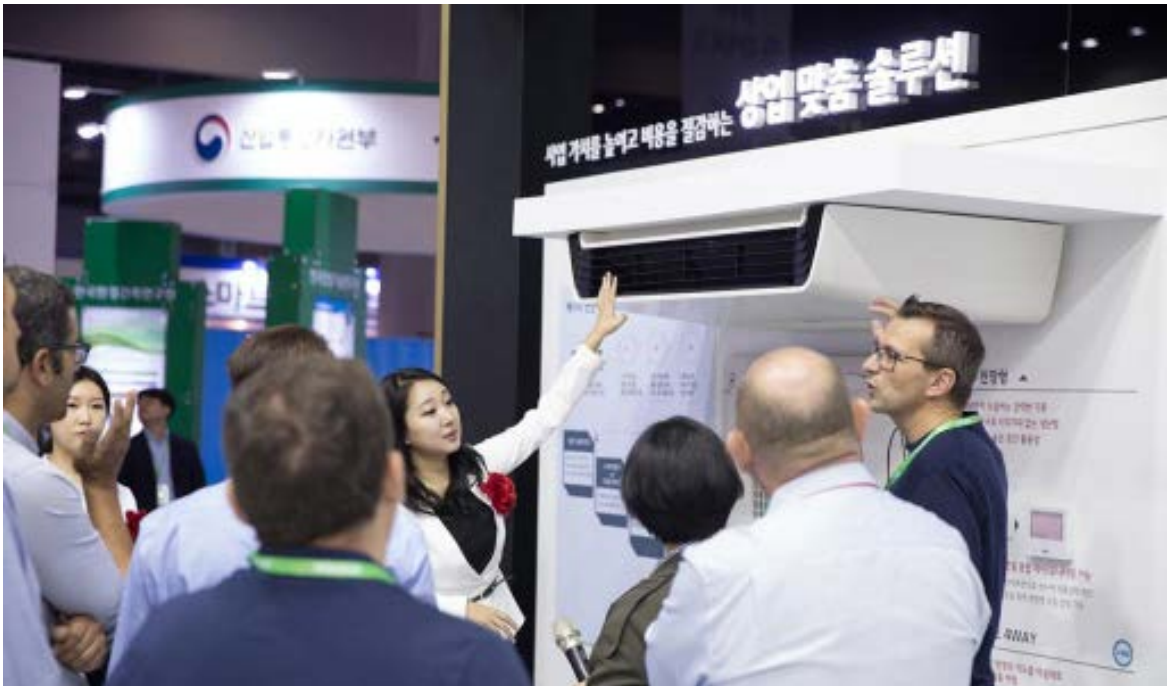
The Korea Energy Show opened from October 2nd to 5th at the Korea International Exhibition and Convention Center (KINTEX) in Ilsan, South Korea, with LG leading the way demonstrating innovative photovoltaic energy storage and HVAC solutions. The focus of this year's Korea Energy Show, the largest energy exhibition in Korea, was the conversion to new and renewable energy and smart energy sources in Korea. **LG Air Solution also attended the exhibition demonstrating their diverse range of energy efficient HVAC solutions** and hosting a group of VIP guests from Spain who were excited to learn more about the HVAC technology from LG. **Jin-hee Kang, public relations general manager of Korea Energy Agency,** said, "2018 Korea Energy Show is the 38th, making it the longest running comprehensive exhibition of its kind in Korea. With global companies like LG Electronics, the exhibition will continue to evolve and provide a future to the energy industry".

KINTEX Convention Center in Ilsan, Korea

VIP guests were able to learn about the renewed Multi V 5 and other LG products at the LG booth

One of the highlights of the LG booth was the renewed LG Multi V 5, the newest adaptation of LG's Multi V VRF solution, **which achieved 1st label of the new energy efficiency regulations labeling program of Korea, starting from October 1st.** The Multi V Super 5 features improvements such as a 10% increase in air volume, a 3dB(A) reduction in noise emission, a 9% increase in energy efficiency and a 21% reduction in energy consumption compared to the last version of its own. **The LG booth also gave visitors the chance to see diverse indoor unit offerings from LG Air Solution** including cassette and floor stand indoor units. The Multi V 5 system can also be integrated with a boiler, integrated AI control, and monitoring systems along with photovoltaic energy storage systems.

Guests at the LG booth received a guided tour of all the LG solutions on display



Visitors were given the chance to ask questions and offer ideas about LG products

The VIP guests were given a guided tour and given the chance to learn more about LG Air Solution products. With so many innovative solutions on display at the LG booth, the guests had lots of questions and were able to discover how these solutions can work for them in the Spanish market. "In our systems, we are starting to use solar panels for the future to better the environment using renewable energy sources. In a few years, we will start to use them everywhere", commented one of the VIP guests after the tour of the booth. **By providing a tour of the booth, LG was able to offer detailed information on their products while gaining insight into what matters most to their customers.**

The Korea Energy Show is held every year to allow local and international innovators share ideas

The 4-day Korea Energy Show convention provides an opportunity for those involved in the energy field to share ideas and display their innovations to their contemporaries each year. This year was no different and the new and renewable energy centered theme of the exhibition this October brought in a new set of players in the energy industry with new ideas, products, and services. **LG also brought new energy efficient HVAC solutions and renewable energy technology to share with the industry** and continue leading the way in efficient innovations. The LG booth at the Korea Energy Show left a lasting impression on visitors and Juan Manuel Gonzalez, the Prescription manager from LGE in Spain said, "I am sure that these kinds of devices will be a must in Spain and Europe in the near future, and LG will help to improve life conditions for our people".

Related Post

LG Presents Optimal B2B Solutions and HVAC Products at Korea Energy Show 2017

November 8, 2018

LG Air Solution Continues to Make its Mark in Germany through Chillventa

Chillventa opened from October 16th to 18th in Nuremberg, Germany with both a record number of attendees and a record number of exhibitors. The international exhibition focuses on innovation in refrigeration, AC & ventilation and heat pump technology. LG Electronics provided visitors the opportunity to experience the latest in HVAC and energy solutions at their Chillventa 2018 booth.

LG Multi V 5 is LG's flagship VRF system

LG allowed attendees at Chillventa to do more than just see their lineup of products and services, but **provided a full range of seminars, demonstrations and information to visitors.** The LG booth created a buzz at Chillventa with demonstrations across each sector highlighting the wide range of products on display. Valuable information on the LG flagship Multi V 5 was displayed on a unique signage display to highlight the Multi V 5 features to everyone visiting the booth. With systems such as the R32 single-split and multi-split olutions designed for residential and light commercial applications stealing the show, visitors were able to receive detailed introductions to these systems that utilize the environmentally friendly R32 refrigerant. In particular, the world's first revolutionary scroll compressor featured in the R32 single split also garnered lots of attention from exhibition attendees in the R32 section of the booth. LG has fundamentally altered its compressor through a cutting-edge shaft-through structure and bottom compression technology resulting in smaller, faster and more efficient compressor.

Therma V Monobloc drew attention at Chillventa as an efficient home heating solution

The LG booth also featured the environmentally friendly Therma V air to water heat pump solution that is 4 times more efficient than boiler systems that use fossil fuels. While exhibiting the Therma V line, LG highlighted the Therma V Monobloc that provides heat and hot water all from a single compact outdoor unit while delivering unrivaled efficiency. Visitors to the booth showed particular interest in these efficient systems that not only reduce operation costs, but also deliver environmentally friendly solutions.

The seminar room allowed guests to learn about LG solutions and consult with LG employees

The 2nd floor of the LG booth featured a seminar room where visitors were privy to diverse talks and presentations including introductions to each of the products features, press interviews and educational seminars. The booth hosted demonstrations and seminars throughout each day of the exhibition to provide customers and visitors the knowledge and resources to make the most of their visit and their systems. **The booth also provided engineers with introductions to the LG design and engineering platform, LATS (LG Air-conditioning Technical Solution).** LATS offers engineers an abundance of resources system design monitoring and management and the LATS sessions proved invaluable for HVAC engineers in attendance. This tool was featured at the Chillventa Specialist Forum as well to highlight the usefulness and productivity it provides to the HVAC and Energy industries.

The eye-catching video wall highlighted key features of the Multi V 5

Demonstrations and tutorials continued at the LG booth throughout the convention

With LG's stake in the European HVAC market growing rapidly, they are committed to delivering revolutionary products to their European customers and demonstrating their innovations on the international stage. If you weren't able to visit Chillventa 2018, don't miss the opportunity

to stop by the LG booth at Chillventa 2020, which will also be held in October in Nuremberg. Vice President Gam-gyu Lee of the LG Air Solutions Division commented, **"LG is gaining ground as a leading total HVAC brand** by providing customers with eco-friendly and highly efficient solutions based on its world-class technology". LG looks forward to displaying their newest innovation at Chillventa 2020 and hopes to see you there.

https://youtu.be/8d95PevTlfE

Related Post

LG Showcased Inverter Scroll Chillers at Chillventa 2016

November 23, 2018

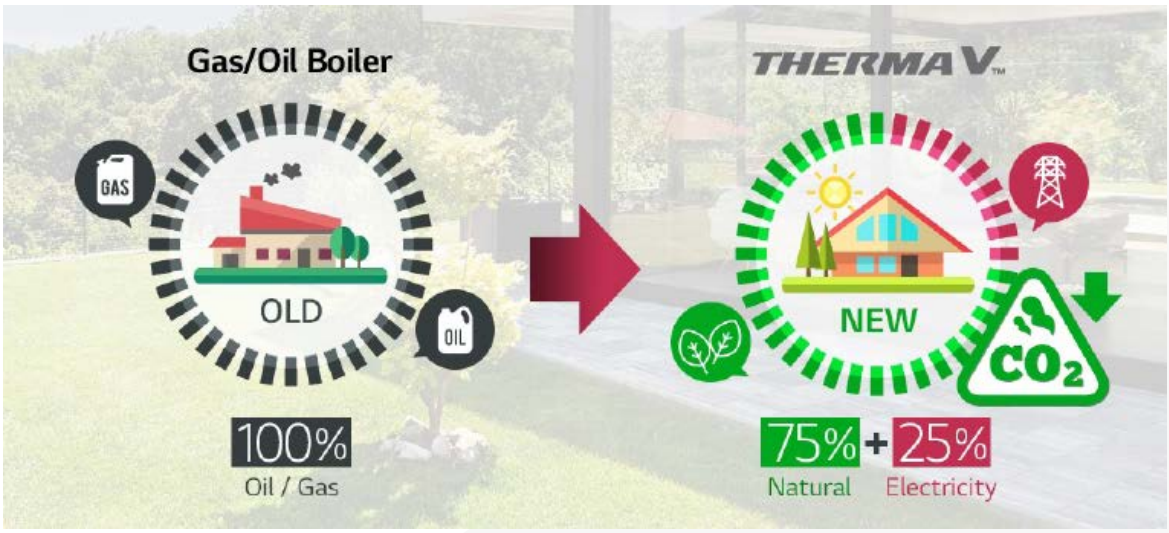
LG Therma V Monobloc: Ditch the Boiler and Make Heat More Efficiently

Many of us have memories of being scolded by our parents for taking too long in the shower and using up all the hot water. While our parents were ultimately trying to conserve hot water, save energy and reduce the power bill, there is another reason why parents as well as entire industries are looking to reduce energy consumption: the environment. The development of environmentally friendly solutions with outstanding performance and user-oriented functionality to keep up with the times is driving many fields around the world and is also a major motivator in the HVAC industry. As LG also continues to innovate effective green solutions, they have introduced the ergonomically designed **LG Therma V Monobloc, offering dependable heating, cooling and hot water supply all in a single compact, energy efficient and environmentally friendly outdoor unit.**

Therma V is the all-in-one efficient heating, cooling and hot water solution for the home

■ Industries Driven by Environmental Protection

Many industries such as the electric vehicle and green building sectors are founded entirely on eliminating fossil fuel emissions, while other industries including energy, manufacturing and HVAC are making transitions to decrease their carbon footprint. These industries are not only providing environmentally friendly products and systems to the market but proving that these green solutions can also offer superior performance when compared with their counterparts. A sustainable solution with exceptional performance is what's driving these industries. With this global initiative underway, **LG is leading the HVAC space with lean and powerful solutions such as the Therma V Monobloc.**



Air-to-water heat pump technology uses green energy and minimized fossil fuel emissions

■ Why Therma V?

Thanks to LG air-to-water heat pump technology, the LG Therma V lineup is able to **utilize outdoor air for 75% of its energy source** to greatly reduce harmful emissions over gas boilers. Therma V is a multifaceted heating and hot water solution that implements LG's own inverter technology. The reliability and performance delivered by Therma V can heat or cool the home while continuously delivering hot water all while **offering 4 times the efficiency of a traditional boiler.**

LG Therma V Monobloc utilizes eco-friendly R32 refrigerant while boasting an A+++ energy rating

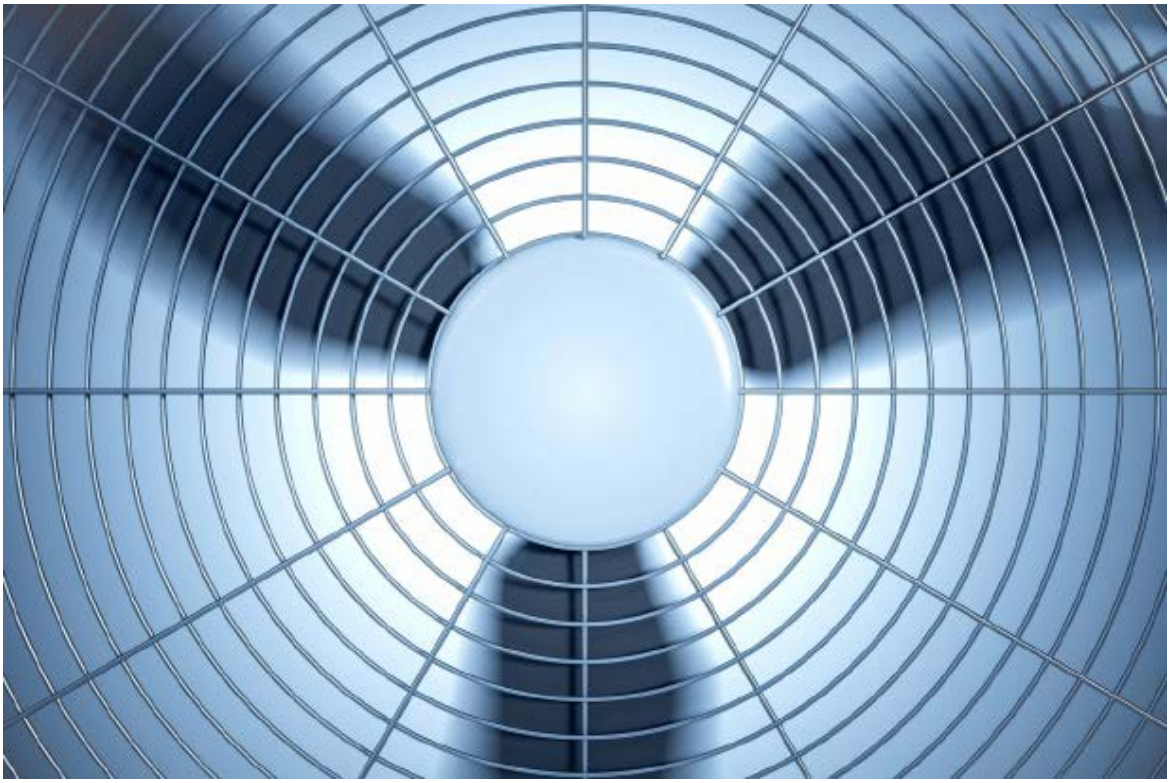
■ The Monobloc Difference

The Therma V Monobloc stands out as an all-in-one heating, cooling and hot water system with plate heat exchanger, water pump and expansion tank in a single compact unit. Monobloc is ideal for new houses as well as for renovations because it supplies heating and cooling directly, there is no need for refrigerant pipe installation inside the home. Along with providing superior performance, installation and maintenance is made much easier with the compact configuration and connectivity. The Therma V Monobloc solution also further reduces its carbon footprint with the use of the eco-friendly R32 refrigerant, which has zero ozone depletion potential. Beyond sustainability, the Therma V Monobloc is also able to consistently provide a leaving water temperature of up to 65°C while operating in outdoor conditions with temperatures as low as -25°C. **The system brings users a new level in convenience as well with intuitive precision control that provides exact heating and cooling while LG ThinQ compatibility allows for intuitive remote control functionality all through a mobile device.**

As industries continue to develop high-performing environmentally friendly solutions, **LG is paving the way with convenient and efficient products like LG Therma V.** Lowering energy costs and protecting the environment are important to everyone, and you can do both at the same time with LG Therma V Monobloc. This compact heat and hot water provider is powerful enough to keep you warm all winter, regardless of how long you shower. Whether it's for your new home or a long standing renovation, the small footprint of the Therma V Monobloc will fit right into your place!

November 30, 2018

As Healthy as the Air You Breathe : LG Energy Recovery Ventilation (ERV)



As you might have guessed, recent studies show that many of us are spending the majority of our time indoors. Thus, the air quality in any residential or commercial building should be a top priority for every home owner or building administrator, but this crucial factor often goes overlooked. A healthy home and work environment is important to be sure, but there are other environments where **the air quality is imperative to the health and safety of the occupants.** Places such as offices, manufacturing plants, hospitals and schools have unique circumstances where effective air ventilation is vital to the well-being and care of the occupants. With this in mind, **LG offers a highly efficient and effective ERV (Energy Recovery Ventilation) solution that can go the extra mile to create safe, clean and healthy environments in any facility.**

■ Air at the Office

Are you aware that pollution concentration in places such as office buildings can be 50% higher than outdoors? In newer buildings with improved envelope quality, air has even fewer opportunities to dissipate than before. Indoor airborne pollutants generated through daily office operations can become trapped inside the building and build-up over time. Long exposure to these pollutants can cause lack of concentration, fatigue, lower productivity levels and even more serious conditions such as asthma, allergies or even stroke. Many office workers open a window windows to ventilate the office but this can allow other toxins and allergens into the building as well. **Proper ventilation in the office creates an environment conducive to health, well-being and productivity.**

■ Air in the Factory

Harmful pollutants in factories can be greatly reduced with proper ventilation

Manufacturing processes can produce dust, fumes and chemicals that become a safety hazard when they become airborne. **Thorough ventilation is crucial in manufacturing plants to ensure the safety of workers and visitors to the site.** With properly ventilated air, harmful pollutants emitting during the manufacturing process can be removed from the environment, which not only improves the environment for workers but also improves the durability and longevity of equipment in the plant. To further enhance the safety of the work environment, CO2 levels are kept in check while excess heat from machinery can be removed from the work space. **Clean air ventilation is the key to a safe and efficient manufacturing environment.**

■ Air in the Hospital

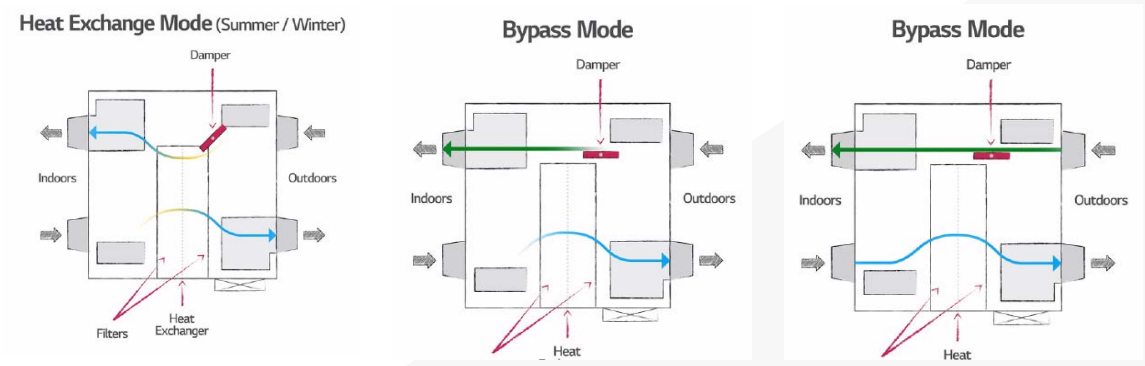
Clean air supply in hospitals is crucial to the health of patients and doctors alike

Clean air and pleasant temperatures do more than just keep patients comfortable. The air in hospitals is often laden with fungi, bacteria and viruses caused and distributed by poor ventilation and overheating. Effective ventilation is vital to the health and safety of patients, doctors and hospital staff alike. **Continuous ventilation and supply of clean air in hospitals is crucial for fighting infection and the spread of disease.** Ventilation is particularly important for effective sanitization in operating rooms and emergency care centers where patients are particularly susceptible to infection from airborne contaminants. **Clean air supply is equally important for more sensitive individuals such as newborns and the elderly. Providing well-ventilated air throughout a hospital is an integral part of thorough healthcare.**

■ Air in the Classroom

Poor ventilation in schools can negatively impact student performance

Children are particularly sensitive to allergens in the air and studies show that clean and well-ventilated air can improve the performance of students by maintaining their alertness, concentration and health. Teachers and other staff also benefit from properly ventilated air. In a poorly ventilated environment, the attendance, comfort and academic performance of students and teachers alike can be negatively impacted. However, the operation of the school itself can also suffer. The efficiency and performance of facilities are inhibited due to build up from unclean air. The relationship between parents and school administration can also be strained as a result of poor performance of the students and school facilities. Furthermore, allergens and pollutants in the air can contribute to health issues such as headache, fatigue, coughing and congestion. **All of these factors make supplying a steady flow of clean and adequately ventilated air in schools imperative to the performance of students** and **the proper operation of schools.**



Automated seasonal mode ensures comfortable temperatures, clean air and efficiency

■ LG ERV Systems Make any Environment a Healthy Environment

LG ERV provides extensive air filtration through 3-step purification system

Along with this intensive purification system, LG ERV solutions also offer comprehensive savings over traditional ventilation. Innovative application modes allow LG ERV systems to generate 39% savings over natural ventilation with seasonal operation that detects outdoor temperatures to automatically adjust operation modes. Free cooling at night reduces cooling loads while delayed operation functionality minimizes excessive running of the system. Even more, CO2 sensors are implemented to detect CO2 levels and automatically adjust fan speeds. These ERV solutions also provide a level of convenience by working in conjunction with HVAC systems while still allowing for independent control. And speaking of control, the intuitive LG controller provides convenient and comprehensive management and configuration of the system. **The compact and easy to maintenance LG ERV solution is ready to keep any environment thoroughly ventilated, safe and clean.**

From our homes and offices to our schools and hospitals, LG ERV solutions are keeping the spaces we occupy each day healthy, clean and comfortable. Clean air through proper ventilation impacts our day-to-day lives and providing quality air is a must for any facility. **LG ERV systems deliver effective ventilation in any facility while saving energy and reducing costs.**

December 10, 2018

LG Takes Cue from Arctic Igloos with Therma V Heating Solutions

The Inuit, Yupik and Aleut are all peoples native to the Arctic region known for its brutal and sometimes deadly winter environment. The people living in this climate have adapted their life-styles to the environment and perfected their survival skills for every facet of their existence. One of the most demonstrative of their environmental adaptations is the igloo. The igloo design stands the test of time and testifies to the innovation and resourcefulness of the people in the region.

Native Inuit people building an igloo from blocks of ice and snow
(Source: https://commons.wikimedia.org/wiki/File:Inuit-Igloo_P.png)

Inside these frozen structures, people light fires to stave off the below-freezing temperatures and create a comfortable 20-25°C (68-77°F) environment without the need for additional heating sources. The bitter cold air outside the igloo keeps the structure from melting, while the warmth inside creates condensation and reinforces the walls to ensure maximum stability. These compact habitats are designed to survive the long northern winters and provide protection from the cold, but they also offer an eco-friendly element that is becoming ever more important is this age of environmental awareness. The resources utilized to construct an igloo are entirely renewable and leave behind no waste. This sort of eco-friendly solution is what HVAC manufacturers are aspiring to achieve today.

