

Case Study: Plastics Plant Receives DC Drive Upgrade



Quad Plus®



Custom DC drive that was no longer supported by the supplier was experiencing frequent failures.

Objective

- Upgrade obsolete DC drive.

Solutions

- Reviewed options between AC and DC technology; determined that remaining with DC technology would provide the best solution.
- Partnered with a major equipment supplier to utilize existing purchase options and reduce the need for custom engineering and builds.
- Utilized the design from a similar solution provided to the customer's sister plant to minimize complications and expense.
- Provided a modern control platform that uses the customer's existing interface.

Results/Benefits

- Existing system tie-ins (Ethernet, hardwired e-stop, UPS) are clearly marked and identifiable in the control cabinet.
- The customer was pleased that their existing main power connections could be utilized.
- The modern control platform allowed for the addition of DC drive alarms and signals to the plant DCS system.
- Using the existing control system with the ability to upgrade meant a reduced need for customer training.
- Because of the similar DC drive retrofit package provided to the sister site, a reduced spare part requirement was possible and delivered reliable operation from the application.

Background

A petroleum supermajor oil industry plastics plant customer was experiencing significant downtime due to a failing DC drive. The drive was a custom design that was no longer supported by the supplier, and replacement parts were increasingly difficult to source. Due to the custom design, no major equipment supplier had an off-the-shelf replacement drive with a matching footprint and main power busbar connections.

Quad Plus Solution

The customer was initially considering converting their drive and motor to AC technology. Making the switch would mean several hundred thousand dollars in new conduit and wiring runs through the existing processing area (and infrastructure modifications) as well as the potential for millions of dollars in opportunity cost with lost production from downtime.

After reviewing the options, we concluded that staying with DC drive technology was the better option in terms of cost. The customer's power network is very robust, and with the existing filtering, common power quality issues resulting from the use of DC drives were not issues for this installation. The DC drive operates almost continuously, but scheduled shutdowns allow for proper motor and drive maintenance without affecting the product or the process.

To complete the solution, our team partnered with a major equipment supplier to utilize existing commercial paths to save the customer's transaction-related costs. We were able to use the existing design to eliminate the expense of the engineering work typically associated with a custom design as a similar solution was already delivered to the petroleum supermajor's other site in the Houston area.

We also supplied the new drive with a modern Ethernet control connection to be available for the control system upgrade while at the same time providing the customer with discreet I/O to maintain the current DCS system interface.

We utilized the same type of modern drive that the customer's sister plant had upgraded to a few years before (another successful QP custom installation). This meant minimal training and spare part packages for the customer to get reliable operation from the application as the sister plant was already using a similar solution.