For most of us, building an igloo is not an option. However, Air to Water Heat Pump (AWHP) solutions are some of the most eco-friendly technologies on the market for keeping a building warm during the cold winter months. No compacting snow, chopping wood or gathering kindling necessary. This state-of-the-art heating solution reduces electricity consumption substantially in comparison with other technologies by transferring heat from the air outside to create a warm, dry environment inside.

Therma V Monobloc uses eco-friendly R32 refrigerant while delivering effective heating

One of the best AWHP solutions on the market is our Therma V. The Therma V is equipped with the most state-of-the-art AWHP innovations available and delivers unparalleled heating performance and energy efficiency. This powerful and ecologically-sound solution uses a merely 23-25 percent of the electricity consumed by conventional heating systems, which translates to four-times the energy efficiency. In addition to its green credentials where energy-saving is concerned, the Therma V R32 Monobloc (one of the standout models of our Therma V lineup) helps to protect the environment with the utilization of eco-friendly R32 refrigerant. R32 has a low Global Warming Potential (GWP) rating of 675; two thirds lower than that of conventional R410A refrigerant (GWP of 2,088), meaning the Therma V R32 Monobloc doesn't add unnecessarily high concentrations of greenhouse gases into the Earth's atmosphere. The stellar performance of this new model is also driven by a 4.45 seasonal coefficient of performance (SCOP) in heating operation and will boast an A+++ Energy-related Product (ErP) label by September of 2019.

Therma V efficiency reduces costs and the carbon footprint of AWHP solutions

In the same way that the ice walls of an igloo provide insulation and protection from the cold, Therma V delivers balanced warmth and comfort. By piping in ambient heat from the air outside, our AWHP solutions deliver more energy through heating than they consume in the form of electricity. The Therma V combines 1kW of electricity with 3kW from ambient heat sources to provide 4kW of energy. Compared with conventional solutions using the same amount of electricity, Therma V generates roughly three-times the amount of heat. Additionally, our wide louver fin and optimized heat exchanger path help to conserve even more energy, boosting reliability and facilitating an improved heat exchange rate. Therma V models also implement durable inverter water pumps that further minimize energy consumption.

AWHP solutions are providing reliable and quick heating with unmatched efficiency that minimizes the stress on the environment while conserving resources. Taking a cue from the native peoples in the Arctic, we at LG are committed to providing warmth and efficiency while minimizing the carbon footprint and environmental impact of our products. How are you keeping warm this winter? Consider surviving the cold with the eco-friendly LG Therma V.

** Analysis conducted using LG Air Conditioner Technical Solutions (LATs), taking into account installation and operating costs over a ten-year period. Simulation used identical weather conditions every year. Simulation results may vary depending on incentive conditions, installation costs, material costs, etc.*

December 21, 2018

Therma V Gets it Done with All-in-One Cooling, Heating and Hot Water

■ Therma V Gets it Done with All-in-One Cooling, Heating and Hot Water

To run a successful business, keeping your customers satisfied should be a top priority. Without exception, **meeting clients' needs and gaining their trust is a must** for sustaining clientele and profits. However, there are many industries, including HVAC, in which service providers must cater to a diverse set of clients and requirements in order to stay afloat.

In the HVAC industry, business is booming but competition is stiff and it is imperative to communicate effectively throughout the installation process, met deadlines and maintain system operations. **An unhappy building administrator will not only hinder business but also cause unnecessary stress** for all parties involved. At the same time, an installer must provide a fully operational system that is convenient, environmentally friendly and highly efficient. Managing the different needs and expectations of administrators and tenants in any type of facility isn't an easy challenge to overcome. **How can an HVAC service provider tackle the unique needs of their diverse customers?** Providing a dependable solution that is convenient and easy to install and maintain while offering environmentally friendly operation solve this problem without a hitch. This is where solutions like the **LG Therma V** hit the mark.

Therma V is campact AWHP solution

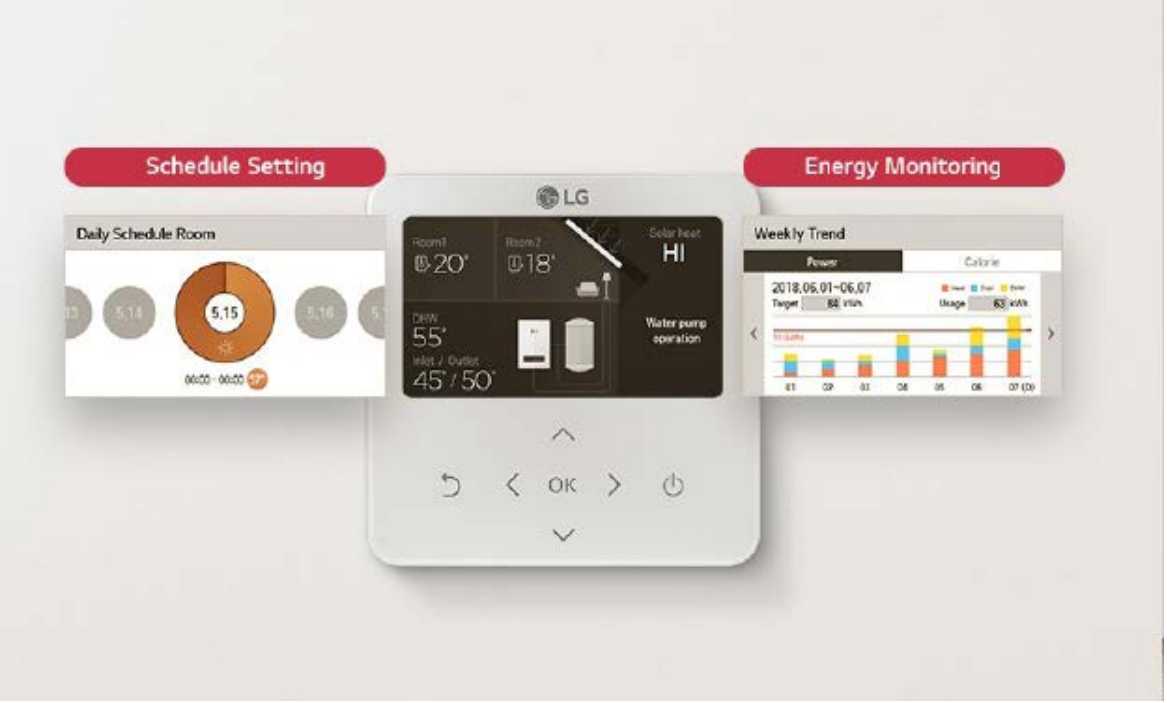
The LG Therma V is an AWHP (Air to Water Heat Pump) system that delivers heating, cooling and hot water in one compact unit. Essentially, AWHP systems work as a boilers but they operate at extremely high efficiency. Each year, the number of developers opting to install AWHP systems continues to stay on the rise. **The LG Therma V stands out with installers** with simple and easy to install configuration. Installing an HVAC systems is a complicated process that requires manpower and man-hours to complete. However, Therma V is changing the game. Even more, the Therma V Monobloc models make the installation process even easier. With the indoor and outdoor unit combines in one compact unit, transportation and installation are as simple as can be. These units also eliminate the need for additional refrigerant piping, so even those with little or no installation experience can manage the job. The latest monobloc models also implement R32 refrigerant, which makes them up to 10 times lighter than units operating with R410A refrigerant and make installation even more convenient.

The simple configuration of **Therma V Monobloc makes installation easier for even the most inexperienced installer** and allows them to meet their deadlines and keep customers satisfied. Once in full operation, the units are quick and easy to monitor and maintain. With the removal of just 3 screws, anyone can access the water pump and strainer and the data-logging feature allows them to easily check operation logs to detect the source of any issues.

Configurator software and no-piping configuration make Therma V a breeze to install and maintain

As any installer with tell you, they must **provide accurate and detailed information in order to gain the trust of their clients.** The State-of-the-art LG Therma V Configurator software gives the installer the ability to access a wide range of data specific to each project so that they have a comprehensive understanding of any job before arriving on site. Not only does the Configurator software prepare installers for the installation process, but it also offers clients with a clear understanding of the process so that they know what to expect.

Beyond convenience, Therma V offers something even more valuable in this age of environmental awareness. **LG inverter technology helps Therma V perform at the highest capacity with optimal energy efficiency.** The LG inverter minimizes energy consumption due to the variable inverter speed capabilities. Moreover, the Therma V BLDC fan provides energy savings of up to 40% at low speeds and 20% at high speeds. Therma V utilizes natural energy resources to reduce its carbon footprint while reducing fossil fuel consumption and overall CO2 emissions.



Therma V allows users and installers to access a wide range of data including energy consumption

In addition to the environmental benefits, the LATS (LG Air Conditioner Technical Solution) can run full simulation analysis to illustrate the economic benefits of Therma V and show users how much they are saving in energy costs. Through the input of specified parameters, the program can calculate annual energy costs, annual CO2 production, monthly energy usage and costs as well as the total amount of thermal energy usage as the temperature changes outdoors.

LG is committed to putting our customers first. This commitment has also led to significant benefits for installers and maintenance service providers as well. The **LG Therma V goes above and beyond** to exceed expectations and provide a solution with simple installation and maintenance, eco-friendly operation and superior energy efficiency.

Reference

February 9, 2018

LG VRF Solutions Making Impact in US (Part 1) Columbia Square

LG Multi V VRF (Variable Refrigerant Flow) systems were designed for maximum efficiency, top-of-the-line performance, unsurpassed comfort and custom control to deliver the ultimate HVAC experience to any installation. LG's industry-leading VRF technology and duct-free solutions are having a major impact in the United States, where the demand for high-performance, flexible HVAC technology continues to be a primary factor in installation across the country. In this 4 part series, let's look at 4 LG VRF installations that highlight the versatility and performance of LG VRF systems. First, let's find out about the installation at Columbia Square in Hollywood, California.

New and unique spaces were created for the new Columbia Square facility

■ LG Delivers Energy-efficient, Cost-effective solutions for Large-scale Renovations

The Mill at Dover-Foxcroft is a 60,000 square foot complex that is made up of 9 structures that were constructed between 1841 and 1944 on the banks of the Piscataquis River in Maine. The site was left vacant for almost 10 years before a development firm launched a project to completely renovate the complex and develop a multi-use facility with offices, residences, a cafe and a boutique inn. The extreme weather conditions in the region along with the specific comfort and efficiency requirements presented a unique challenge in procuring an HVAC system for the site.

LG's VRF system creates comfortable environments for all purposes

■ The LG Multi V Solution Meets the Needs of Unique Renovation Projects

The LG Multi V VRF system was able to meet the unique requirements of this renovation project with large glass windows and open spaces allowing the Columbia Square facility to obtain LEED Gold Certification. The LG MULTI V system comes complete with innovative Dual Sensing Control that monitors temperature and humidity levels to efficiently manage cooling and heating. Equipped with LG's Ultimate Inverter Compressor and boasting a large capacity for outdoor units, the MULTI V VRF is a powerful climate control solution.

LG Multi V 5 units installed at Columbia Square

As LG continues to deliver comprehensive VRF systems, we will see more and more cases where Multi V solutions are creating efficient and cost-effective environments in a wide range of spaces.

https://youtu.be/m0lfrKcY5jw

In the next installation of this case study series, we will examine 3 more LG VRF installations that have met the specific needs of the US market while offering flawless HVAC solutions for other unique facilities.

MORE CASE STUDIES IN THIS SERIES
LG VRF Solutions Making Impact in US

[Part 2] The Mill at Dover-Foxcroft
[Part 3] The Sharpe Building at the Foundry
[Part 4] Smouse Opportunity School

February 9, 2018

LG VRF Solutions Making Impact in US (Part 2) The Mill at Dover-Foxcroft

In the first installment of this series, we took a look at the LG VRF installation at Columbia Square in Hollywood, California. LG delivered an efficient and cost-effective VRF system in its LG Multi V IV. LG also provided a comprehensive HVAC solution for the Mill at Dover-Foxcroft in Maine that succeeded in meeting the unique requirements at the historic site.

Gears remain on site from historic equipment at The Mill

■ The Challenges for this Historical Renovation?

The Mill at Dover-Foxcroft is a 60,000 square foot complex that is made up of 9 structures that were constructed between 1841 and 1944 on the banks of the Piscataquis River in Maine. The site was left vacant for almost 10 years before a development firm launched a project to completely renovate the complex and develop a multi-use facility with offices, residences, a cafe and a boutique inn. The extreme weather conditions in the region along with the specific comfort and efficiency requirements presented a unique challenge in procuring an HVAC system for the site.

LG Multi V Water IV Heat Recovery units

https://youtu.be/LTvYE4PIcMk

Keep an eye out for the next installation in this series where we will learn more about LG VRF solutions in the US.

MORE CASE STUDIES IN THIS SERIES

[Part 1] Columbia Square

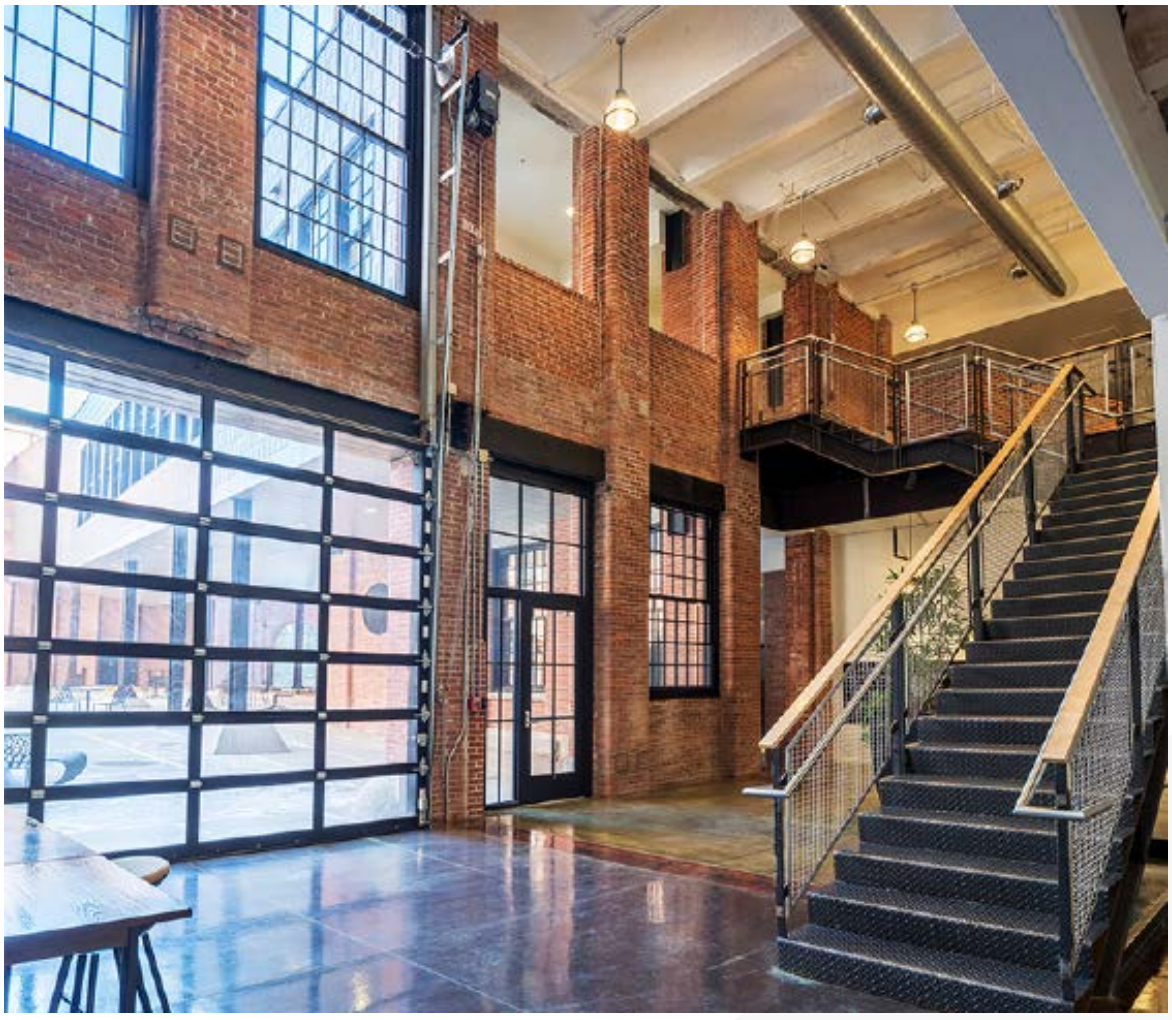
LG VRF Solutions Making Impact in US

[Part 3] The Sharpe Building at the Foundry
[Part 4] Smouse Opportunity School

February 14, 2018

LG VRF Solutions Making Impact in US (Part 3) The Sharpe Building at the Foundry

In the last part of this case study series, we learned about the LG VRF solution installed in the Mill at Dover-Foxcroft on the Piscataquis River in Maine. The LG HVAC solution installed in Maine provided an impeccable system for a unique and historic complex. Today we will look at the LG VRF system installed in the Sharpe Building at the Foundry in Rhode Island.



The LG VRF delivers a comfortable environment even in large, open spaces

■ How can LG Help you Renovate While Preserving the Existing Architecture?

The Foundry has a rich history that dates back almost 150 years. It was originally established in 1872 in Providence, Rhode Island. A renovation of the 157,500 square foot, six-story structure was planned to develop 196 loft-style residences in the historic building. Keys to the success of the project required an HVAC system that would retain the historic architectural qualities of the structure while taking into consideration the expectations of young professionals moving into Providence's urban center for modern comfort and luxuries. The team responsible for undertaking the project set out to install an HVAC system that was energy-efficient, aesthetically pleasing and quiet. An LG Multi V IV VRF heat recovery system was selected to maintain the aesthetic qualities of the historic structure while making efficient use of space. The small refrigerant lines utilized by the LG Multi V system offered a minimally intrusive solution without installing bulky ductwork throughout the building. LG's energy-efficient Multi V IV VRF system was able to meet all the requirements of the Sharpe Building and also delivered a cost-efficient solution with lower operating costs. The Sharpe Building at the Foundry is now fitted with a stable and efficient HVAC system that caters to its sophisticated residents delivering the upmost in comfort.

LG Multi V units installed at the Foundry

https://youtu.be/P9lrmDMjDV8

Look out for our final installation in this series where we will learn about another LG VRF solution in the US.

MORE CASE STUDIES IN THIS SERIES

[Part 1] Columbia Square

[Part 2] The Mill at Dover-Foxcroft

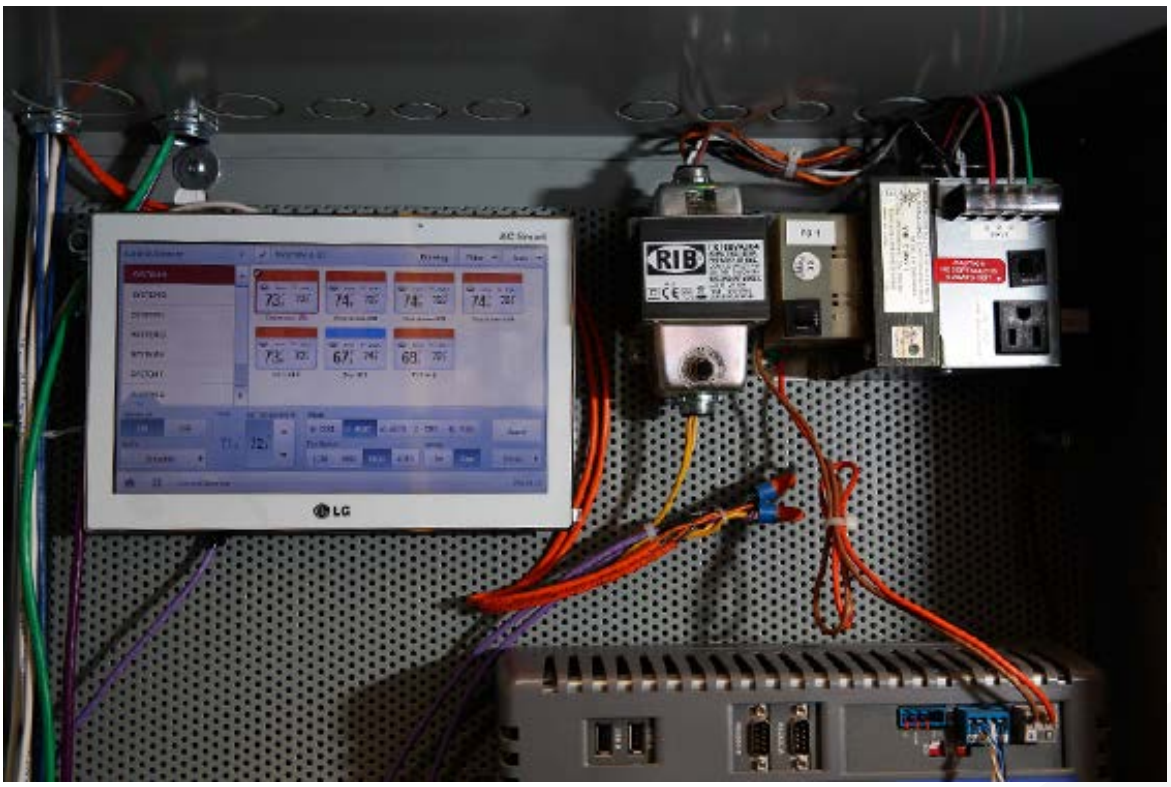
LG VRF Solutions Making Impact in US

[Part 4] Smouse Opportunity School

February 14, 2018

LG VRF Solutions Making Impact in US (Part 4) Smouse Opportunity School

Previously in this series, we learned about an innovative LG VRF solution installed in the Sharpe Building at the Foundry in Rhode Island. In the final installment in this series, we will learn about the LG VRF solution installed at Smouse Opportunity School in Iowa. This project offered a unique set of challenges that led project leaders to select LG to deliver the HVAC solution that could meet their needs.



LG's VRF solution provides innovative technology even for historic structures

■ Providing Comfort While Maintaining Structural Integrity

Smouse Opportunity School was initially commissioned in Iowa in 1931 specifically for special needs students. The school was one of Iowa's first schools dedicated to providing a learning environment for physically or mentally disabled students that were unable to attend traditional schools. The 80 year old design of the building presented challenges when upgrading its HVAC system. The historic building had unique designs that housed specific environments over several floors. Providing a comfortable environment for students while maintaining the historic architectural integrity of the structure with an efficient HVAC system was a key requirement of the project.

■ LG Multi V Water Takes Advantage of Existing Water Sources

The development team selected the LG Multi V Water IV VRF system to satisfy all the requirements of Smouse Opportunity School. The LG VRF solution fit seamlessly into the environment as the system was able to connect to the schools existing central plant with a cooling tower and boiler, which made it easy to incorporate the LG water-cooled condensing units in the basement of the school. The LG HVAC system was installed over a 10 week period during summer vacation at the Smouse and the historic structure is now fit with a state-of-the-art HVAC system that preserves the historic value of the building while saving the school money on energy costs.

LG indoor HVAC unit installed at Smouse Opportunity School

https://youtu.be/_Hk0jQVGsxU

This is our last installation in this US case study series, but please keep a look out for more case studies to learn about our innovative HVAC solutions being installed around the world.

MORE CASE STUDIES IN THIS SERIES

[Part 1] Columbia Square
[Part 2] The Mill at Dover-Foxcroft
[Part 3] The Sharpe Building at the Foundry
LG VRF Solutions Making Impact in US

April 16, 2018

Environmentally Friendly and High-Efficiency LG Air Solutions are Conserving Energy Across India

LG Air Solution is continuing to work with partners around the world to deliver energy efficient and environmentally friendly HVAC solutions. We had a chance to hear from Jaewoong An from the Air Solution Marketing Communication Team about his recent trip to India and learn about the impact LG Air Solution is having across the country. Let's see what he has to say about meeting our valuable partners in India and the solutions we have in place there.

When you hear someone say 'India', what comes to mind? Gandhi? A country with a huge population of over 1.3 billion? A country of amazing developers, mathematicians and scientists? Or perhaps Bollywood? I was the same way... until I visited the Titan Factory on a business trip.

■ The Environmentally Friendly, Energy Saving Titan Factory

The Titan Factory is located in the Hosur region 90km south of Bangalore, 'India's Silicon Valley.' This factory is one of Titan's many factories and Titan is an affiliate of the highly respected TATA Group. This factory is a chronoscopic manufacturing facility of the Titan subsidiary TEAL (Titan Engineering & Automation Limited) where they manufacture items ranging from spacecraft components to tools for national defense.

I guess you could say that TEAL is the grandchild of the TATA Group.

They say that, originally, this region was nothing more than a wasteland of dry grass and rocks. With the TATA Group philosophy of giving back to the community, Titan has built a factory here and created centers for education and living infrastructure for the community.

In fact, Titan Factory employees have been able to care for their families by housing their parents and sending their children to school while being at the forefront of revitalizing the Indian economy.

This place was once a wasteland but it now hosts the Titan Factory, which was designed with the concept of keeping nature first. The building itself is covered in greenery, natural wind flows freely throughout the facility, solar energy is utilized for power and natural rainwater is also collected and reused in the factory.

The facility is covered in green

Rain water collection system

And the real reason why I visited this factory is because there is an environmentally friendly, high-efficiency **LG HVAC system** in place in this enormous building that not only manages temperatures, humidity and air quality in work spaces but also simultaneously manages cooling and clean room air quality required for specific chronoscopic manufacturing processes.

Shall we take a brief look at what type of solution is implemented in this factory?

First, there is the **screw chiller.** The screw chiller in responsible for air conditioning the production line and providing cold water to the cutting-edge manufacturing line. This chiller sends and receives water from a cooling tower located outside the factory and supplies refrigerant to remove heat from the factory. The LG screw chiller uses water from a thermal energy source, so it is an environmentally friendly, high-efficiency solution that supplies clean refrigerant and does not harm the ozone layer.

The screw chiller that cools the factory and supplies cold water to equipment

The cooling tower that keeps the water cool outside the factory

Next there is the Multi V VRF (Variable Refrigerant Flow) system. This system connects to the indoor AC units and cools the air with the refrigerant that circulates in the system to work as an efficient heat exchanger.

Multi V outdoor unit

There is also the HydroKit. The HydroKit is a solution that uses a heat pump to heat water. This system doesn't use electricity to heat water like a coffee pot, but implements a heat pump solution to increase efficiency.

The high-efficiency with heat pump technology

I was also able to check out the indoor AC units, geothermal solution, devices connected to the building management system and other LG Air Solution technology throughout the factory. Security is tight at the Titan Factory, as it is with any top-ranked company, so I am unable to show you more of the facility, unfortunately.

The high-efficiency green factory

■ Kiran Hospital, where the air is kept clean with the HVAC solution

In the Indian market, LG Air Solution technology is not only found in factories, but can also be easily found in large commercial buildings and special facilities such as hospitals.

The front of Kiran Hospital

Before I visited the Titan Factory, I had the opportunity to visit Mahatma Gandhi's hometown of Surat in Gujarat. The largest landmark in this region is Kiran Hospital where, of course, LG Air Solution plays an important role.

A unique feature in hospitals is that the air environment must be managed extremely carefully. This is because the air is closely connected to the health and treatment of patients. So, the HVAC solution in a hospital requires the highest level of management and control.
Kiran Hospital is also in the process of becoming an energy efficient building, or 'green hospital', just like the Titan Factory.

Kiran Hospital and LG Electronics India members take pride in delivering a comfortable environment in this regional landmark

The people I met during this trip are all very proud to be working at India's most influential company and hospital. I could also sense the pride of these valuable LG Air Solution partners.

A plaque of appreciation given to LG Electronics from the Titan Factory

COMMENT

Jae-woong An
Specialist,
Air-Solution Marketing
Communication Team,
LG Electronics

Actually, it's hard to find a company in the entire world that can design and propose total solutions for customers from small scale air conditioners, large HVAC solutions and comprehensive HVAC control solutions like LG Electronics.
Air exists all around us at all times, and even though you can't see it, it is immensely important to our lives. You can expect LG Air Solution to continue making great strides to keep the air at its highest quality.

May 11, 2018

The Wind of LG Electronics Air Solution is Rising at Cairo Medical Center in Egypt

LG Air Solution is continuing to work with partners around the world to deliver energy efficient and environmentally friendly HVAC solutions. We had a chance to hear from Jaewoong An from the Air Solution Marketing Communication Team about his recent trip to Egypt and learn about the impact LG Air Solution is having in New Cairo. Let's see what he has to say about meeting our valuable partners in Egypt and the solutions we have in place there.
Looking at the magnificent pyramids in Egypt, one is humbled by the great power those rulers must have had to make their slaves work tirelessly on constructing such mysteries of the world. But unlike what we've often been told, the people who built the pyramids were actually free men, and not slaves, according to an interesting story I recently heard.\

Who built these giant pyramids?

The story describes how farmers participated in building the pyramids as a form of substitute employment during the Nile River's flood season. It reminds me of Roosevelt, who introduced the New Deal Policy in an attempt to revive the economy and create jobs.

■ New Cairo, Where the Winds of Development are Rising

Several thousand years have passed and Egypt is now facing a new wind of immense development. Instead of building pyramids, a new town in the east of Cairo is planning a massive development project. Through this project, the town of **New Cairo** will become a metropolitan city, which is expected to accommodate up to 5 million people by 2022.

Every corner of the town is experiencing development

Countless skyscrapers will fill the city once this project is concluded and one of the most important aspects to consider when designing these skyscrapers is their **HVAC solutions.** This means it's vital to include **comprehensive management of indoor air,** not only for cooling and heating but also ventilation, humidity, and purification. Air quality is especially important for **health and business productivity** in commercial buildings because many people spend a major part of their day inside.

The building I visited this time was **Cairo Medical Center** (CMC) in **New Cairo.** CMC is a mega-medical complex in which over 200 clinics are concentrated to provide a full range of medical services. This would be considered a novel system in a country like Korea where medical facilities are categorized into large, middle-and-small-sized hospitals, and clinics.

To put it simply, it looks like an apartment building big enough to hold about 400 households, with each unit being occupied by a clinic that provides medical services through its individual reservation system.

Front view of CMC

■ LG Air Solution Rising with the Winds of Development

What would it be like if over 200 clinics installed their own air conditioners? Not only would the back of the building look terrible covered in AC units, but it would be a serious waste of electricity with all of them running at the same time.

The extreme climate in Cairo includes dry desert air, sandstorms, and hot external temperatures. This means **HVAC equipment should run around the clock and without failure.** Another factor to consider at CMC is that with all the medical facilities, it's crucial to provide **clean and healthy air** to those who visit for treatment and recovery.

A comfortable indoor environment begins with pleasant air

In order to provide healthy and pleasant air throughout the building, CMC chose LG Electronics' **VRF (Variable Refrigerant Flow) solution.** To put it simply, it looks similar to the kind of central air-conditioner with which most of us are familiar. This solution combines a number of technologies to implement optimal heating and air-conditioning technologies, such as a **world-class compressor** developed by LG, which operates the HVAC system with non-stop high efficiency. These technologies are crucial in enabling **more convenient and efficient air management.**

CMC equipped with LG's VRF solution

The **Multi V Series** at CMC has been proven to achieved high performance and great energy efficiency by applying high-efficiency inverter compressors developed by LG Electronics. The **Multi V with LG VRF Solution** was also recognized for its competitiveness soon after being implemented at **CBS Columbia Square** in Hollywood last November. Moreover, it was given **top marks by experts in the field at BD+C,** a prestigious architectural design, news, and trend journal and online portal for architects and engineers.

Related Post

LG VRF Solutions Making Impact in US (Part 1): Columbia Square
LG Multi V S Receives Top Marks from Industry Experts at BD+C

Another aspect that has greatly impressed administrators and representatives of the building and the doctors residing at CMC is a solution which makes **an accurate billing system possible by measuring exactly how much electricity is used** at each clinic. If everyone were expected to pay the same regardless of their power expenditure, the users wouldn't find the solution very economical.

COMMENT

Jae-woong An
Specialist,
Air-Solution Marketing
Communication Team,
LG Electronics

The air inside CMC was of the highest quality and comfortable compared to the hot, dry air outside. I felt proud to learn that this quality air was being provided thanks to LG's technology. The wind of development blowing through Cairo turned out to be **fresh air from LG's air solution** after all.

August 2, 2018

Myanmar Looks to Become Leading Marine Logistics Hub in Asia with LG Air Solution

LG is committed to working together with partners with the goal to provide energy efficient and environmentally friendly HVAC solutions. JH Nam from the Air Solution Communication Team has weighed in on the impact LG Air Solution is having in the developing country of Myanmar. Let's see what he has to say about LG and the developments happening in the land of the golden pagodas.

Recently, global companies have been focusing their attention on one country in particular, **Myanmar,** well known for outspoken Burmese political leader, Aung San Suu Kyi.

Myanmar may not be as well known as its neighboring countries on the Indochinese Peninsula such as Vietnam, Thailand and Cambodia, but the country's **potential should not be underestimated. Myanmar's landmass is about 6 times that of South Korea, and its population is over 56 million.** The once affluent Asian country has struggled economically and politically over the past 50 years due to the closed socialist economy and military dictatorship.

However, in recent years, with the huge transition in the political and economic systems along with **abundant natural resources, cheap labor, and geographical advantages, the country is being recognized for its potential for rapid growth.**

■ A Key Marine Logistics Hub in Asia?

The coastline of Myanmar stretches about 1,930 kilometers along the Bay of Bengal and the Andaman Sea. Myanmar is also bordered by well-developed countries such as China, India and other Southeast Asian countries. For this reason, Myanmar has the potential to emerge as a **key hub for marine logistics in Asia** in the near future. Since its full-scale reform of its politic and foreign trade policy in 2016, Myanmar has experienced rapid economic growth.

Yangon is brimming with change and development

Yangon is the old capital of Myanmar that has developed into the **largest commercial city,** and many global companies are investing in its economy. Recently, Korean companies have actively invested in Yangon as numerous business infrastructures have been established. Thanks to these changes, it is now possible to see people from different nationalities in Yangon.

Last September, **'Lotte Hotel Yangon',** offering premium services and facilities, opened in Myanmar's economic hub, Yangon. The hotel has become a symbol of Myanmar since it is located just to the north of Sheldon Pagoda, the Buddhist sanctuary, and nearby Lake Yangon, a large amusement park in Yangon. Moreover, the hotel has 658 rooms in total (343 hotel rooms and 315 serviced apartments) and it has become a **local landmark** due to its scale and size.

■ Where the Breeze of LG Blows

There is another reason why this hotel is gaining so much attention. This is because **LG Air Solution** has also made its mark on the hotel. The Lotte Hotel Yangon hosts many residents along with a range of large-scale facilities that must operate 24 hours a day, making an **efficient HVAC system** essential. Also, **optimized heating and cooling must be supplied** to each space in order to create a comfortable environment for all residents.

LG Air Solution is able to provide world-class HVAC services that suit the demands of a hotel. LG provides **centrifugal chillers, air handling units and fan coil units** for hotel central air conditioning systems. They also offer **Multi V** units that allow guests to freely adjust the temperature in individual serviced apartments as well as a wide range of indoor units for large-scale facilities.

High-efficiency LG centrifugal chiller

LG's **high-efficiency centrifugal chillers** boast an efficiency of the highest standard with **2-stage compressor and de-compressor inverter technology.** This technology makes LG HVAC centrifugal chillers a perfect fit for **conserving energy and providing comfortable environments in large-scale buildings and industrial facilities.** The control panel with a high-resolution display and simplified UI also makes the chillers easy to operate the automatic configurations with a simple touch of the screen. Furthermore, the **environmentally friendly R-134a refrigerant** minimizes damage to the ozone layer.

LG Multi V IV

The **Multi V** is the **LG Electronics' flagship solution** for medium and large-scale buildings. Multi V is embedded with LG's own high-efficiency inverter compressor that boasts **high-performance and energy efficiency** (17% improved efficiency compared to the previous model) and provides the benefit of **reduced operating costs.** Lotte Hotel Yangon administrators praised the LG solutions installed at the facility saying, 'LG Air Solution technology and products provided us with all the solutions we needed at our hotel.'

As Myanmar looks to become the prominent marine logistics hub in Asia, many people are collaborating to ensure this ambition comes to fruition.

LG Air Solution will continue to promote development like we are seeing in Myanmar with world-class technology and products.

https://youtu.be/01FqtmFDN3g

Related Post

The Wind of LG Electronics Air Solution is Rising at Cairo Medical Center in Egypt
https://www.lghvacstory.com/the-wind-of-lg-electronics-air-solution-is-rising-at-cairo-medical-center-in-egypt/

Environmentally Friendly and High-Efficiency LG Air Solutions are Conserving Energy Across India
https://www.lghvacstory.com/environmentally-friendly-and-high-efficiency-lg-air-solutions-are-conserving-energy-across-india/

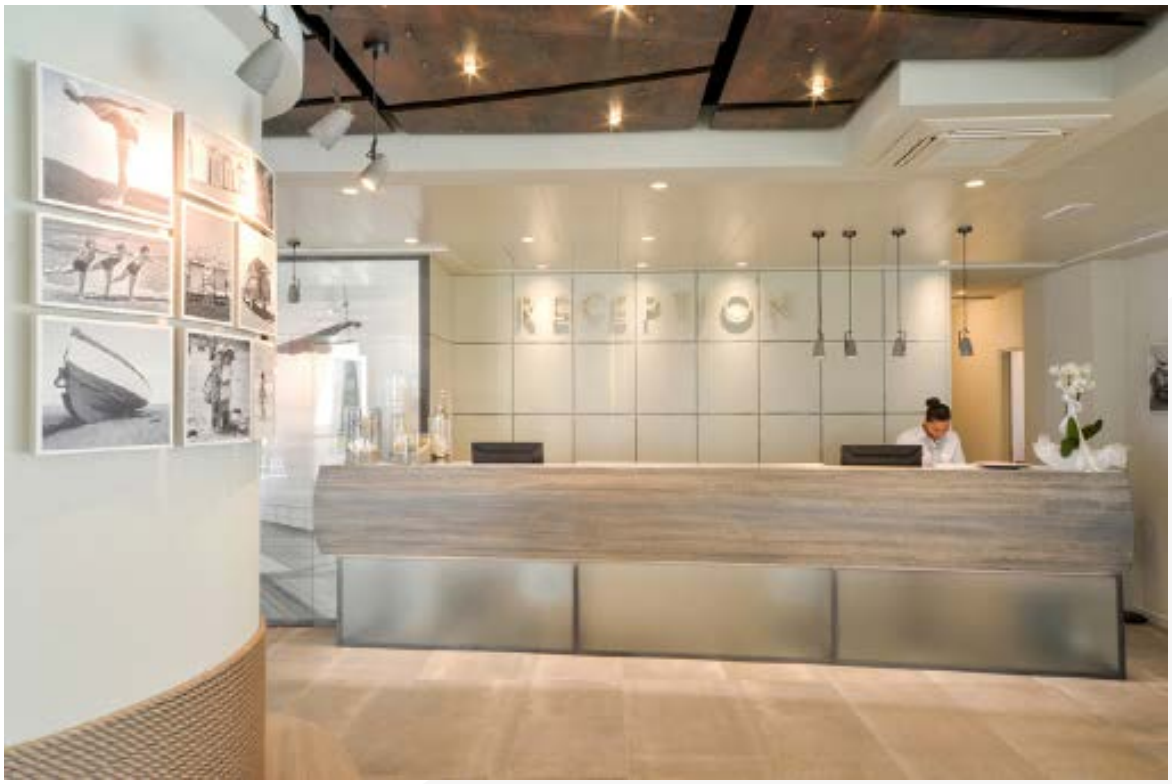
October 16, 2018

Lindbergh Hotels Revamps its Brand with LG Air Solution at Hotel Nautilus in Pesaro, Italy

In a move to rebrand its hotel chain, **Lindbergh Hotels is making valuable partnerships with companies like LG Electronics to guarantee the highest in quality standards.** The Hotel Nautilus is a family hotel in Pesaro, Italy, located just a few steps away from the Mediterranean Sea and part of the Lindbergh Hotels chain. This elegantly styled 96 room hotel provides guests with luxurious accommodation along with a restaurant, a dedicated space for children and a heated swimming pool. As the tallest wooden hotel in Europe, the hotel melds beautifully with the surrounding environment and focuses on each of its facilities being energy self-sufficient and adhering to global green building standards. For this reason, Lindbergh Hotels turned to LG to create an efficient air conditioning solution that integrates seamlessly into the BMS (Building Management System) of Hotel Nautilus.

"After careful market research to evaluate the solutions available, LG Electronics was selected. The company has been assessed as the most reliable in terms of energy control, integration with existing BMS systems and ease of use."

Marco Manzali , Technical Manager, LINDBERGH HOTELS



The BMS at Hotel Nautilus can be controlled remotely directly from reception

In line with efforts of Lindbergh Hotels to maintain efficient and self-sufficient facilities, Hotel Nautilus is equipped with a central control system with touch screen located at the reception desk that reduces electrical loads and optimizes energy consumption. **With the solutions provided by LG, the air conditioning system integrated into the BMS operates effectively** while taking in to account specified climate requirements depending on the actual occupancy of the facility. The comprehensive system is capable of verifying occupancy across each room or space in the hotel and activates climate control when required. If space is unoccupied, the system enters 'eco' mode to conserve energy.

Guests can adjust temperatures precisely in each individual room

Hotel Nautilus in Pesaro was fitted with **LG Multi V VRF solutions to optimize energy efficiency in the hotel and bring a higher level of comfort to guests.** The Multi V system provides zoned climate control and makes it possible to adjust temperatures in each room or space so that guests can match temperatures to their specific level of comfort. The Multi V units are equipped with LG inverter compressors that deliver highly efficient steam injection and HiPOR™ (High-Pressure Oil Return) technology. **Functionality such as Continuous Heating,** which implements a two-part heat exchanger that alternates defrost cycles for constant heat supply, and **Smart Load Control,** which adjusts refrigerant temperatures to improve efficiency and comfort, **makes Multi V ideal for hotels and other large-scale facilities.**

Temperatures are maintained uniformly across all common areas within the hotel

Ultimately, the LG system at Hotel Nautilus includes 7 Multi V outdoor units and 70 Indoor units to manage climate control across guest rooms and common spaces such as the lobby and the restaurant. **LG is committed to helping our customer attain their goals for the utmost in efficiency and comfort.** Gianluca Figini, Air Solution Director at LG Electronics Italy, encapsulates this saying, "We feel we have helped Lindbergh Hotels accomplish this in Hotel Nautilus. The Hotel Nautilus is a very interesting reality for LG Electronics considering the commitment to energy efficiency and consumption control. In this context, we integrate our solutions perfectly so that it can be integrated into the building's BMS system. We will be very pleased in the future to continue cooperation with LINDBERGH HOTELS in other facilities run by this company, always in the name of energy efficiency and consumption control while respecting the environment".

November 1, 2018

LG Air Solution is Making an Impact in Drought Stricken South Africa

When spring arrives in **South Africa,** the streets are brilliantly colored in purple. The beautiful **jacaranda tree blossoms** are to thank for this stunning display of color.

These elegant blossoms bloom in October and November each year to fill the country with their distinct purple hue. Locals and tourists alike can't help but be mesmerized by the scene of these blooming purple flowers hanging from the high branches like bunches of grapes on a vine.

But, it may become more difficult to see jacaranda tree blossoms in the near future due to **a law put in place by the South African government banning the planting of new jacaranda trees.**

■ The Worst Drought in 100 Years

What could be the reason for the ban on these beautiful trees? The reason for the ban is the onset of **the worst drought South Africa has seen in 100 years.** Since the jacaranda is tree species that absorbs large amounts of water from the ground, South Africa is adopting a policy of maintaining the current number of trees without increasing the number in order to combat the shortage of water.

Policies being implemented by the South African government not only affect the jacaranda tree. The drought, which started about 3 years ago, has been changing many aspects of life in South Africa. The government has declared a national state of disaster due to the shortage in water supply and South Africans are only allowed to use 50 liters of water a day per person.

Even practices such as watering your lawn or washing your car have been limited. Citizens are limiting the use of water by installing water management equipment in their own homes to collect rainwater and repurpose sewage water. These water conserving policies not only apply to individual citizens. **Companies are also experiencing the effects of these policies economically.**

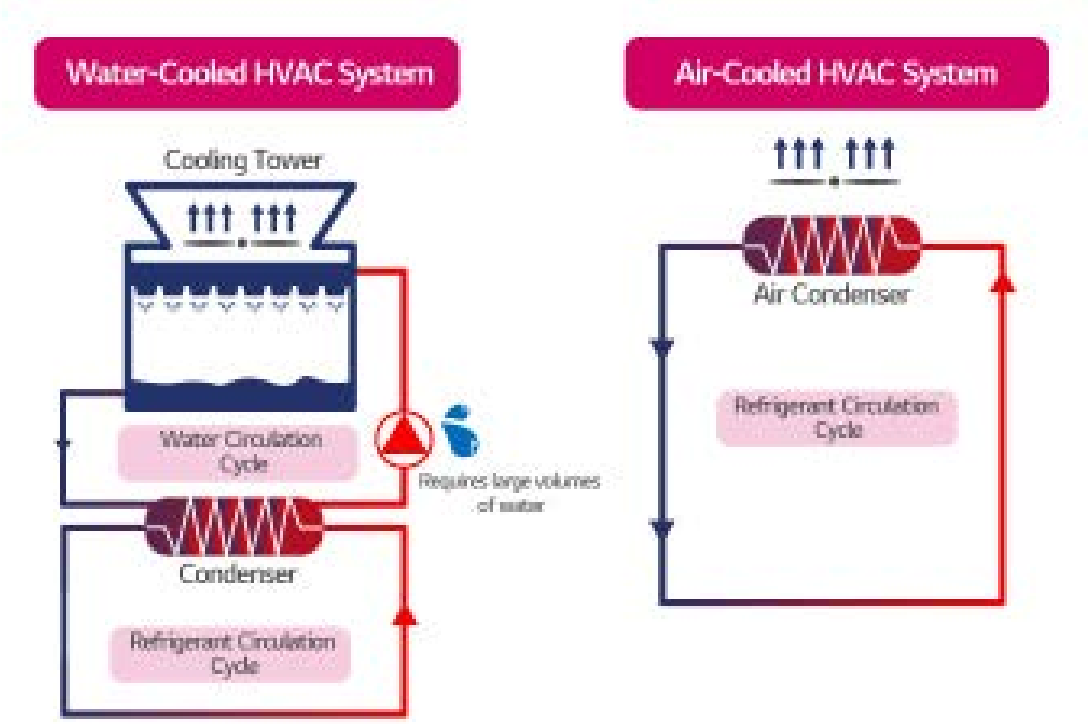
■ LG Air Solution Finds an Answer to the Shortage of Water

Panorama of Cresta Shopping Centre

Located in Johannesburg, the leading center of commerce in Africa, **Cresta Shopping Center** is a shopping mall that was opened in 1977. In the over 40 years since it was founded, the shopping mall has continued to be remodeled and expanded, and a particularly large amount of attention to the **HVAC system** has been paid throughout the mall.
When considering the operation of a shopping mall with many people coming and going on a daily basis, providing a comfortable environment for customers is directly related to sales and profits of the center.

Cresta Shopping Mall previously had a **water-cooled package HVAC system** installed. **Water-cooled HVAC systems use water to cool the condensation heat that comes from the compressor.** Therefore, water-cooled HVAC systems **require additional cooling towers and a continuous supply of coolant water.**

Because this type of system requires large volumes of water, **they are less efficient in locations where water supply is expensive or water is in short supply.** Also, the existing system was fitted with a **constant-speed compressor** with **poor efficiency, and high operating fees** was a constant concern.



Water-cooled HVAC system and air-cooled HVAC system

After considering how to use water resources more efficiently during the drought and how to curtail the expensive operation fees of the HVAC system, Cresta Shopping Mall proceeded with an **extensive overhaul of their HVAC system to provide the optimum environmen**t for their customers. In a large-scale shopping mall, an HVAC system needs to be **specialized for many diverse spaces** such as open atriums, many small shops, offices, movie theaters and food courts. There are also many other internal requirements for an HVAC system. Accordingly, a **flexible system design** capable of simultaneously supplying heating and cooling to individual spaces and central HVAC functionality is required.

Shopping malls have very specific requirements for an HVAC system

Shopping malls also require **HVAC systems that fluctuate** in supplying heating and cooling depending on expansion of the facility or renovations to spaces. **LG Air Solution** has the right solution for precisely these types of concerns.

LG Multi V IV installed on the rooftop of Cresta Shopping Mall

LG ACP supports integration of LG HVAC solutions into a facility's BMS

Cresta Shopping Mall selected the **high-efficiency air-cooled VRF system, LG Multi V,** along with powerful **LG AHUs (Air Handling Unit)** from the wide range of LG HVAC solutions. This all-in-one **Eco Package** combination is providing **drastically improved energy efficiency** over the existing water-cooled system and is **reducing operation and maintenance fees.**

High-efficiency Inverter Compressor in the LG Multi V

LG Multi V with a **high-efficiency inverter compressor** is providing optimum energy efficiency in all spaces whether running at both maximum and partial load. Even more, the diverse indoor units with ducted or cassette configurations have been implemented according to the requirements of each environment to flexibly meet the needs of our customer.
Cresta Shopping Mall was able to **greatly reduce operation fees by 32%** and **resolve the excess use of water and costs issues** caused by the existing water-cooled HVAC system.

BMS integrated control with LG Air Solution

Cresta Shopping Mall is the first mall in South Africa to implement a high efficiency VRF HVAC system. With this new system, they are not only able to deliver the **most comfortable environment for customers,** but they are also relieving the burden of excess energy costs while leading in the efforts to solve social issue of insufficient water.

With this technology as a starting point, we will continue to see the **purple jacaranda blossoms** for years to come with **LG Air Solution!**

https://youtu.be/TV1XSKtvq7c

Related Post

Myanmar Looks to Become Leading Marine Logistics Hub in Asia with LG Air Solution
The Wind of LG Electronics Air Solution is Rising at Cairo Medical Center in Egypt

Trend & Issue

February 2, 2018

Air Quality and Allergy Advice from Allergy UK

Clean air indoors is critical to our health and at LG, we strive to create healthy environment for our customers with our HVAC systems and PuriCare air purification products. There are many steps we can take to keep the air in our indoor environments health and clean. But don't just take our word for it, let's hear what the experts have to say. We had the opportunity to get the expert opinion of Holly Shaw from Allergy UK and she offered some interesting insight into air quality and dealing with allergic conditions.

■ LG Air Solution Finds an Answer to the Shortage of Water

Allergy UK is the leading British medical charity dedicated to providing support, advice and information for those living with allergic disease.
https://www.allergyuk.org/

> **Allergens** are substances that have the potential to cause an allergic reaction and **are not harmful to everyone,** just those whose immune system misinterprets that substance as harmful and produces an unwanted response.

An unhealthy indoor environment for those spending time indoors at home, in an educational setting or at work, can have significant consequences on your health. For those with existing allergic conditions like allergic asthma or hay fever [which can be seasonal or perennial (year round)], exposure to allergens indoors can exacerbate these conditions and cause allergic symptoms.

The quality of the air indoors can be influenced by many different factors including poor ventilation, exposure to irritants, chemicals, and different heating sources.

Allergens are substances that have the potential to cause an allergic reaction and are not harmful to everyone, just those whose immune system misinterprets that substance as harmful and produces an unwanted response. In allergic conditions such as asthma, hay fever and eczema, the immune system generates an unwanted response in a target tissue (airway, skin or nasal passages).

■ Hidden Allergens

Allergens can be found in all areas indoors and from a variety of sources despite levels of cleanliness or being a new premises. Allergens can also be hidden with no obvious source, for example mold that is behind a cupboard or under a carpet.

Mold hidden under floorboards

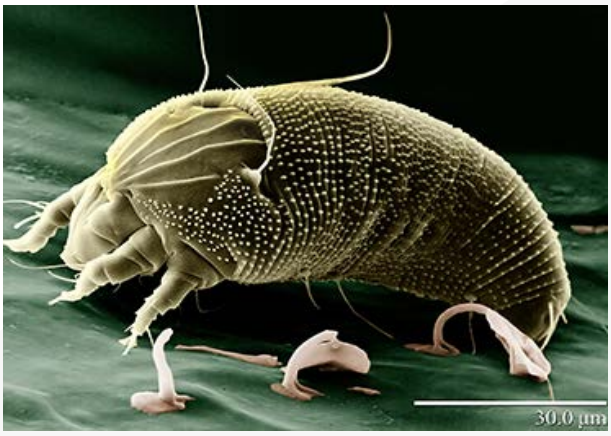
“

Allergens can be found in all areas indoors and from a variety of sources despite levels of cleanliness or being a new premises

”

■ Mites and Pets

The house dust mite is one of the most common indoor allergens. It thrives well in warm, humid environments and lives in soft furnishings like carpets, bedding, curtains and cushions. Pets can be problematic too and pet dander can be found long after animals have left or even where they have not been as pet dander can also be moved around on clothing and footwear.



Mold hidden under floorboards

■ Allergies

Having one or more allergic conditions like allergic asthma, hay fever or eczema can be triggered by aero allergens (allergens in the air that you breathe in) from the indoor environment. Skin allergy like atopic eczema can be triggered by allergens and irritants in the environment that come into contact with the skin.

If you suspect you have an allergy then it is important to discuss this with a health professional, the first point of contact will usually be your GP. Pharmacists can be a good source of knowledge on medications for allergic conditions. If you require a medication that comes in a device like an asthma inhaler, nasal spray, or eye drops, it is important that you know how to use these devices correctly to get the most from the medicine.
Avoidance is key to managing any allergic condition but with aero allergens, it is not always possible to completely avoid. So, reducing the amount of allergen in the environment may help.

Useful Tips

Some useful tips for reducing allergens from the indoor air environment:

- Keep surfaces clutter free and soft furnishings to a minimum
- Clean hard surfaces and vacuum regularly to reduce allergen levels
- Keep pets outside where possible, or at least out of commonly used rooms in the home (bedrooms and living rooms)
- Remove any visible mold by cleaning with a mould cleaner or bleach
- Ensure appropriate ventilation of small spaces by using extractor fans and opening windows
- Remove indoor pot plants as they can promote mold growth

We greatly appreciate Holly Shaw for her insight into indoor allergens and advice on reducing allergens indoors.

We at LG hope that air purifiers such as the LG PuriCare can make the indoor environments where you spend most of your time healthy and safe.

March 7, 2018

Women's Day 2018 :
Are Women in HVAC the Future of the Industry?

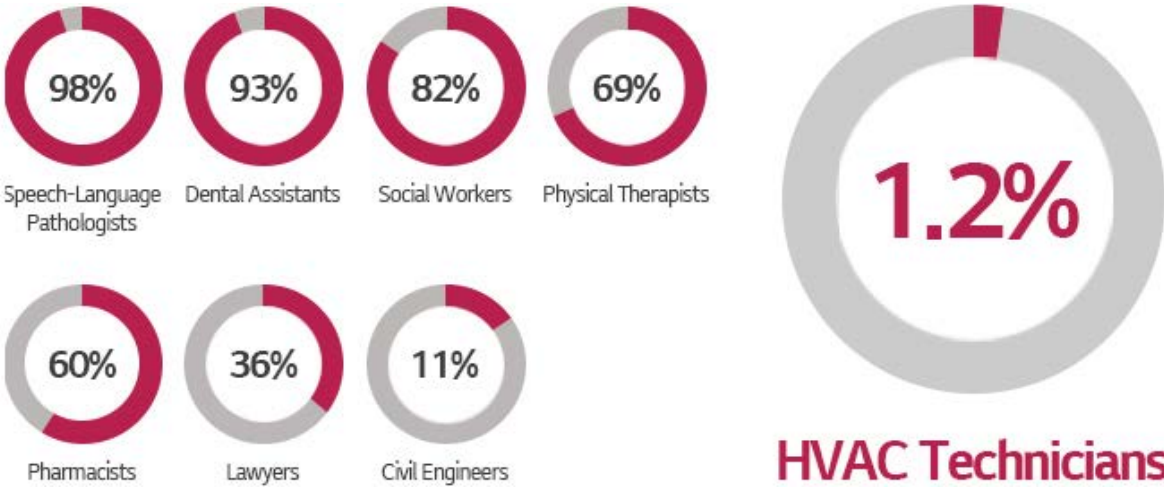
> "**A lot of women** don't see the opportunities that exist, and they're not around enough women who work in these roles to realize all the benefits a career in this industry can afford them."

The **future of the HVAC industry** looks bright! According to the 'Growth Opportunities in the Global HVAC Equipment Industry' report from Research and Markets, the global HVAC market is projected to reach approximately USD 120.6 billion by the year 2022 and is anticipated to grow at an annual growth rate of 4.9% between 2017 and 2022. New technology in HVAC is not only creating more opportunities in the workforce but also generating a more diverse set of jobs in the industry. The HVAC industry seems to have everything going for it, but there is one thing missing... WOMEN! There is a drastically lower rate of **women in HVAC** than in other industries around the world. With this booming industry creating so many new opportunities for workers and entrepreneurs, we are likely to see women at the front lines of the HVAC industry adding a new sensibility to its technology and designs. At LG, we are committed to offering opportunities to individuals seeking them while delivering quality technicians that can provide world-class services to our customers around the world. With Women's Day coming up on March 8, we want to celebrate the contributions women have made to our industry and highlight opportunities that the industry can provide to women around the world.

■ Women and the HVAC Industry

Women in the Workforce

Percentage of Women Represented in Selected Occupations



More women are entering the HVAC industry than ever before, but women still only make up just over 1% of the HVAC technician workforce world-wide. A similar disparity is present in almost every element of the industry. Global expansion in the industry is creating positions in which women could prove to be a strong asset. Growth in the retail, hospitality and commercial sectors is predicted to translate to continued growth in the HVAC sector as these developments entail large-scale implementation of HVAC systems. This growth in HVAC means the industry will be looking to take on a large number of new technicians. Women stand to not only take advantage of opportunities in the field but also to become a valuable resource in the sector. Women in HVAC are poised to be the **future of the HVAC industry.**

■ Perspectives from Women in the HVAC Field

We had the opportunity to talk with some women working in HVAC at LG and gained interesting insight into the HVAC industry and what it means to be a woman in this male dominated field. Let's see what they had to say.

COMMENT

Virna Kumorkiewicz
Key Account Manager,
HVAC and Energy,
LG Electronics
Buenos Aires, Argentina

To succeed in a male-dominated field like HVAC, a woman needs to prep, prep and more prep. And after that, more prep. Self confidence and trust in your ability to use your knowledge combined with the unique 6th sense that all women have are important. I believe that as a woman, patience, persuasion and manner in conducting negotiations are key features inherent to our gender that can favor positive outcomes in business. Personnel on construction sites and decision makers are predominantly men. Therefore, as a woman, I need to prove my solid technical knowledge and share the merits of my opinion to level the field.

COMMENT

Graziela Yang
Product Manager,
System Air Conditioning,
LG Electronics
Sao Paulo, Brazil

The environment in the HVAC industry is always positive and I feel that I am always learning. However, as the majority of the team is men, I found it more difficult to be confident in the beginning. Men can tend to be somewhat 'cold', so I think being a woman adds some 'warmth' to the work atmosphere. In my opinion, it is important to work hard and be modest in the beginning and also, being open minded is always a positive attribute.

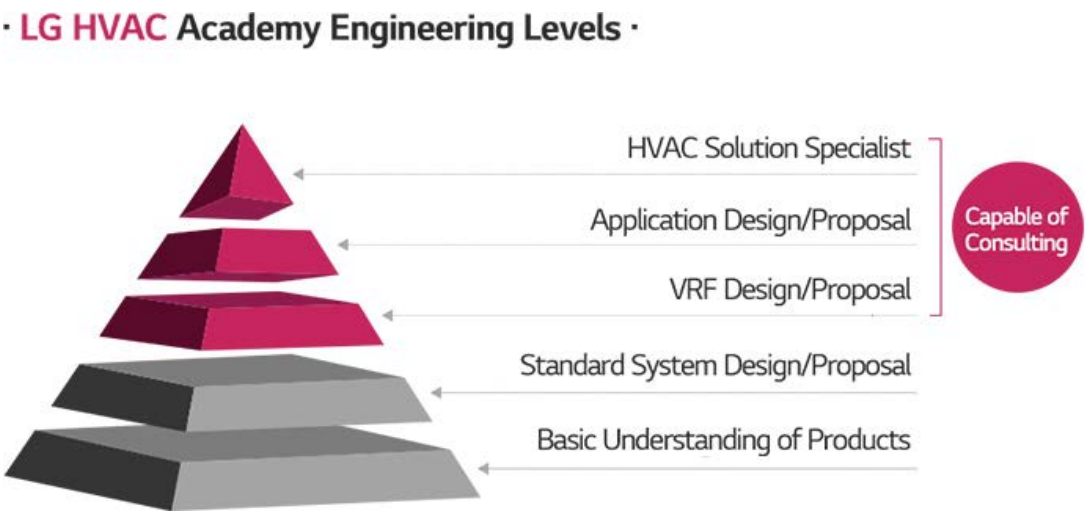
COMMENT

Yanhua Jin
Sales Manager,
Chiller Sales Xi'an Branch,
LG Electronics
Xi'an, China

The decision makers and authorized representatives for projects are almost always men, this may seem daunting but, in actuality, I feel that I am able to win the favor of customers through sincerity and perseverance and this gives me greater confidence in my career. Women can be more approachable, so they can be more likely to be accepted than men. Women are strong with details and women tend to pay more attention to detail. Also, when you are in a position that is seen as weaker, it is natural that you will win some sympathy and connect with customers more easily. In fact, women's toughness tends to be more suited for this role sometimes. This toughness can prove especially important and you will experience great results if you put your heart and effort into your work.

Learn more about what it takes to become an HVAC technician:
THE ROAD TO BECOMING AN HVAC ENGINEER (PART 1)

■ LG Culturing the Future



Initiatives by LG to train professionals in the HVAC sector offer in-depth courses for HVAC installers, service technicians, system designers, consultants and sales staff. We have established **LG HVAC Academies** around the world, where people can gain the training and skills to become experts in the field. We currently run 69 academies around the world including 18 partner academies offering 5 levels of certification that endow participants with the know-how and expertise to succeed in their field. These academies are equipped with all of LG's state-of-the-art products such as our flagship **Multi V 5** system air conditioner and advanced, cloud-based HVAC control systems. As **women enter the HVAC market,** they will be greeted with a wide spectrum of resources such as those offered at our **LG HVAC** Academies.

Women and men alike have a powerful resource in LG HVAC Academies

Women continue to expand into primarily male-dominated industries such as HVAC, they will find new challenges and new opportunities that will provide them with enriching careers. HVAC has a lot to offer and gives people working in the field chances to grow and find independence in their work. We hope to see more **HVAC women** in our sales rooms, in our research labs and installing our equipment in the near future, across India and throughout the world.

April 24, 2018

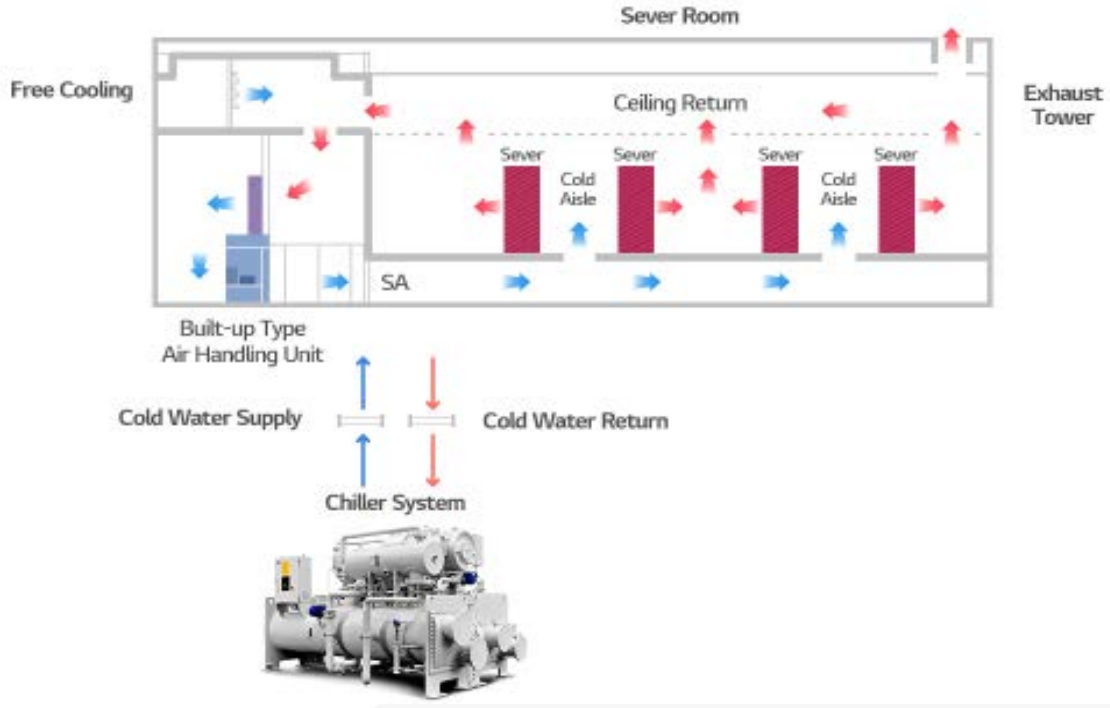
Beating the Heat in a Data Center

The performance of a data center is directly related to the ability to keep it running efficiently. Over the past 20 years, the typical data center ecosystem has changed and grown dramatically. 10 years ago, data center designers and managers were mainly concerned with air-cooling technologies that could keep the large scale servers cool. However, there are now a new set of density and efficiency challenges faced when managing data center environments that require a new perspective. The science behind data center cooling is ever changing and applying the right solutions is key to the success of a data center.

■ The Data Center Dilemma

With cloud services and big data increasing the complexity and diversity of information being stored and transmitted over networks contributing to the extensive amounts of data that must be processed daily, data centers are continuing to be a vital part of how virtually all elements of business and commerce including finance, entertainment, education, healthcare etc. This influx in data makes maintaining data centers even more important and properly managing the temperature of a data center is crucial to its safety and reliability. The servers that store and process this data generate an extremely large amount of heat and a powerful and reliable HVAC system that can operate efficiently 24 hours a day is absolutely essential. **Data center managers must consider energy efficiency and cost effectiveness when cooling a data center.** In recent Green Grid research into European data center usage, **energy efficiency and operating costs are the most common areas of the data center reported as requiring improvement.** A 2015 NRDC report indicated that data center electricity consumption is projected to increase to roughly 140 billion kilowatt-hours annually by 2020. This is the equivalent annual output of 50 power plants, costing U.S. businesses $13 billion annually in electricity bills. The tremendous strain on the power supply of a data center also greatly increases the amount of carbon emissions that damage the environment.

Data centers require a unique system of ducts and aisles that run through the ceilings, floors and spaces between server racks to circulate cold air in and remove hot air from the servers. Servers that store and process data in a data center run 24 hours a day and it is essential that the HVAC system responsible for cooling the data center must be able to efficiently provide consistent and constant cool air to the center. The security of the data stored in data centers is crucial in keeping the connected systems we use everyday functioning and our society moving forward. However, maintaining cool temperatures required in a data center can be a strain on the data center power supply and is also financially draining. LG is able to provide a range of HVAC solutions that can maximize the efficiency in data centers of any size or configuration.



Data center HVAC solutions provide a unique airflow to improve data center efficiency

■ Data Center Solutions

Data center HVAC systems come in many types and sizes including solutions for package, modular and built-up type data centers. Package type data centers are prepared with the necessary components that can be constructed where data center facilities are needed and modular type data centers come in modular units with server racks and air conditioners that form containment aisles in order to isolate the hot air and the cold air. **Built-up type data center HVAC solutions** are built into the original structures on site and offer unique advantages to data center cooling systems. These days, many data center HVAC solutions also feature a cooling system known as **free cooling.** Free cooling is an economically efficient method implemented in data centers to channel natural, cold outdoor air into the airflow for cooling within the centers. With 'fresh-air mode', 'combined-air mode' and 'circulated-air mode', this free cooling saves energy and reduces power costs. When outdoor temperatures are between 13-20°C, **fresh-air mode** engages and the HVAC units are turned off while the cool air from outside is used to cool the data center. **Combined-air mode** uses a combination of outdoor air and re-circulated air when temperatures drop below 13°C as the outdoor air becomes too cold to circulate through the server racks. **Circulated-air mode** uses air cooled exclusively by the HVAC units when outdoor temperatures reach over 20°C.

LG Centrifugal Chillers efficiently provide cooling to data centers

LG's centrifugal chillers like the ones found in data centers in Busan and Pyeongchon, Korea, are large scale build up type HVAC systems that secure the stability of cooling in data centers. These data centers in Korea are 25,512m^2 and 85,547m^2 respectively and, as with all data centers and server rooms, require constant cooling and environment management. **Power Usage Effectiveness (PUE)** is a global standard metric that describes how efficiently data centers utilize energy. The PUE ratio is determined by dividing the amount of energy that enters a data center by the power actually used to run the infrastructure in the facility. While the global PUE average for data centers is 1.7, **LG centrifugal chiller systems are able to maintain an impressive 1.4 PUE.**

PUE Efficiency Ratings

PUE	DCiE	Level of Efficiency
3.0	33%	Very Inefficient
2.5	40%	Inefficient
2.0	50%	Average
1.5	67%	Efficient
1.2	83%	Very Efficient

Among the wide range of LG chillers available, LG ice thermal storage chiller solutions can further reduce running costs by taking advantage of less expensive overnight electricity fees and use ice accrued over night in the system to cool the building and lower running costs. These systems reduce the power load in the centers during the day and **lower electricity fees while using thermal energy** from the ice stored in the system to cool the data centers.

Data centers will continue to be a vital part of society and their role in managing the data that makes our world run is constantly changing. At LG, we are constantly at work developing system that can keep data centers and other diverse spaces cool, comfortable and running strong. The next time you visit your company's data center or even just pass by it, give some thought to the effort that data center managers and LG are putting in to make it efficient and secure.

April 30, 2018

LG Multi V S Receives Top Marks from Industry Experts at BD+C

Trade publication and website Building Design and Construction (BD+C) has published their second annual 101 Top Products Report and the LG Multi V S VRF 5-ton heat recovery system has made the cut. The list from BD+C gives recognition to innovative and industry changing products that stand out in their field. At LG, we are extremely proud to have one of our products selected by this prestigious organization as a stand-out solution in the industry!

BUILDING DESIGN +CONSTRUCTION

■ A Nod from BD+C?

BD+C is a world-renowned and award-winning magazine and online portal that provides daily design and construction news, trends and other resources for architects, engineers and contractors. Being recognized by BD+C demonstrates the impact of a product in its respective industry sector and speaks volumes about the effort and innovation that went into the development of the product. BD+C editors were responsible for seeking out game-changing products as top selections for the list and the remaining products were recognized based on reader inquiries about the products over the months leading up to publication. Products receiving accolades on the list published by BD+C are categorized into Building Envelope, Building Systems, Flooring, Glass and Glazing, Interior, Plumbing, Structural, and Windows and Doors. Other products featured on the list of top products were innovations from distinguished companies such as 3M, Dupont, Delta and ThyssenKrup along with an array of small, medium and large-scale companies. We are honored that the Multi V S is featured together with the other cutting-edge solutions in the BD+C 101 Top Products Report. The compact LG Multi V S, which is ideal for installation in locations where space is at a premium such as small-scale commercial buildings, premium residential buildings, restaurants and retail shop facilities, is listed in the Building Systems category and was highlighted for its compact footprint and efficiency.

LG Centrifugal Chillers efficiently provide cooling to data centers

> The ductless Multi V S system has a **minimal footprint** and **frees up space** for unique or high-end interior designs and is also **ideal for renovated historical buildings**

■ Multi V S: the Force Unseen

Once the compact and low-noise Multi V S units have been installed, the system can stay out of sight and out of mind. HVAC system design and configuration is paramount in architectural space design and Multi V S units are compact and light-weight while the system has extensive piping installation capabilities allowing designers for more freedom in system designs. Longer refrigerant piping means the outdoor units can be installed in remote locations in a building away from the windows or doors for more efficient design and less noise pollution in the interior of a space. The ductless Multi V S system has a minimal footprint and frees up space for unique or high-end interior designs and is also ideal for renovated historical buildings as it eliminates the need to sacrifice structural integrity.

■ The Performance of the Multi V S

The Multi V S has an embedded LG inverter compressor with a 15Hz-150Hz frequency range that provides efficiency and reliability for flexible residential and commercial applications. LG's variable heat exchanger circuit intelligently determines the optimal path for both heating and cooling to maximize efficiency for all operations. Self-diagnostics also makes the system more than just efficient, but add to the convenience and reliability of the system. Fault Detection Diagnosis (FDD) capabilities including auto start-up, auto refrigerant check and black box functionality, among others, optimizes system reliability and streamlines system maintenance. Slim and light Multi V S units that range from 4hp to 12hp deliver high-capacity simultaneous heating and cooling functionality to ensure comfortable environments in diverse space designs. All you need to do is turn the system on or off and the Multi V S will handle the rest.

As recognized by BD+C, the LG Multi V S delivers a high-performance solution with a uniquely small footprint, making it ideal for residential or light commercial installations. While we are exceptionally grateful for this recognition, hearing from our customers is invaluable and we are always listening. The LG Multi V S is will continue to make its mark on the industry and we couldn't be more proud that our product was featured by BD+C.

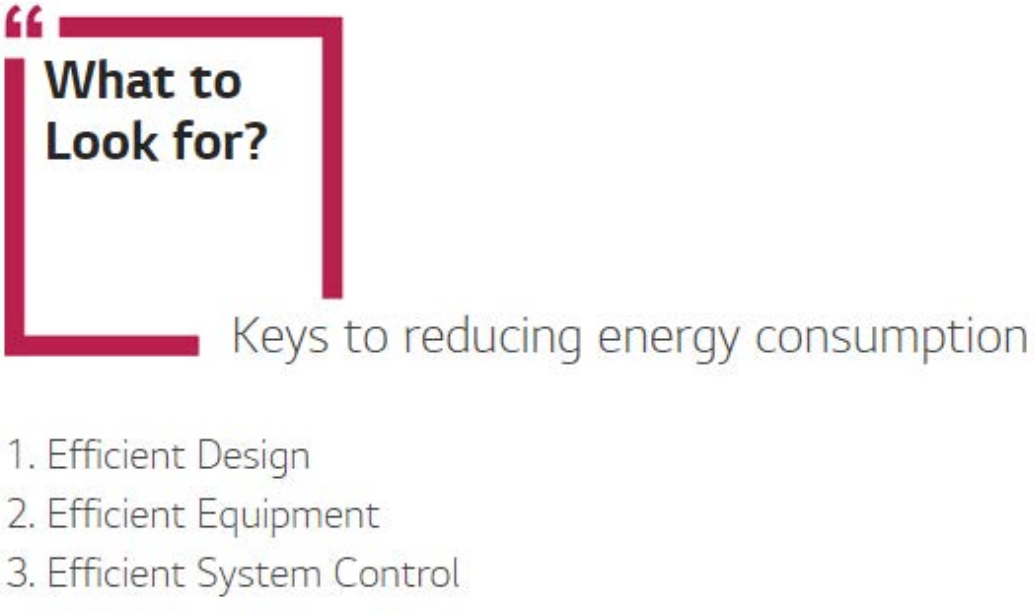
May 15, 2018

LG HVAC Solutions are Helping Building Managers Conserve Energy like Never Before

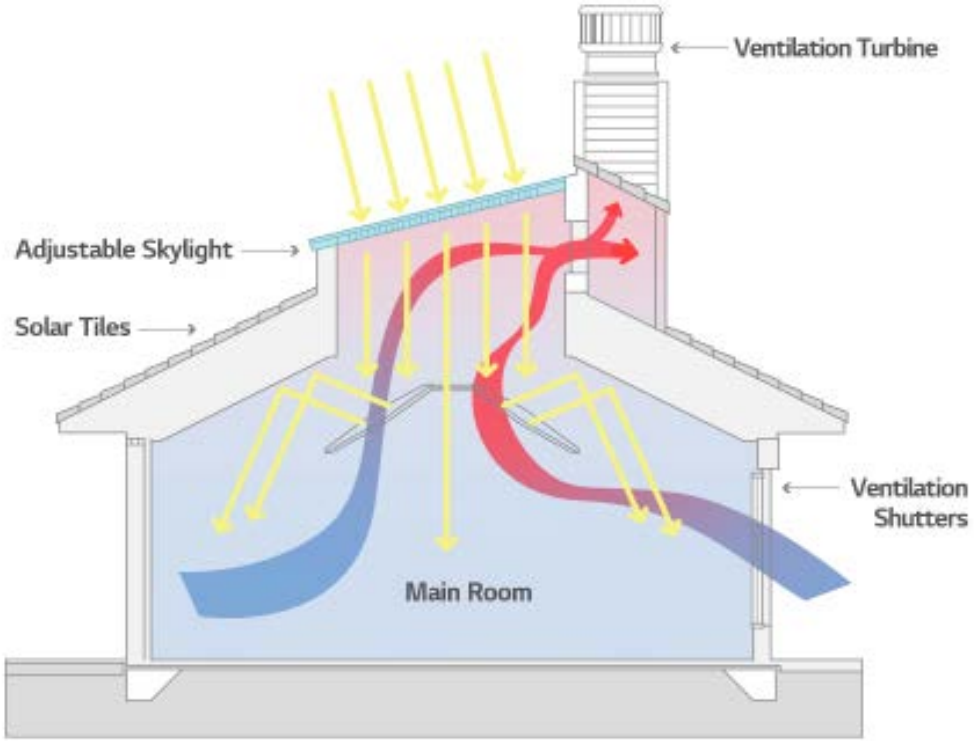
The reduction of power consumption in a building can have significant effects on financial assets, security, environmental quality, comfort, energy costs and profits. But the fact is, there is still a long way to go in efforts to reduce the amount of energy that is wasted, particularly in commercial properties such as office buildings, hotels, factories, shopping centers, education centers, hospitals and airports. The amount of energy wasted in heating and cooling accounts for a large portion of a building's overall energy consumption. While there are global efforts to reduce energy waste and improve sustainability, **building owners are still looking for ways to manage energy consumption more efficiently.** As LG continues to develop innovative solutions for heating and cooling, our HVAC solutions are effective in reducing power consumption over existing HVAC systems and are able to decidedly improve the overall efficiency of a building.

■ Where is the Energy Being Wasted and What Can We Do?

The size and complexity of buildings continue to increase and along with that comes an increasing amount of inefficiencies that result in wasted energy and higher carbon emissions. While 30-45% of a building's energy consumption is typically dedicated to heating and cooling, as much as 30% of the total energy consumed by a building is wasted. These statistics indicate that a significant portion of energy consumed in a building is wasted through heating and cooling. Much of this **energy waste is a result of inefficient design, inefficient HVAC systems as well as inefficient system controls.** Let's take a closer look at what factors can reduce energy consumption in your building.



1. Reducing Energy Consumption Through Design



This figure shows how natural lighting and ventilation reduce energy consumption in a space

If you're planning a new building project, the design of the structure itself can greatly impact the efficiency of the building. Factors such as orientation of the building, construction materials, insulation and window type can all help to reduce energy consumption. Depending on the location of the building and the climate in the region, you can take advantage of natural heating, natural lighting and natural ventilation through placement of windows and skylights. A properly sealed building envelop can also work to prevent efficiency losses by eliminating thermal bridges in the structure. 'Cool roofs' or 'green roofs' made of materials specifically designed to reflect sunlight can even keep the roof of a building as much as 50% cooler in the summer and reduce the amount of air conditioning required. Careful consideration of these factors can make heating and cooling your building more efficient and reduce operating costs.>

2. Reducing Energy Consumption Through Equipment

While factors such as structure design and materials can reduce the energy consumption in a building, effective and efficient equipment should be a primary factor when considering an HVAC system. Finding the right solution with the specs that can meet the needs of your new or existing building while minimizing energy consumption is not an easy task. But this step in the development process is where LG can really make an impact and make your job easier.

■ LG Multi V 5 VRF Solutions

VRF systems allow for precise control across a wide range of spaces

Efficient HVAC systems are, as discussed, paramount to the overall efficiency of a building. The LG Multi V 5 is the newest installation in LG's innovative VRF heat recovery systems with the latest in technological improvements to reduce energy consumption in your building. But how does the Multi V 5 reduce energy consumption and waste? First of all, VRF systems deliver refrigerant to indoor units without the need for duct work in a facility, which allows the outdoor units to supply refrigerant precisely to spaces only where cooling is required. One of the most impressive features of the Multi V 5 is Dual Sensing Control, which evaluates indoor and outdoor conditions including temperature and humidity to precisely determine parameters and further reduce energy wasted on unnecessary operation. These elements alone are doing their part to reduce waste in a building's HVAC system and curtail the overall energy wasted in a building, but LG HVAC solutions offer much more.

LG offers a diverse set of chillers for every installation environment

Large structures and facilities such as factories and commercial buildings can generate large amounts of heat and keeping these spaces cool requires a lot of energy. HVAC systems known as chillers are essentially massive air conditioners that generate chilled water in order to provide cooling and remove excess heat from buildings. Chillers come in wide variety of configurations and they are able to utilize methods such as evaporative cooling, geothermal applications or even ice energy storage to offer energy efficient alternatives to what many of us consider conventional HVAC systems.

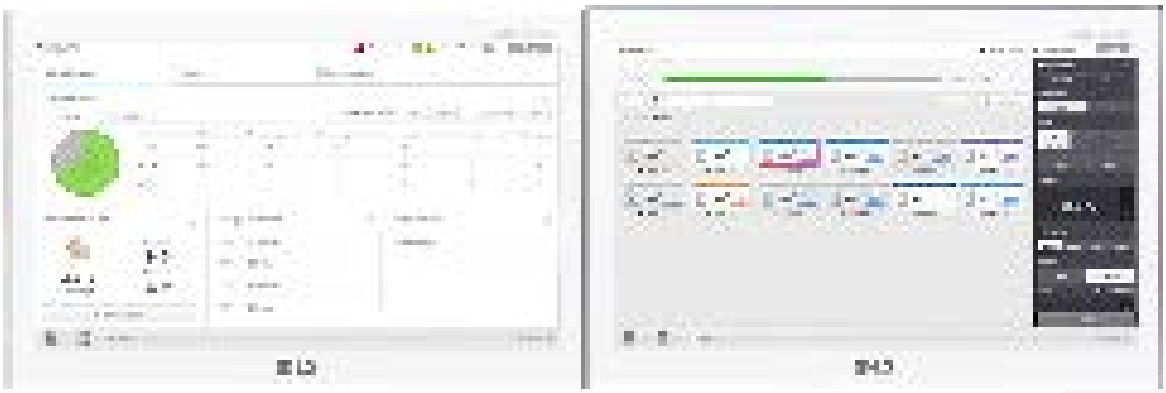
■ LG Chillers

As part of the LG total HVAC solution, LG Chillers add another level of energy efficiency in large-scale projects such as factories, power plants, district cooling and high rise buildings. LG offers a wide range of centrifugal, absorption, screw and scroll chillers that are also ideal for shopping malls, commercial buildings, hospitals or other large complexes. LG's range of chiller solutions is able to efficiently supply coolant throughout large-scale facilities 24 hours a day. The powerful centrifugal chillers provide some of the world's highest efficiency ratings. This diverse set of chillers provide efficient cooling and heating solutions for all types of large-scale building projects and can work seamlessly with Multi V 5 VRF systems.

3. Reducing Energy Consumption Through Control

Innovative designs and equipment play a valuable role in improving the efficiency of an HVAC system, but effective energy management used in conjunction with an efficient VRF system makes all the difference in isolating and preventing energy waste. Energy consumption in buildings makes up about 40% of global energy usage and a large percentage of this energy is wasted through ineffective energy management. Finding just the right control solution for your HVAC system can be a challenge, but LG has you covered here as well!

■ LG AC Smart 5



LG AC Smart 5 streamlines energy management for optimal efficiency

The intuitive AC Smart 5 control interface provides you full control of HVAC system energy management by allowing you to customize operations across facilities and floor plans from one or multiple locations and devices, and streamline operations. Comprehensive smart scheduling and analysis offered by AC Smart 5 also allow precise control of the Multi V system. With these advantages, a building manager can program the system to heat or cool spaces only when required and eliminate energy wasted in spaces that are unused or that require diverse operation loads throughout an entire building. Integration of LG's AC Smart 5 completes the total HVAC

solution for an efficient building or facility.

Even though the demand for heating and cooling is growing, LG HVAC solutions are reducing energy consumption and energy waste in buildings around the world. There are many options to consider when developing a building and while initial design and installation investments may seem high, those initial costs can be recouped in the long run with efficient designs, equipment and system controls for your HVAC solution. Consider the amount of energy your building might consume and imagine how LG VRF, chiller and control solutions can reduce energy consumption in your building as well!

Source

https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings

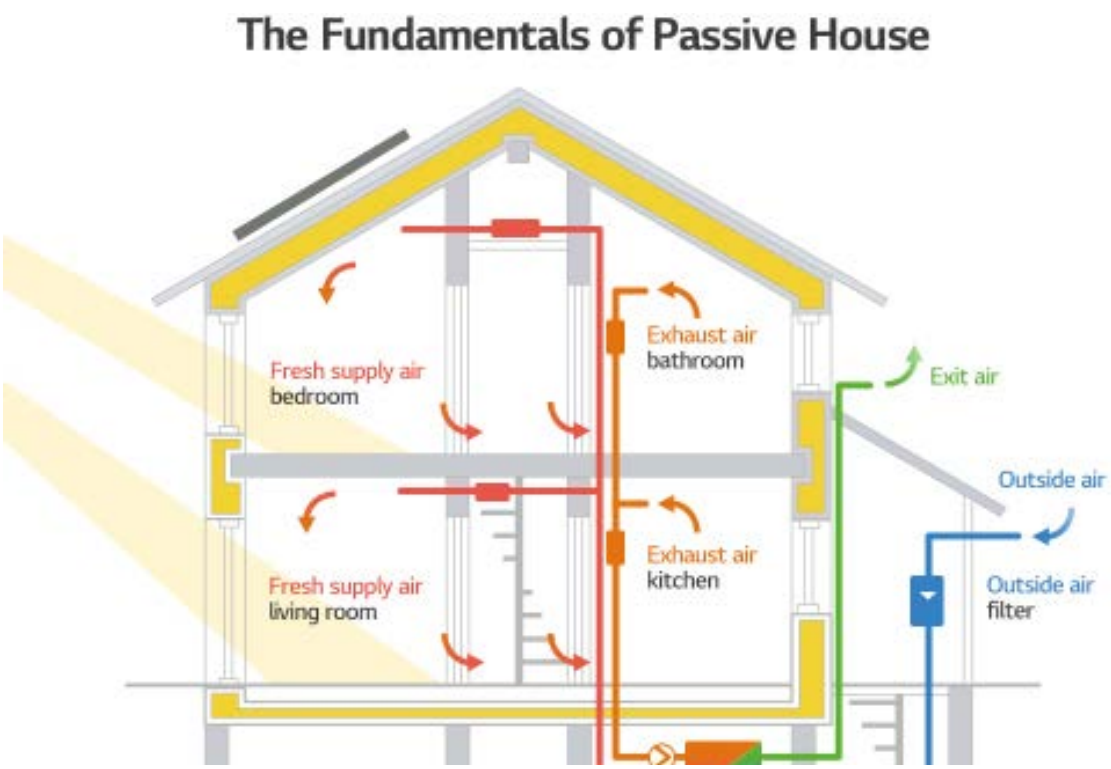
June 4, 2018

Passive House is Creating a new Standard for Efficiency

The first Passive House structure built in Darmstadt, Germany, in the 1990s

* Source : Wikimedia Commons

As we have continued to find sustainable solutions for living around the globe, an idea known as Passive House has been growing over the past few decades that could really make a difference in the long run. Passive House is a concept of constructing buildings that are 'hyper-efficient' and provide efficiency, affordability, comfort while delivering exceptional air quality without compromising design or aesthetic. The initial goal of the concept was to heat and cool buildings naturally or 'passively' and energy efficiency developed as a by-product of the efforts to develop low-energy housing. Let's look deeper into what makes Passive House design so desirable for modern buildings.



■ What is Passive House?

A Passive House is a building that is extremely well insulated and energy efficient. Demand for cooling in the summer heat is managed through ventilation and shading along with building and window orientation. In the winter, heat is derived from the sun and from cooking and appliances in the building as well as from the building's occupant themselves. Passive Houses are able to provide up to 90% in energy savings over traditional buildings and more than 75% over the average new building. High energy savings is even represented in buildings that require 'active' cooling. Due to the great degree of variance in climates around the world, Passive House standards also vary depending on location. As we'll discuss later, comfort is also an integral factor in Passive House as well.

The early origins of Passive House are closely related to the elements of passive cooling and heating in ancient cultures such as the natural cooling and heating provided by the traditional Korean Hanok

■ The Origins of Passive House

The concept of Passive House was devised and tested in the 1980-90s by Bo Adamson and Wolfgang Feist in Germany. The Passive House Institute (Passivhaus-Insitut – http://passive-house.com/index.html) was soon founded in Darmstadt, Germany, with the goal to establish and promote Passive House standards. The first 'passive houses' can be found across the world in ancient structures built in cultures such as Iran, Portugal and Korea. Bo Adamson was the first to classify these structures from ancient cultures as 'passive' and sought to apply this sensibility and comfort to modern architecture.

■ The Modern Passive House

ABC No Rio, New York – Passive House Office
Architect: Paul A. Castrucci Architects

Hollis Montessori School, New Hampshire – Passive House School
Architect: Windy Hill Associates – Copyright: Eric Roth

Passive House Retreat, New England – Passive House Residence
Architect: ZeroEnergy Design – Copyright: Greg Premru

* Mechanical Design & Passive House Consulting for all above projects by ZeroEnergy Design

■ What's in it for You?

Less Energy Consumption / Sustainability

A minimal amount of active heating and cooling is required as a result of the extensive building envelop and the elimination of a thermal bridge. In addition, thermal loss can further be reduced and building efficiency improved with an efficient heat recovery system.

Improved Indoor Air Quality

Passive House buildings continually provide fresh air throughout the structure and eliminate pollutants and odors.

Comfort

A comfort of occupants is an essential criteria in Passive House, standards keeps a building free from draughts as well as excessive over-heating or cooling while delivering clean air consistently throughout the building.

Flexibility/Versatility

The Passive House standard allows full freedom in design for designers and architects, and it's being implemented more and more in structures such as office buildings, schools factories and hotels.

Affordability

While higher quality standards for materials and components make the initial investment in Passive House designs higher, savings outweigh investments through hyper-efficiency and the reduction of overall energy consumption.

As a global leader in air solutions, we at LG take special interest in energy efficient technologies that are making our world more effective, sustainable and comfortable. The Passive House standard is changing the way people approach architecture and brings us back in touch with the sensibility of our ancestors while providing comfortable and environmentally friendly solutions for buildings. We hope to see Passive House and LG solutions continue to have a positive impact on energy, comfort and the earth.

July 6, 2018

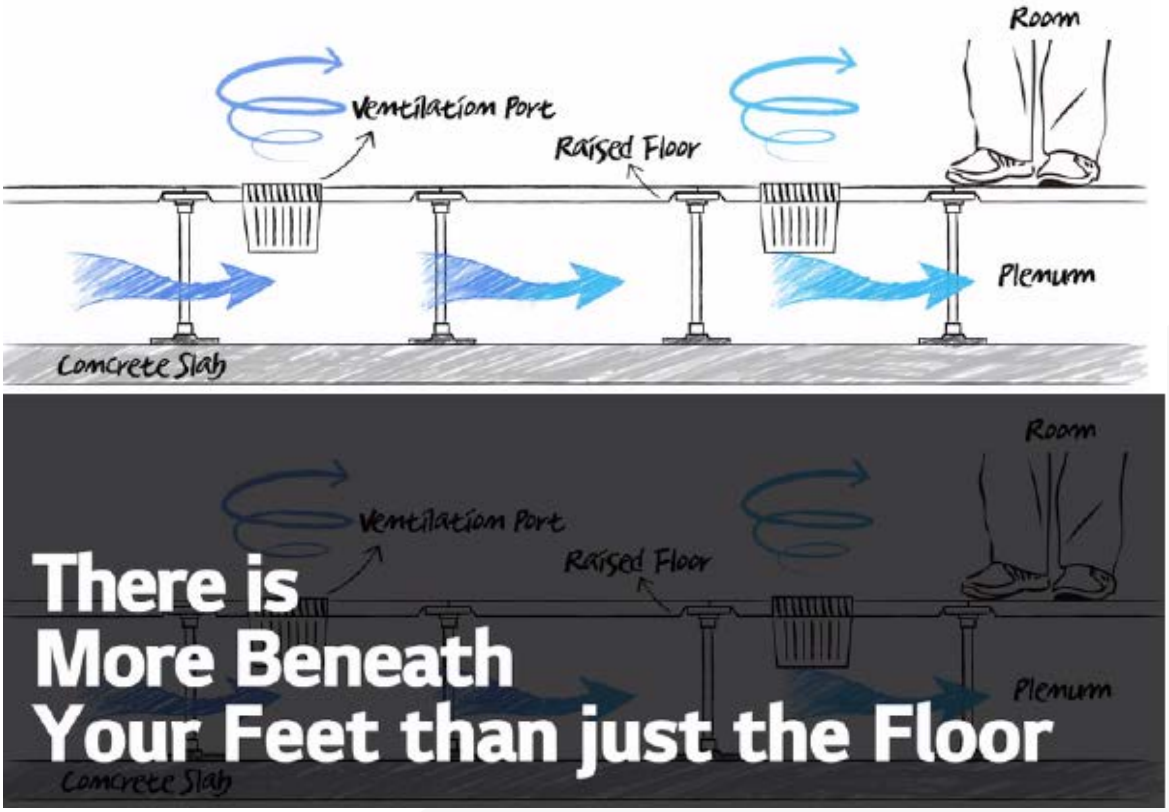
There is More Beneath Your Feet than just the Floor : Underfloor Air Distribution

While you're walking through your office, what do you imagine is beneath your feet? Carpet? Tile? Concrete? Electrical or network cables? What about air? The world of HVAC technology and innovation is rapidly changing. While new trends are initiating changes to long-standing methods of heating and cooling, a not-so-new trend is offering significant benefits to building administrators and building occupants. UFAD (Underfloor Air Distribution) is a system of air distribution in a building that channels air through an plenum under the floor used for heating and cooling. This system is making its mark on the HVAC industry as an alternative method of heating and cooling a building that offers some interesting benefits beyond efficiency including occupant comfort.

Since the middle of the 20th century, UFAD has been used in server rooms and data centers

■ UFAD Basics

UFAD technology was developed in the 1950s specifically for environments with high heat loads such as computer rooms and control centers. Although UFAD has been used predominantly in computer server rooms and data centers to this day. However, applications of UFAD have been making their way into commercial architecture and providing more efficient, flexible and comfortable environments



UFAD systems distribute air through a plenum and into the room through ports in the floor

Essentially, the conceptual differences between UFAD and conventional overhead HVAC systems are simple. In a UFAD system, a raised space known as a plenum is built in beneath the floor on each story of a building to facilitate air distribution throughout the building. The raised floor is typically constructed of lay-in floor panels that can be reconfigured to suit a wide range of floor plan layouts. Air distribution vents are fit into the floor panels and can be strategically placed throughout occupied spaces in the building. Once the air is distributed into a room, it becomes warmer and rises to be extracted through vents in the ceiling. The basic structure sounds simple enough, but UFAD offers interesting advantages to building owners, architects and building occupants.

“

One of the more exciting benefits that **UFAD affords** building owners and administrators is **improved energy efficiency**

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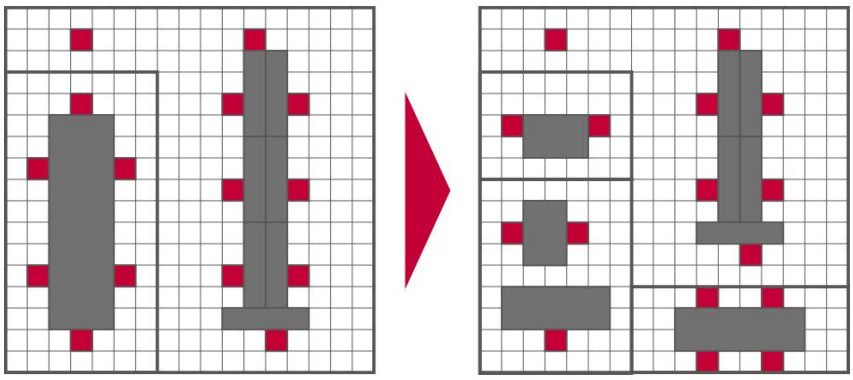
■ Who Benefits from Underfloor Air Distribution?

Building Owners

One of the more exciting benefits that UFAD affords building owners and administrators is improved energy efficiency. The systems require less airflow volume, lower fan power and a lower air supply temperature than a traditional system in order to cool the same space. This more efficient air distribution is able to help building owners bring their facilities one step closer to meeting LEED (Leadership in Energy and Environmental Design) certification standards.

UFAD systems also eliminate the need for duct work that would be fitted into overhead HVAC systems and, thus, reduce the amount of materials required for construction. This not only reduces initial installation costs but also greatly reduces construction time. Standard modular components further reduces construction costs while making construction and maintenance easier. The need for fan coil plumbing systems is also eliminated for more cost effective maintenance.

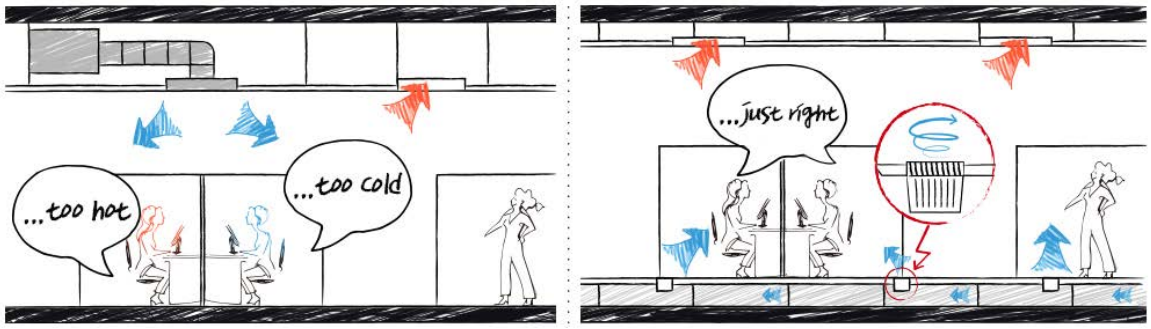
Another particularly intriguing benefit of UFAD is that it can add value to a building or facility. The added comfort and flexibility provided by UFAD systems, which we will discuss shortly, not only improve the overall appraisal value of a property, but the integrated modular systems increase the lifespan of a building as they can be easily expanded or replaced. The diminished need for additional equipment such as fan coil systems creates more space on each floor and in higher buildings can even allow for additional floors in the same footprint.



UFAD makes diverse floor plan layout configurations possible

Architects / Designers

Flexibility in design is a godsend to an architect or designer. The easy to install modular components and standardized specs of UFAD systems bring a welcomed freedom in structural and aesthetic design when compared to conventional HAVC systems. The minimal ceiling installation also makes the overall installation and construction process quicker and easier. Designers also appreciate the ability to modify designs and configurations even after installation is complete.



With UFAD systems, occupants have the ability to adjust the air supply to their individual space and air is extracted from the room through vents in the ceiling

Occupants

The comfort level of occupants in a building speaks volumes about the effectiveness of an HVAC system. With UFAD systems, airflow can be controlled at each air distribution vent so that individual users can adjust the supply of conditioned air in their own space. The air distribution method described earlier delivers more uniform temperatures throughout rooms in a building and better ventilation ensures cleaner air by removing dust and particles from the environment. Flexibility in floor plan layouts also allows users to make more efficient and desirable use of space. Easy access to system components can make the cleaning and ventilation maintenance process more convenient as well.

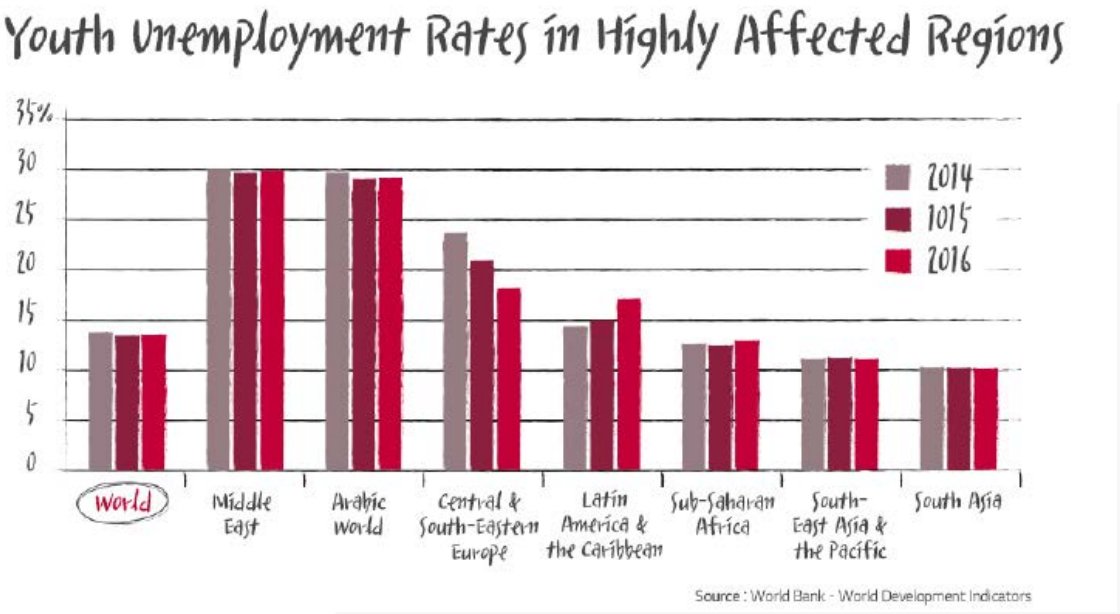
UFAD offers a new dynamic in heating and cooling that is prime for environments such as office buildings, hospitals and schools. The improved efficiency, increased property value, ease of installation and maintenance as well as optimized comfort makes you wonder why we don't see more of these systems in place today. But the next time you're walking through a building, believe it or not, you might be walking on air!

July 13, 2018

To Inspire a Generation: World Youth Skills Day

WORLD YOUTH SKILLS DAY

We're all familiar with the expression 'children are the future', but this idea becomes all more meaningful when the employment and education of our youth comes into play. Around the world, youth make up a significant portion of the total working age unemployment population. A main contributor to high rates of unemployed youth is the lack of valuable skill sets that match the skills demanded by employers. However, these trends can change when youth receive the training and education they need to succeed in the workforce. World Youth Skills Day was started in 2015 to bring awareness to the value in providing skills development to youth for their future and ours. LG would also like to recognize World Youth Skills Day 2018 on July 15 to highlight the importance of providing young people with guidance and training.



■ What is World Youth Skills Day?

World Youth Skills Day was designated by the United Nations General Assembly as July 15 in 2015 and the day is recognized to promote the importance of providing youth with skills development opportunities. Youth unemployment is common to all regions of the globe even with average attainment of education improving. Youth between the ages of 15 and 24 make up as much as 25% of the global working age population but represent about 40% of global unemployment despite over 70 million youth actively seeking work in 2017. The World Youth Skills Day initiative centers around the promotion of youth employment, entrepreneurship, equity and gender equality. The day highlights the importance of transitioning to sustainable economies and culture as well. The World Education Forum also established the Education 2030 Framework for Action as part of the Incheon Declaration adopted in Incheon, South Korea on May 15, 2015 to 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.' One of the primary goals of World Youth Skills Day and Education 2030 is to address economic, social and environmental demands by helping youth and adults alike to develop skills for work including self employment.

■ LG Education Initiative

At LG, we also hope to inspire our future generations of HVAC technicians, developers and experts. In particular, LG HVAC technicians are often the face of our company and are the feet on the ground that keep our LG Air Solution products and systems running smoothly and efficiently. As the HVAC industry continues to grow, there will be more opportunities for youth in the field. LG Air Conditioning Academies offers training accessible by youth to learn the skills required to become competent, effective and successful professionals in the HVAC field. HVAC technicians in particular play a major role in the continued development of the HVAC industry and we pride ourselves in making education and training attainable. HVAC provides jobs with stability, flexibility and room to grow!

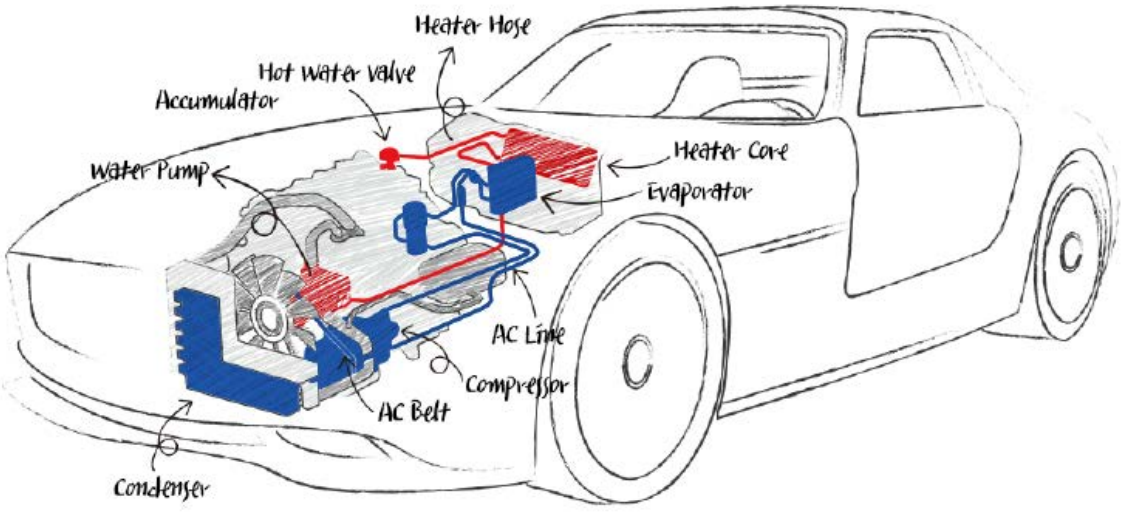
We're excited at the prospect of improving youth unemployment and providing positive prospects to up and coming youth. We welcome you to recognize World Youth Skills Day with us and youth around the world!

July 26, 2018

HVAC on the Move: Land, Air, Sea and Space

It's a hot summer day and you head out the door and rush down the street to catch the bus. Sweating and breathing heavily, you climb aboard the bus to be greeted with cool refreshing air inside. What's better than the cool relief provided by air conditioning in the sweltering heat? Heating and cooling in cars, planes, trains and buses make our commutes and travel much more convenient, but it's not necessarily an easy task and each mode of transportation presents unique challenges. Heating and air conditioning in transportation does more than keeping us comfortable while getting from point A to B, it also plays an important role under the sea and in outer space as well. Let's explore the technology that makes heating and cooling on the move possible.

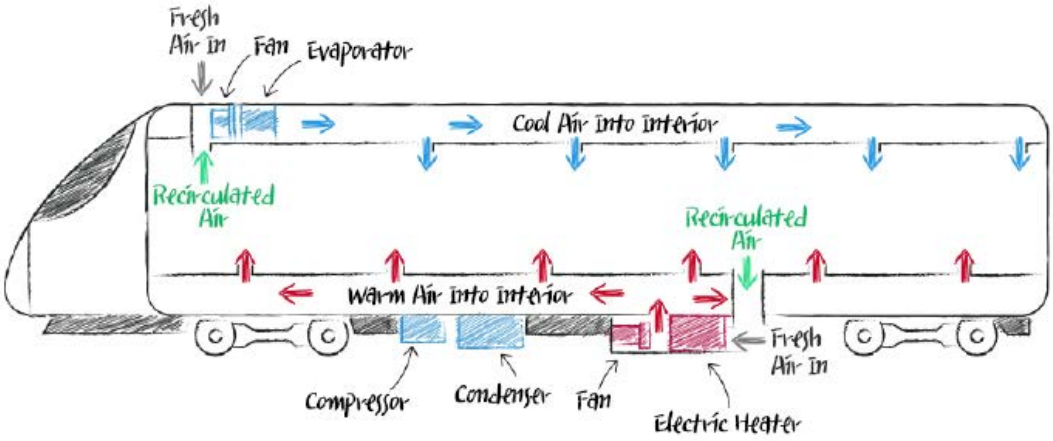
■ HVAC on the Road Again



The air conditioning systems in our cars are run by the cars' engines

Driving a car in the summer without air conditioning can make for a brutal journey, so keeping comfortable and safe on the road makes all the difference. Heating is also necessary while driving in the winter. The air conditioner compressor in a car is coupled with the crankshaft of the engine to drive the compressor in place of an electric motor. Automobile heaters are essentially radiators that pass hot fluid through the tube of a heat exchanger between the fluid and cabin air. Whether on the way to work or out for an afternoon drive, we can thank these systems for keeping us happy.

■ HVAC on Track – Trains

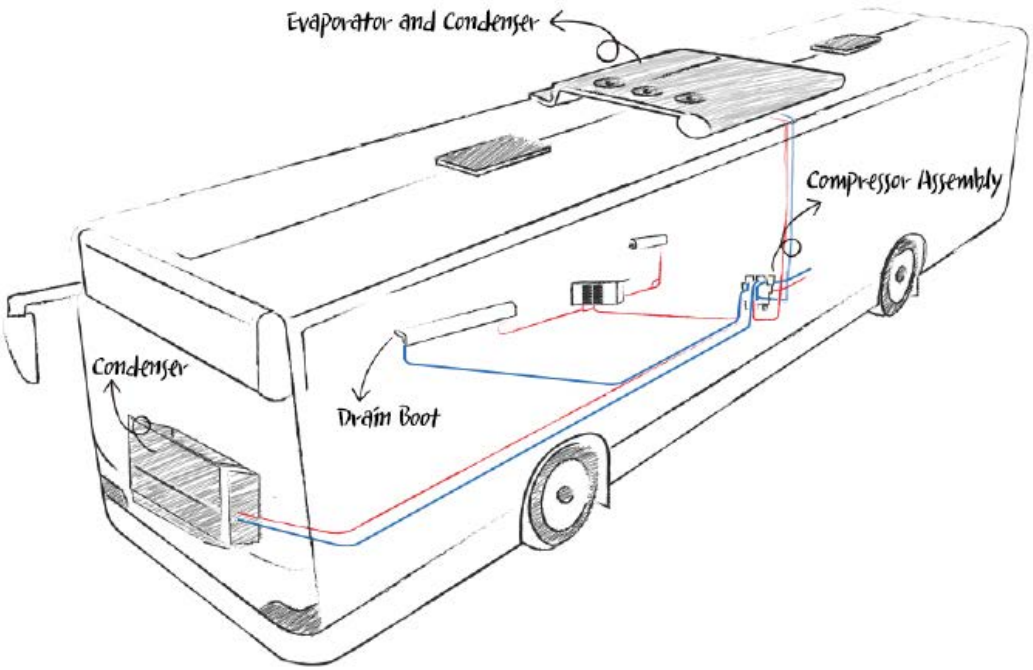


Train HVAC components

While train and subway HVAC systems are less standardized, they operate under similar basic principles and surely get the job done. HVAC systems in trains are often composed of multi unit inverter condenser and evaporator sections mounted on top of the train or beneath the floor in the undercarriage, although they can also be mounted on the side of the train as well. The systems can also be split so that cooling is distributed from the ceiling within the cabin and heat is distributed from the floor. HVAC systems must be particularly efficient at ventilation on subway cars not only to provide quality air to passengers but also for safety reasons in case of a fire or other emergencies.

Air conditioning can make all the difference on your daily commute

■ The HVAC on the Bus Goes Round and Round – Buses

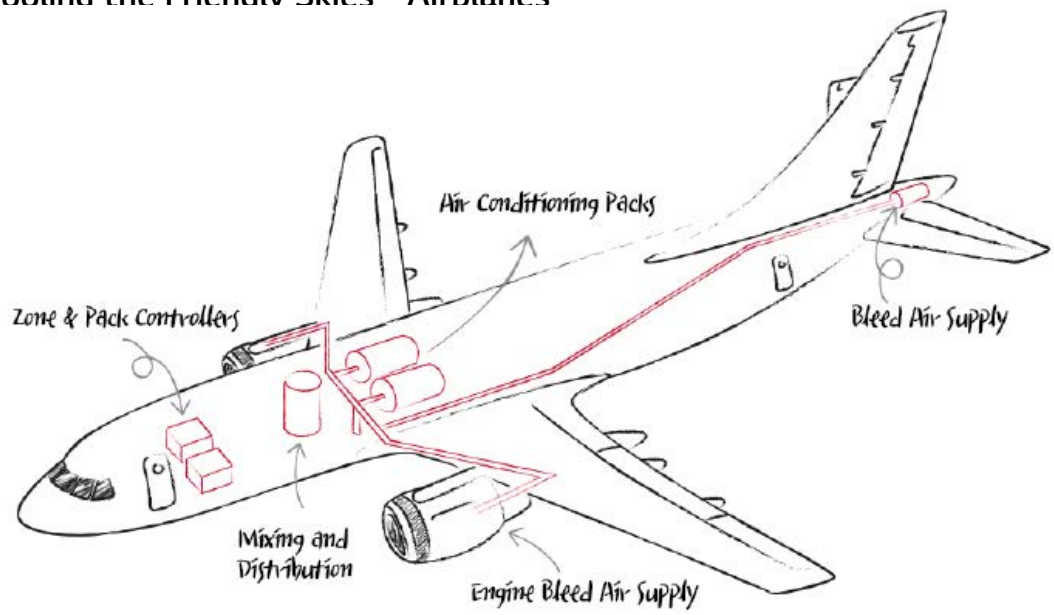


Basic bus HVAC diagram

Buses are an easy and convenient way to get around whether traveling long distances or just commuting around the city. Air conditioners on buses operate similar to those on trains, but there are additional conditions. HVAC units on buses are commonly housed on the top or rear of the bus with the compressor being run by the engine as in cars. In recent years, roof mounted units have grown in popularity due to their improved energy efficiency. Constant exposure to the elements and rough road conditions can take their toll on the compressor of a bus HVAC system, so protecting the compressor is crucial to the longevity of the HVAC system.

Cooling a crowded bus can be a life saver!

■ Cooling the Friendly Skies – Airplanes



Air conditioning packs system on an airplane

There seems to be a consistent supply of cool air on airplanes, but how do these HVAC systems keep us comfortable? Air conditioning in modern commercial aircraft are primarily operated through 2 types of ECS (Environmental Control System). Simpler ACM (Air Cycle Machine) systems are ideal for large turbine aircraft with a plentiful supply of bleed air, or air compressed by the turbine, to be used as a medium for cooling. Less expensive VCM (Vapor Cycle Machine) systems use special refrigerants for cooling and are better suited for aircraft with limited engine air bleed capacity. On large aircraft, the heating and cooling system components are all combined together in what is known as an air conditioning 'pack.' The pack will include components such as a flow control valve, a by-pass valve, controllers, a mixing unit and the ACM or VCM.

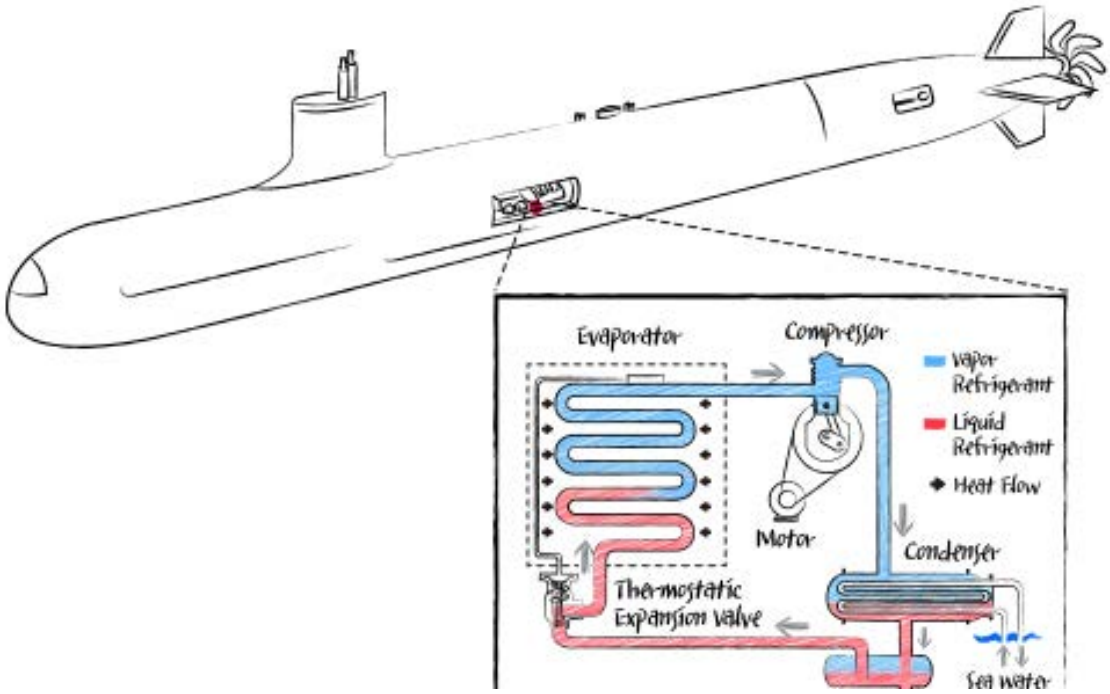
Vapor condensing from cool air entering the cabin of an airplane

■ An HVAC Odyssey – Spacecraft

The International Space Station has a unique system in place for heating and cooling

The HVAC systems above are all systems we have frequently experienced. But what about HVAC...in space? Space shuttles and stations like ISS also need climate control to keep their occupants comfortable and safe. To begin with, MLI (Multi Layer Insulation) plays a major role in thermal regulation on a spacecraft. MLI limits the level of heat transfer with the help of thin layers of reflective material. Compact fluid loop heat exchangers run with mechanical pumps are effective in controlling the thermal environment on spacecraft and have advantages such as flexible integration into other systems, stability, controllability and the capacity to handle high variations in temperature including extreme heat. Small electric heaters are also used throughout spacecraft to supply heat as well as strategically placed mirrors outside the spacecraft that direct sunlight into the ship through windows to distribute heat to the occupants.

■ The HVAC Aquatic – Submarines



The basic working of a submarine HVAC system

Let's also take a journey under the sea to have a look at how cooling is managed in submarines. There is only a small amount of space for occupancy in a submarine, but within the inner hull, heat is constantly being produced by elements such as engines, storage batteries, stoves, electric lights and even people. With this heat, moisture is also continuously being produced. Only a few cubic feet of space is available for housing air conditioning equipment, but air conditioning is crucial not only for the comfort of the occupants but to control this level of moisture. The temperature at which the air becomes saturated with moisture is called the 'dew point' and this dew point must be managed to limit the amount of moisture on board the submarine. To achieve this, air from inside the submarine is drawn by fans into an evaporator that removes moisture from the air and that water is drained away and stored in a tank away from the internal environment of the submarine. The drier, cooler air is returned to the interior of the submarine for a drier and cooler environment.

Limited space in a submarine leaves little room for an HVAC system

Air conditioning can be found in places we may have never even considered before. HVAC systems on our many forms of transportation have truly changed our daily experience. The next time you're making your commute, keep your cool. Just remember there are people taking advantage of similar HVAC technology deep beneath the sea or even out in space! Air conditioning can be found in places we may have never even considered before. HVAC systems on our many forms of transportation have truly changed our daily experience. The next time you're making your commute, keep your cool. Just remember there are people taking advantage of similar HVAC technology deep beneath the sea or even out in space!

August 8, 2018

Adventure King, A Man with a Mission DIY Air Conditioning

Have you ever imagined making your own air conditioner? What about making your own personal wearable air conditioning system? Would you even know where to start? We found an interesting YouTuber who set out to accomplish these 2 missions. Adventure King (Westar) is a Korean bike enthusiast and YouTuber that posts videos of his adventures while out on his bike along with some fun and compelling DIY projects done from home. To take on such projects takes dedication and we salute Adventure King's passion for air conditioning and devotion to his interests!

■ No AC at Home? Why not Make One?

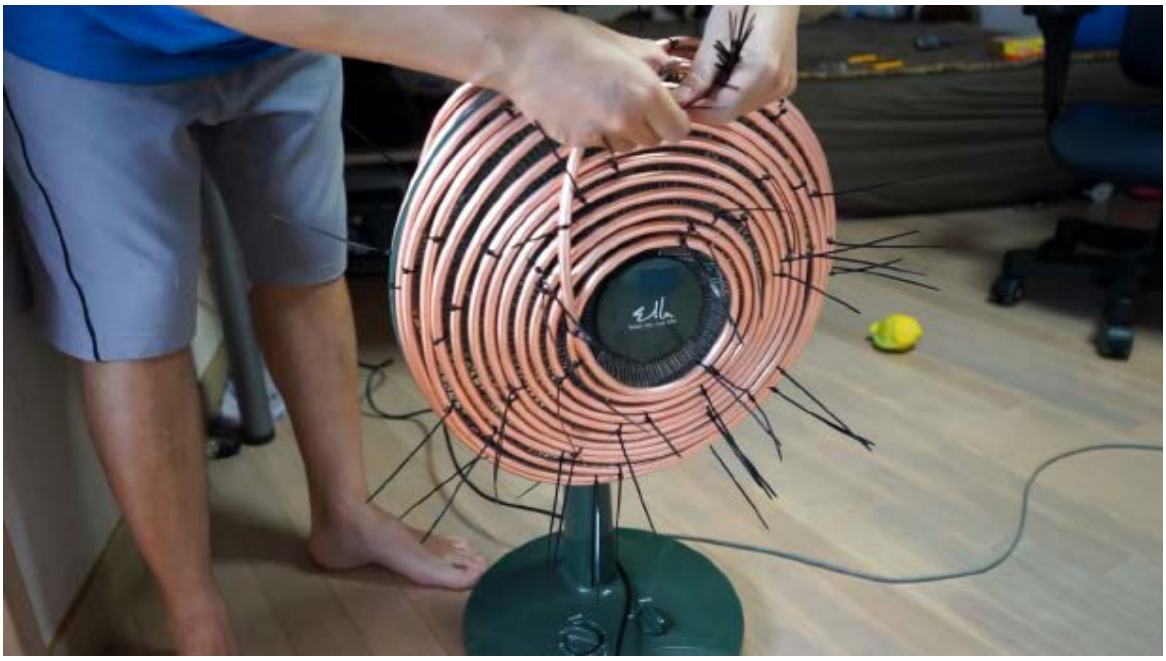
https://youtu.be/0w0Z8iw0LXI

Adventure King thinks his air conditioner is starting to look like a hedgehog

In this video, **Adventure King set out to test a homemade air conditioner to cool his apartment.** He had high ambitions with his creation and he'll have you interested from the start. He begins by providing a list of the items he implemented to create his DIY home air conditioner. The materials he uses and the method of cooling are simple, but he hits some roadblocks throughout his journey. Watch as he takes you through the air conditioner creation process and learns along the way.

Adventure King removes the lid from the cooler so he can make a new one for his project

He makes a groove in the new cooler lid so that it fits tightly on top

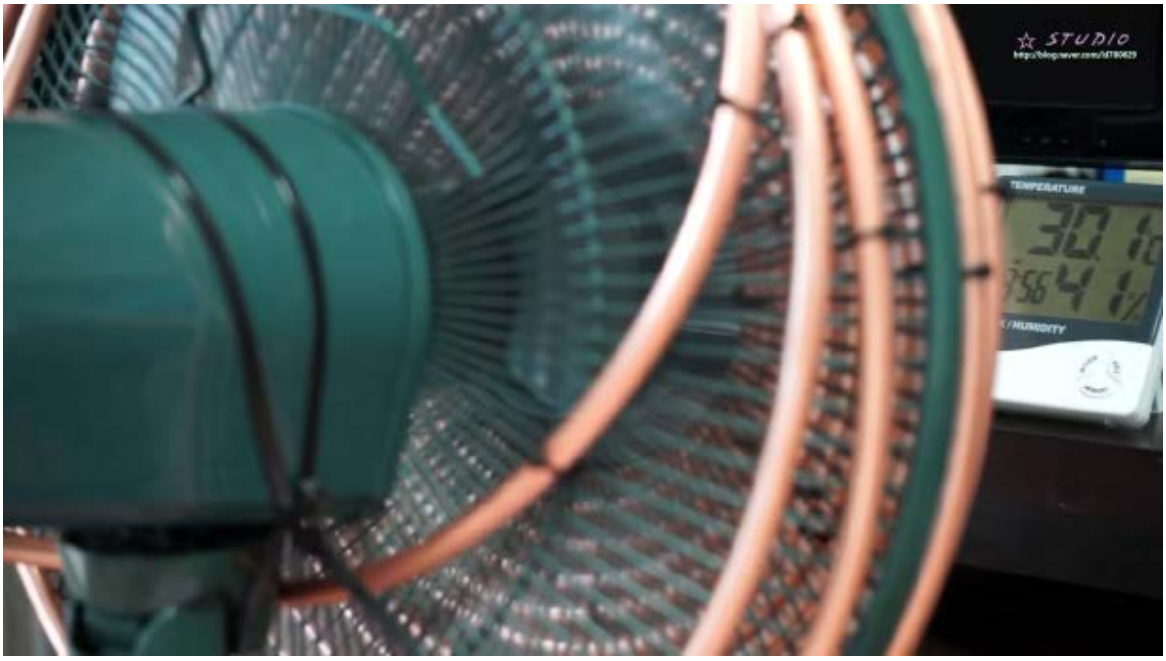


He makes sure the copper pipe is securely attached to the fan so it can work as a coil

■ The Process

Adventure King starts out by checking his materials to be sure they are all in working order. He needs to make a Styrofoam lid to fit on the top of the cooler with a hole in it for the hoses and cables. This turns out to be a challenge, but he has the skills to make a lid that fits just right. Next, he needs to attach the copper pipe to the frame of the fan. **The copper pipe will act as a coil through which water will run and the fan will distribute cool air** from around the coil. He then puts a hole in the Styrofoam and feeds the pump cables through it. After he cuts 2 sections of the hose, he feeds them through the hole in the Styrofoam lid as well. Once the

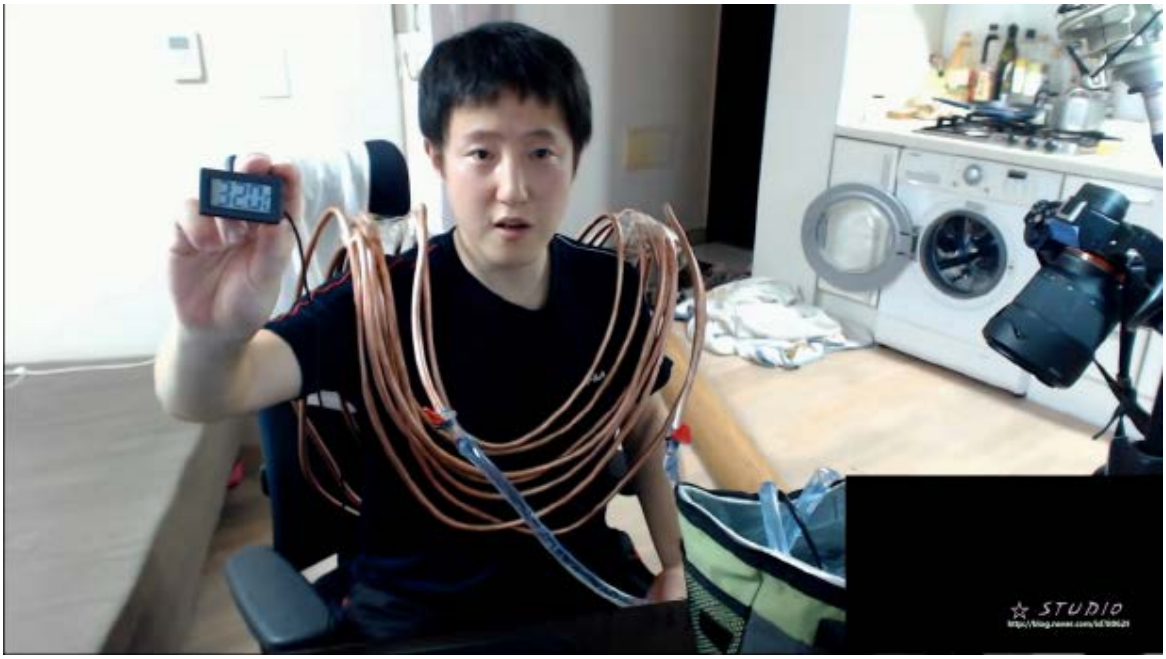
hoses have been fed through the lid, he fastens them to the copper coil with the pipe clamps using Teflon tape to seal them tightly. At this point, he simply fills the cooler with water and ice and turns on his DIY air conditioner. The process is simple, but if you watch the video, it was far from easy. This was an interesting experiment to say the least.



Finally, Adventure King gets to test out his creation

■ It's a Bird! It's a Plane! It's... an Air Conditioner?

https://youtu.be/8QSwmo_sP3s



Adventure King tests his invention

Envision walking down the street on a scorching hot day with your own personal air conditioner to keep you cool. Adventure King sought out to do just that in this video where **he ventures to create a wearable air conditioner with just a few simple components.** As you watch, you can see he's not sure where this project will take him, but he gets a few ideas throughout the creative process that help him complete the task at hand. Can you guess what steps he'll take next? He ends up with an interesting looking contraption in the end. What does it look like to you?

Adventure King struggles to bend the copper pipe into shape

The plastic hoses are attached to the copper pipe

The pump gets placed into the water and ice to feed the water to the copper pipe

■ The Process

To create his 'wearable air conditioner', Adventure King again checks his materials to be sure they're alright. Now, he's ready to start. He needs to shape the copper pipe so that he will be able to wear it on his body. While watching the video, you wonder what shape he is aiming to create. Once the copper pipe is in the desired shape, he then attaches sections cut from the hose to the copper pipe with pipe clamps and uses Teflon tape again to ensure a tight seal. He finds out the importance of sealing the connections the hard way. Next, he attaches the hose to the pump and fills the cooler with water and ice. He turns it on and in the moment of truth... it works! Would you walk to work wearing this personal air conditioner?

Now he's ready for a test run!

Adventure King shares our fervor for air conditioning and we hope you'll catch it too. You can find even more DIY air conditioning ideas on his YouTube channel and maybe you'll get an idea or two of your own.

August 22, 2018

How Energy Efficiency Can Help Sell Your Home

When putting a home on the market, sellers must consider what peaks the interest of buyers and making your home more attractive on the market is key to a faster sale. Obvious elements such as curb appeal, contemporary designs and colors all attract buyers, but there are also unseen factors that can make a difference. While recouping investment on certain installments such as a new HVAC system is not easy, energy efficient additions including HVAC systems can make or break a deal.

■ The Simple Things

When looking at a new house, buyers quickly notice the obvious features from the entryway and flooring to the kitchen and bathroom. Here are just a few things to consider.

Curb Appeal

The appearance of your house from the curb is what many people will remember about your house, so **it is important to catch a buyer's eye when they first arrive.** Try looking at your home from across the street to see where there is room for improvement. Accentuating positive features such as a well manicured lawn, and inviting entryway or winding walkway can capture the attention of a potential buyer. Spending time and money on extensive landscaping is not necessary but presenting a clean and tidy appearance is important in attracting people to the house.

The Kitchen

Small upgrades to your kitchen can go a long way. Adding color to the room with a stylish backsplash or installing new tile won't break the bank, but these additions will create a contemporary and comfortable appeal. Modern appliances can be added as old ones need replacing, but if you're not taking them with you, modern designs can help a move your property.

The Bathroom

The bathroom can be considered the workhorse of the house and a messy or uncomfortable design will turn people off. **New faucets and fixtures can transform a bathroom** and even lighting, especially around the mirror, can create an inviting space. The tile, bath and sink should also be clean and offer a sense of tranquility in what is one of the most important rooms in a home.

■ Efficiency Makes a Home

Buyers want energy efficient options without sacrificing comfort. Many efficiency-related upgrades to a home go unseen, but can be deal breakers for a buyer. **Energy efficient appliances that stay with the home will stand out to buyers** as an important economical factor when making such a large purchase. **Features such as windows with a high efficiency rating can also relieve a few headaches** and provide buyers with piece of mind. Properly insulated windows can reduce heating and cooling costs by as much as 12%.

Energy efficient windows save money and attract home buyers

When it comes to larger systems like HVAC in a house, buyers will look elsewhere or ask for a reduction in price if the system is outdated or out of commission. Heating and cooling make up over 40% of annual utility costs and providing new residents with **an economical HVAC system may be a huge factor in getting buyers interested in your property.** A durable and efficient HVAC system is less about adding value to your home and more about getting buyers interested in your home to begin with.

Installing a new air conditioner can be costly but efficient HVAC systems make all the difference

Selling a house can be a daunting endeavor, but with the right upgrades and attention to detail, you can have buyers falling in love with your property. With the push for green energy across all markets, the real estate market is no different. Energy efficient upgrades may be just what you need before putting your house on the market. Be sure to investigate the best ways to enhance your unique property.

September 14, 2018

5 Brazilian HVAC Stars Take LG by Storm

In August, some very special friends of ours took time out of their busy schedule to visit Korea and learn more about LG products and services. 5 popular HVAC social influencers came to see us all the way from Brazil. Last year, Luiz Fernando Gaivota came to Korea to learn more about our products and share insight into how the HVAC industry works in Korea with his followers. We were so happy to have met him that we invited him back along with 4 of his associates. Our Brazilian friends spent 5 days with us learning a lot about LG products and services while teaching us a thing or two as well. Let's meet this team from Brazil and see what they were up to during their trip to Korea.

https://youtu.be/xPcE5xPABX4

The HVAC social influencers from Brazil were with us for 5 days but the time sure flew by. Here are a few of the things they were up to while in Korea.

Arriving in style. Our friends from Brazil finally arrived in Korea after a long flight.
We were happy to see they were in good spirits.

Carlos and the team from Brazil stopped
by Whisen Park after the production line tour to see all the products LG has to offer.

They visited our headquarters to receive installation training with Korean installers.

The guys were sure to get lots of firsthand experience.

We welcomed our friends with a special dinner where they had the chance to share installation experiences with the Korean installers.

At our R&D center, the influencers were able to receive answers to technical questions and share ideas about how products could be improved based on their installation experiences in Brazil.

Even with a tight schedule we were able to see a few sights and relax as well.

The team took some time to check out various installation sites and learn about Korean installation methods.

We also gave them the chance to find out more about the many innovative LG products in the Magok Science Park showroom.

The team from Brazil visited our headquarters to share their activities as social influencers with LG employees. This was particularly interesting for our employees.

The team was able to learn a bit about the Multi V units during another visit to an installation reference site.

We got the chance to discuss what it takes to make effective social video content with the Brazilian influencers and learnt about what it takes to create successful HVAC content.

5 members are dedicated to changing the face of the Brazilian HVAC Industry with support from LG

At the end of the training and orientation session, we had a jersey swapping ceremony with the Brazilian influencers to commemorate their trip.

We appreciate Luiz, Job, Carlos, Rofran and Gela for taking the time out of the schedule to visit us and share their insights. This team of influencers is reshaping the HVAC market in Brazil and is a great example of the impact that passion and determination can have. The success of Luiz and his associates is an inspiration to us and we hope it inspires other HVAC specialists around the world. Hope to see you again soon, our Brazilian friends!

Check out how Luiz and his associates are influencing the HVAC market in Brazil!

LF Gaivota Climatização e Elétrica

Job Refrigeração

Carlos Djones

Rofran Ar Condicionado

Gela Rápido Dicas e Treinamentos

October 15, 2018

HVAC Keeps us Comfortable, but how is it Impacting Our Health?

For many of us, our HVAC systems provide us with much needed relief from the heat in the summer and a well-maintained system can even provide relief to some allergy sufferers by removing particles from the air. However, **air conditioners can also have a negative impact on our health, stemming from factors such as dryness and poor air quality due to insufficient circulation.** Air conditioner use is increasing worldwide, and the comfort and satisfaction we derive from our air conditioners is invaluable. Today, we'll look at a few negative side effects that can be brought on by air conditioning and how we can relieve some of these symptoms.

■ Dryness

Air conditioners remove moisture from the air during the cooling process, and this can affect us in several ways. Leaving the air conditioner on for long periods of time will **dry out the air in a space and cause discomfort or even something more serious.** One can avoid many of these symptoms by taking a short walk outside or opening windows intermittently to circulate the air.

Dry Eyes

Those that suffer from dry eye syndrome experience dryness, irritation, redness, and blurred vision and **these symptoms can be exacerbated by the dryness of the air caused by air conditioning.**

Dry and Itchy Skin

Sun exposure combined with prolonged exposure to **air conditioning can cause dryness and irritation in the skin** that may be temporary but can cause significant discomfort

Headaches

Dehydration and continued shivering due to cold temperatures can also cause **headaches and migraines. Headaches can be brought on by poor air quality associated with systems that are not maintained properly.**

Dehydration

The lack of moisture in the **air caused by air conditioning can promote dehydration,** which can also lead to headaches.

■ Air Quality

Some HVAC systems provide filtering that improves air quality but **an air conditioner that is not maintained and cleaned properly can have adverse effects on our health.** Maintaining a clean HVAC system with quality air filtration will provide quality air throughout any space. Effective air circulation is also important for maintaining a healthy environment.

Respiratory Conditions

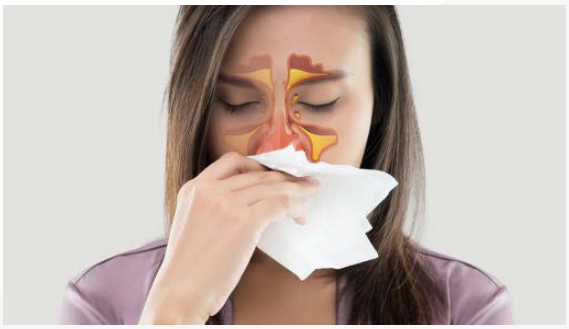
As air conditioning dries out air conditions, it can cause nasal blockage, dry throat, shortness of breath or even lung infections.

Allergies and Asthma

Air conditioners can provide relief for many allergy sufferers but **a poorly maintained system exposes us to unhealthy particles and microbes** while excessively cold conditions can cause complication for asthma sufferers.

Disease

Air conditioners can dry out our nasal passages and mucus membrane leaving us susceptible to viruses and bacterial infection.



■ Drowsiness

Fatigue

You may think that a cool environment helps keep you awake and improves energy levels but, in fact, **prolonged shivering in a cold environment can contribute to fatigue and a lack of concentration.** Maintaining comfortable temperatures for all occupants in a working environment will improve productivity and alleviate fatigue brought on air conditioning. Air conditioners that evenly match temperatures precisely across diverse spaces throughout a facility to avoid excessive cold should provide comfortable environments for any home, office, school, hospital or commercial setting.

The HVAC systems in our homes and offices ensure that we stay comfortable throughout the year, but these same systems can be causing us health risks that we never assumed to be air conditioner related. **While these side effects can be serious, most of them can be avoided by selecting and maintaining a clean and effective HVAC system.** Be sure not to become over-dependent on your air conditioner and always allow for proper ventilation so that the spaces you occupy are healthy and clean. Taking care to monitor how you use your air conditioner and how it affects your body can keep you comfortable, healthy and more productive!

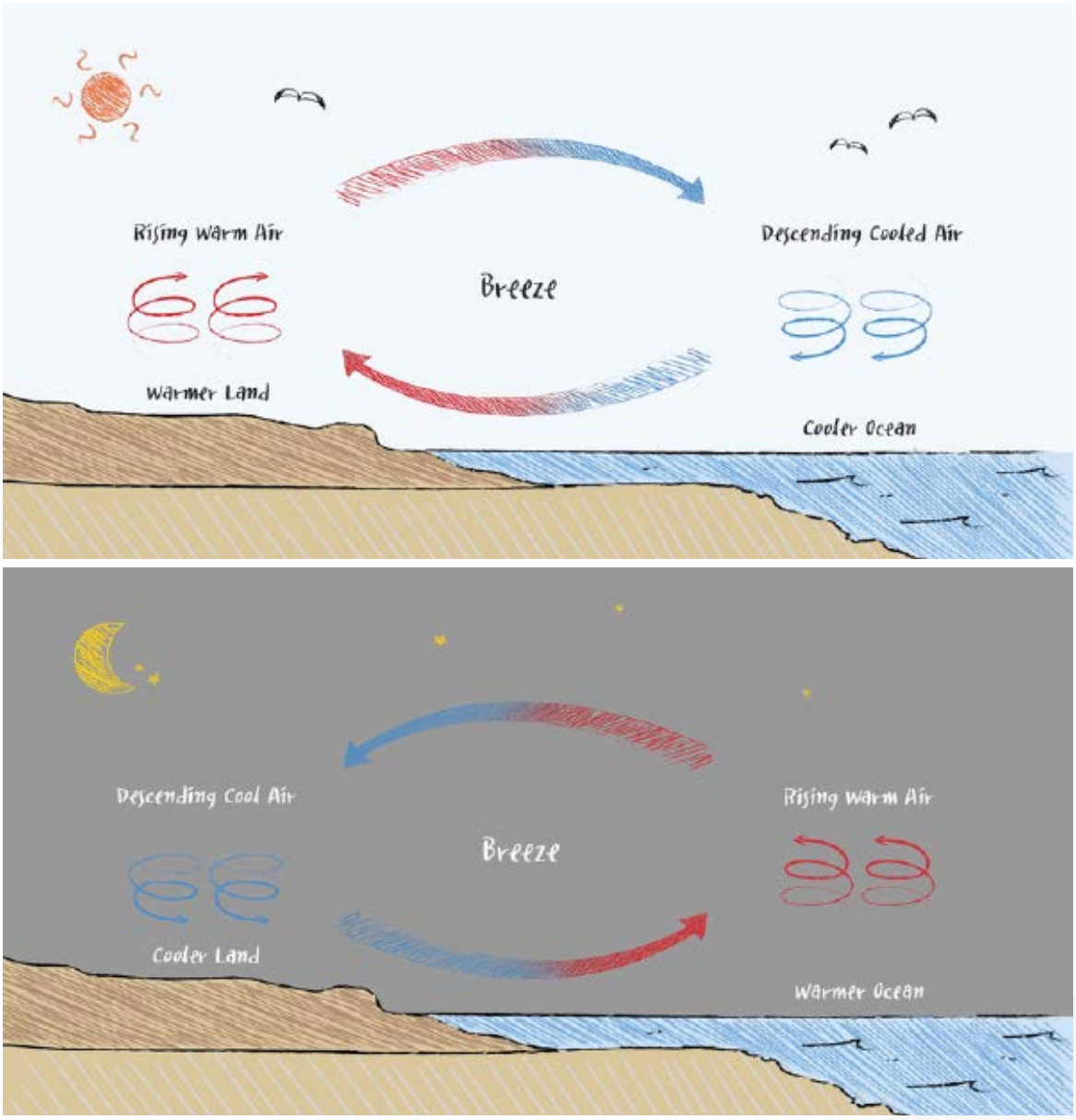
November 16, 2018

From Wuthering Heights to the Wind in the Willows: All About Wind with LG Air Solution

At LG Air Solution, we're all about wind! Wind is our specialty and we dedicate our time to providing the most powerful and effective wind control systems in the world. Wind in nature is our inspiration, but where does natural wind come from and where does it blow the hardest? **Wind is caused by differences in atmospheric pressure and these differences are responsible for everything from gentle breezes to the powerful forces that create hurricanes and tornados.** Join us as we delve into the world of wind and find out how wind is created and where to find the windiest places on Earth.

■ Blowin' in the Wind

To put it simply, wind is created when air is under pressure. **Air naturally moves from high pressure to low pressure conditions and the movement of the air is what we call wind. Imagine blow**ing air into a balloon and then releasing the valve of the balloon. The air in the balloon is under pressure and it naturally (and forcefully) moves through the hole in the balloon to the lower pressure conditions outside of the balloon. You can feel the wind created as the air leaves the valve in the balloon. This is the same principle through which wind is created in nature.

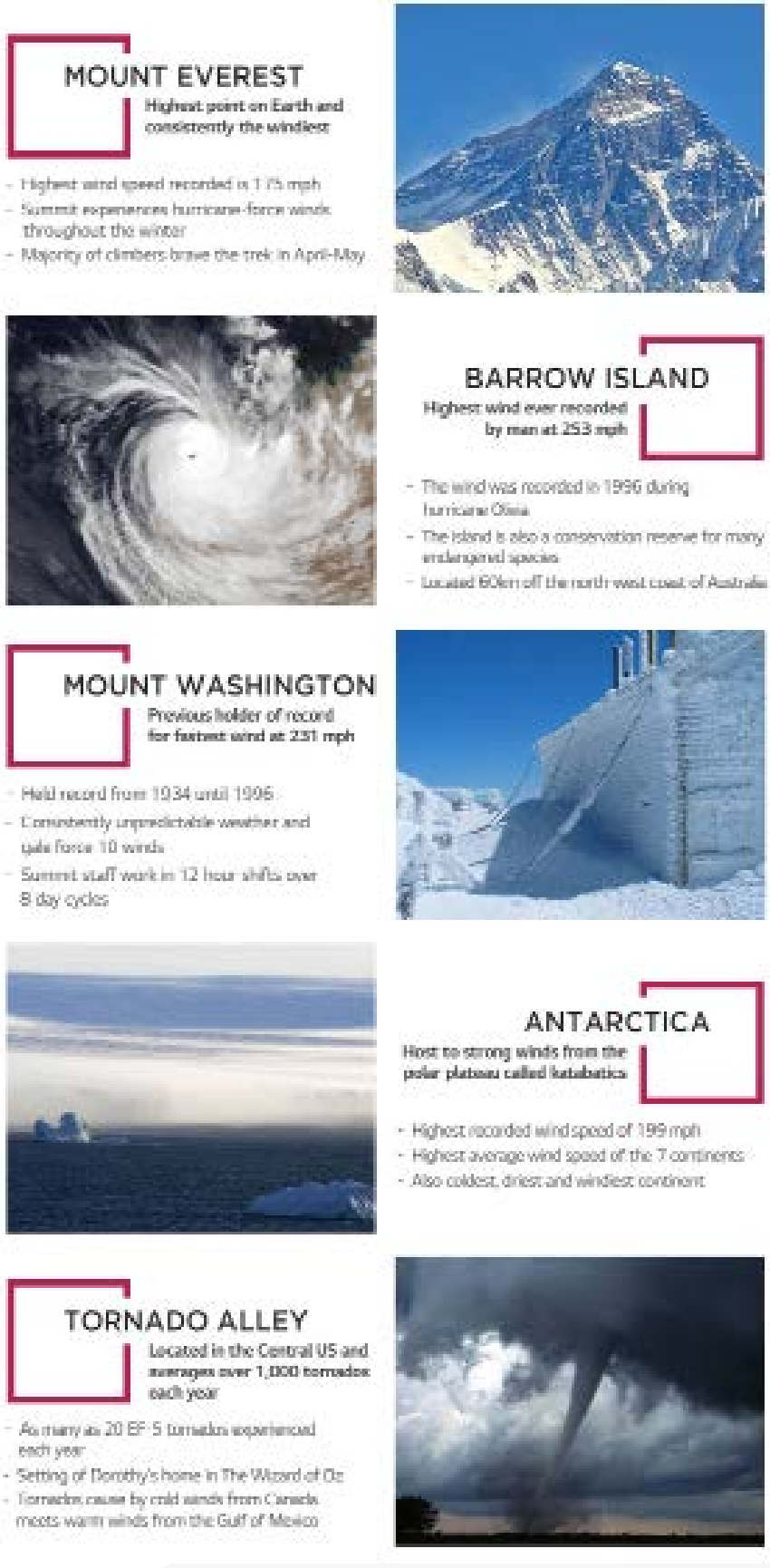


Atmospheric pressure is caused by temperature changes on the surface of the Earth

The differences in atmospheric pressure on the Earth are created by heat distributed from the sun across the planet. As the sun heats up certain parts of the Earth more than others, the air above the hotter places rises and air from the cooler places moves in to fill in its place. When you're at the beach, the sun heats the sand more than the water and the air above the sand rises while the air above the water moves over the sand and rises as well. This cycle continues and creates a refreshing breeze. On a larger scale, these gentle breezes can become serious forces to reckon with.

■ Windiest Places on Earth

Wind affects our lives and environments in many different ways, but there are some places on Earth where the effects of the wind are monumental. Let's look at 5 of the windiest places on the planet.



■ Wind and our World

Wind has a profound effect on our lives and is much more than just a refreshing breeze at the beach. However, the same pressure systems that cool us off while sunbathing are the same systems that produce the powerful and sometimes dangerous hurricanes, tornados and gale force winds around the world. That said, humans have also been harnessing the power of the wind for thousands of years. Mesopotamians are thought to have used the sailboat for travel and trade on the Tigris and Euphrates rivers as far back as 5,000 years ago while the Chinese are documented to have utilized the windmill for grains mills and water pumps as early as 1200 A.D. Even the electric wind turbine was invented in the late 1800s. These mediums for **accessing the power of the wind have had profound impacts on the development of human civilization and the technology** is still being implemented around the world today. The wind is responsible for shaping much of our geography and our environment, but it is also one of our greatest resources.

Wind has been moving us forward for thousands of years

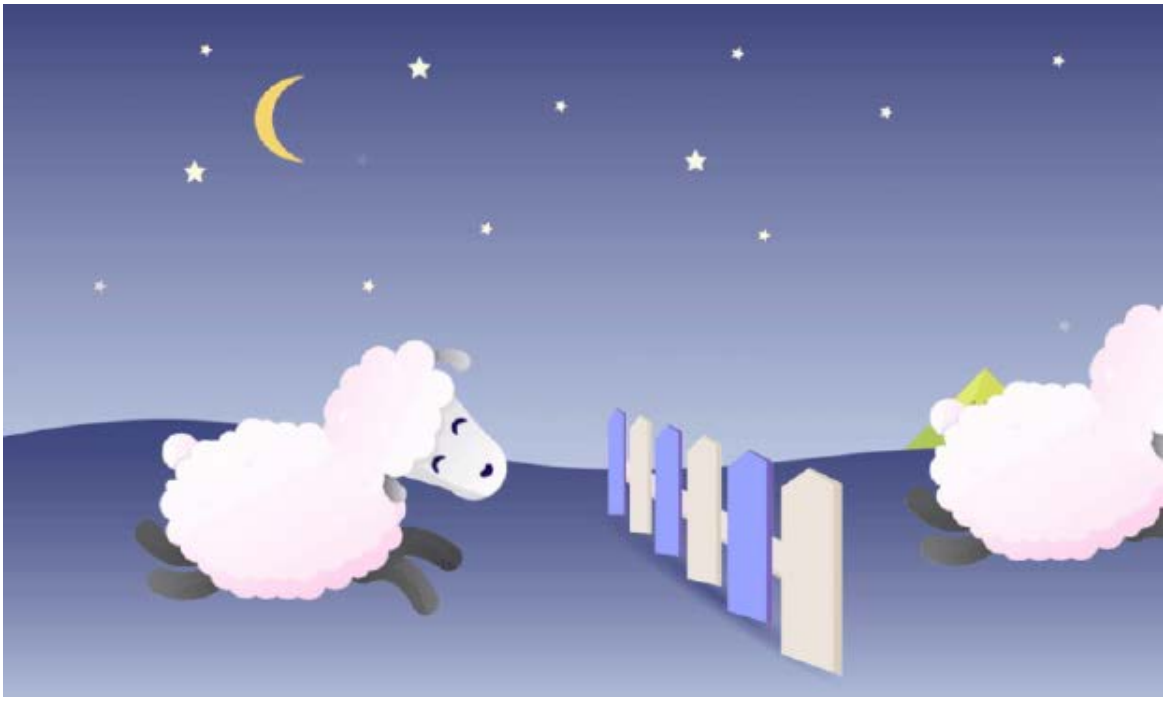
Look for Yourself

This link provides a map that lets you see wind activity around the world in real time.
https://earth.nullschool.net/

As wind specialists, LG Air Solution takes inspiration from the wind in nature. While we may not be creating gale force winds, our HVAC solutions are providing powerful airflow to customers around the world. How windy is it in your neck of the woods?

November 27, 2018

Stay Cool in the Arms of Sleep
The Ideal Sleeping Temperature



Sleep is one of the most important factors that impacts our health and well-being. It is attributed to having significant effects on everything from concentration and productivity to mental health and immunity. There's no denying the value of a good night sleep, but **there is an essential element you may not be considering that could help you get much needed sleep.** The temperature in your bedroom can greatly affect how easily you get to sleep, how much sleep you get and the quality of your sleep.

Cooler sleeping temperatures can help you get better quality sleep and much more!

■ The Best Environment for Sleep

Rooms that are hot, cold or draughty can have a negative impact on our sleep. Studies have shown that **there is an ideal temperature range that helps us get the best night sleep.** A cool 16-18°C (60-65°F) is found to be the ideal sleep temperature for most individuals. Our body temperature spikes slightly in the evening and then drops just before bedtime and hot environments can decrease the amount of REM sleep we can achieve, which is detrimental to the quality of our sleep. While temperatures over 24°C (71°F) can attribute to restlessness, temperatures below 12°C (53°F) can make getting to sleep difficult. Although the ideal temperature for each individual will vary, **you can count on getting more quality sleep with the thermostat set a bit cooler** at bedtime.

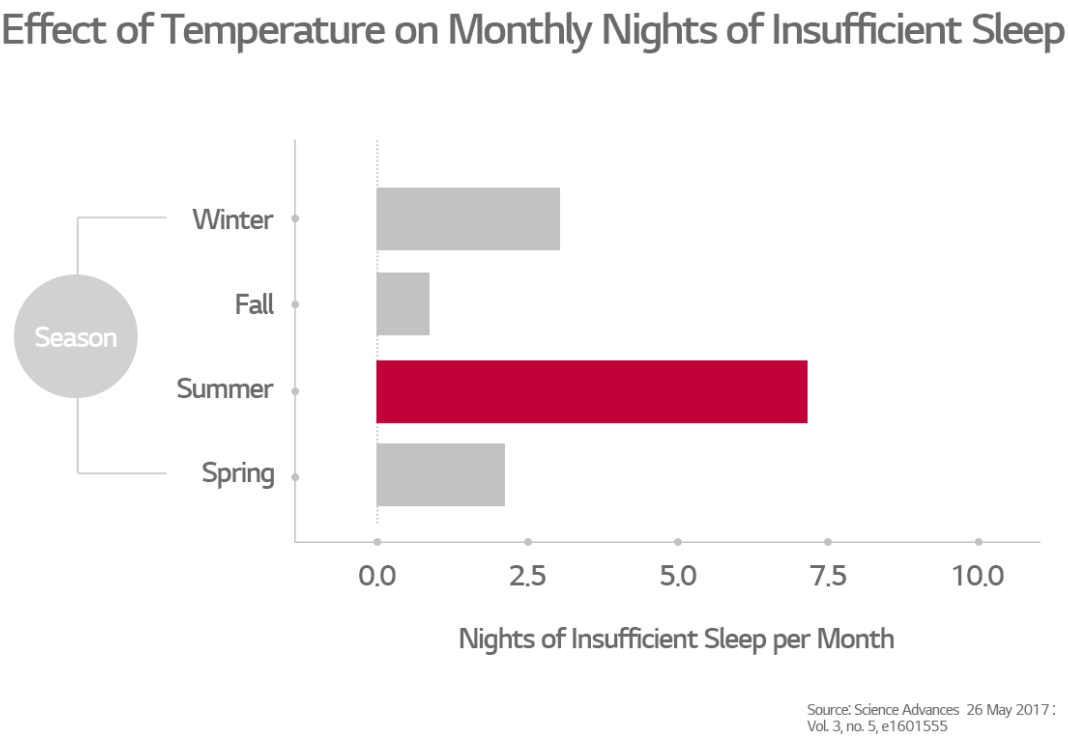
Cooler sleeping temperatures can help you get better quality sleep and much more!

Even though cooler temperatures can help us get better sleep each night, ideal sleep temperatures for babies and the elderly are slightly warmer. Since babies are more sensitive to their surroundings, the recommended temperature for sleeping babies and toddlers is between 19-22°C (66.2-72°F). Temperatures that are too cold or too hot can be particularly dangerous for babies. The elderly can also be particularly sensitive to the cold and temperature regulation for the elderly is especially important in the cold winter months. The approximate temperature recommended for seniors is 20°C (68°F). **Precise temperature monitoring and control** in each room of the house **is ideal for ensuring and comfortable and healthy night sleep for everyone.**

Cooler sleeping temperatures can help you get better quality sleep and much more!

■ Benefits from Sleeping in a Cool Environment

There are significant benefits attributed to sleeping in the recommended cool temperature zone. A cooler environment reinforces the body's natural sleep instinct as the body temperature drops during sleep and this will help you get to sleep faster. People that suffer from insomnia tend to have a slightly hotter core temperature than others and lower temperatures at bedtime can help signal to your body that it is time for sleep. Beyond getting a good night's sleep, there are also other benefits associated with sleeping in cooler temperatures. The cooler recommended sleep temperature stimulates the production of melatonin, which is an anti-aging hormone and also improves brain function. As the body cools naturally during sleep, it also burns fat. Cooler temperatures in a sleep environment can further this effect. Furthermore, increased insulin sensitivity in cooler temperatures during sleep can decrease risk for type 2 diabetes and can decrease the effects of Alzheimer's and brain aging. Overall, **as cool temperatures facilitate REM sleep, the body has a better opportunity to restore tissues and muscles and provide more healthy daytime function.**



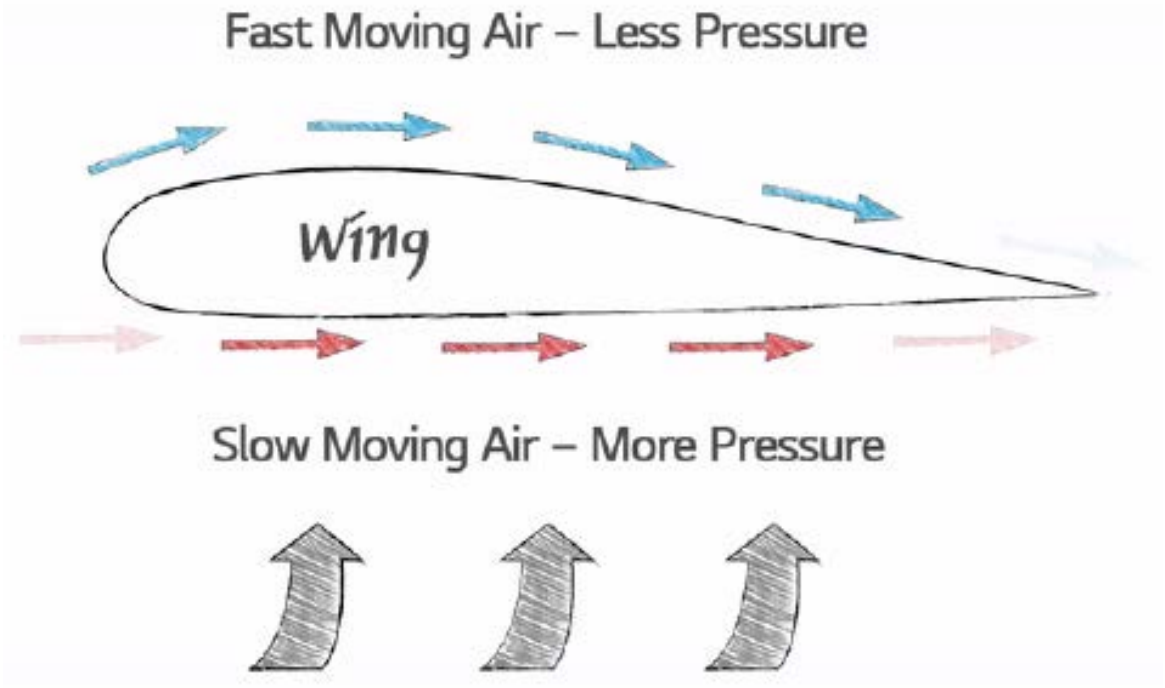
Warmer temperatures at bedtime can lead to a lack of quality sleep

Getting a good night's sleep not only helps you feel more rested but also allows other health benefits that can be further facilitated by sleeping in the recommended cool 16-18°C (60-65°F) temperature range. Taking advantage of **this knowledge can help you get the most out of your nights and days** with deeper and healthier sleep. Try it out for yourself and get a great night's sleep!

December 17, 2018

HVAC in the Wind Tunnel Technology

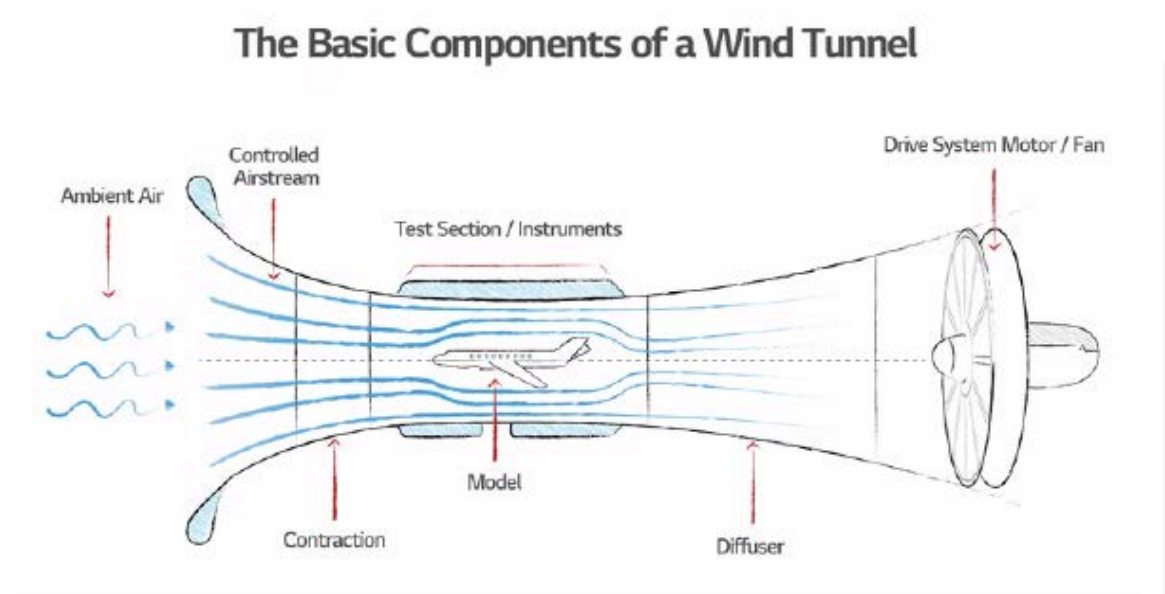
When designing an airplane, there are many factors to consider in order to create a safe and efficient machine and one of the most important factors to evaluate in the design process is aerodynamics. But how can we test the aerodynamics of the plane without putting the plane in the air? This is where facilities known as wind tunnels come into play. In actuality, **wind tunnels are utilized to assess the aerodynamics and efficiency of everything from architecture and fans to cars and aircraft.** The fans in HVAC solutions provided by LG are also tested in special facilities to ensure that their unique characteristics are supplying the most efficient and effective airflow possible. Let's take a look at the **wind tunnel technology that makes our planes faster, our buildings safer and LG HVAC systems more efficient.**



The basic principles of aerodynamics on the wing of a plane

■ Aerodynamics

To better understand wind tunnels and their purpose, we should first discuss aerodynamics. **Aerodynamics is the study of the way gases (the air) interact with moving solid objects.** The word itself comes from two Greek words: aerios, concerning the air, and dynamis, which means force. Humans have been interested in aerodynamics for thousands of years as we can see from well known ancient stories such as Icarus by Diodoris. **The principles of aerodynamics can essentially be described through 4 basic forces: lift, drag, thrust and weight.** Aerodynamics is easily observed through the air flowing over the wing of a plane. As a plane moves through the air, it creates low pressure above the wings and causes the wings to be lifted or 'sucked' up by the pressure difference above and below the wing. This phenomenon is what makes flight possible.



■ Wind Tunnel Fundamentals

To put it simply, **wind tunnels are tube shaped facilities that allow designers and engineers to test how air passes over an object.** They come in different configurations and sizes with the largest located at the NASA Ames Research Center in California. As illustrated in the figure above, there are 4 basic components to a wind tunnel. The 'contractor' works as an air funnel to streamline the air before it passes over the test subject. The 'test section' is where the test subject and instruments for measuring are located. The 'diffuser' does just as its name implies and diffuses the air stream as it exits the test section. Finally, the motor and fan components are what draw the air into the wind tunnel and maintain the airflow for testing. The fan pulls air into the tunnel and the air stream blows against the test object fixed within the test section after passing through the contractor. The air stream is then monitored and measured to determine effects of the object on the air stream. The data is then collected and analyzed so that the test object can be streamlined and the aerodynamics of the object can be optimized. In addition to aircraft and spacecraft, **aerodynamic studies in wind tunnels have been highly profitable for solving design problems** in fans, automobiles, boats, trains, bridges, and building structures.

https://youtu.be/XNhjaGR6pSs

Air tunnel technology was implemented in the development of the LG axial-flow fan

■ The Fans that Keep LG Products Blowing Strong

Wind tunnel tests are also performed to precisely measure the air movement of fans at a specific pressure. **LG implemented wind tunnel technology in their R&D fan chamber to develop the biomimicry axial-flow fans found in their HVAC products.** Humpback whales are able to glide smoothly through the water due to humps on their backs that reduce drag. Clams are also able to avoid drag and keep from being swept away by ocean currents thanks to the grooves on their shells. These biomimicry features were developed, tested and implemented by LG to the fans that power the airflow in LG HVAC products using air tunnel technology. Through these applications, LG axial-flow fans demonstrate a 10% increase in flow rate, a 20% increase in energy conservation and a 2dB reduction in sound emission.

COMMENT

Siyoung Oh
Senior Researcher,
LG Air Solution R&D Lab

"With wind tunnel technology, we were able to obtain reliable results from understanding air flow loss in the first stage of development and with this foundation, we developed ideas for biomimicry technology and proceeded with meticulous attention to detail."

■ Conclusion

Wind tunnel technology has an impact on many of the machines and objects we use everyday. And now you know, it even went into supplying cool air or heating to you as you read this now. Our cars, planes, bridges, buildings and **even HVAC systems all benefit from wind tunnels and so do we!**

December 20, 2018

Season's Greetings from LG Air Solution

With 2018 nearly behind us, we at LG Air Solution are proud of the accomplishments and success we've experienced over the past year. We've seen our products continue to make their way across the world and provide efficient and effective solutions to customers of all walks of life while documenting our challenges and accomplishments along the way through our blog. As we celebrate the closing of 2018 and the beginning of 2019, we would like to offer a special gift to our readers, wishing you the happiest of holidays and a Happy New Year!

https://youtu.be/EsZ2Qg-nlO4

https://youtu.be/aRW2nCUraG4

We've created unique pop-up book illustrations highlighting our products that will continue to make an impact on the RAC industry and provide our loyal customers with unparalleled quality solutions for many more years to come. Please enjoy our gift to you and we will continue to bring you exciting content on LG Air Solution products and the booming RAC industry in 2019. See you next year!

LG HVAC STORY

https://www.lghvacstory.com

LG Electronics

https://www.lg.com
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Products and solutions may vary according country and operating conditions.
Please contact your local LG office for further information.