

UOP Drier Regeneration Control System (DRCS)

New Control System Solution

Introduction

The gas and liquid driers in a Butamer™ unit or Penex™ unit perform the important task of safeguarding the catalyst from water vapor in the makeup hydrogen and hydrocarbon feed. Water vapor permanently deactivates high activity chlorided alumina isomerization catalyst. Therefore, the driers must be regenerated properly and in a timely fashion.

Since more than 80 valves are typically involved in the operation and regeneration of the driers, it is important that a properly designed and tested logic system be used to automate the drier sequencing and regeneration. The UOP drier regeneration control system (DRCS) performs these key functions while minimizing operator involvement and therefore operations expense.

UOP Design Advantages

The key to the regeneration capability and reliability of the DRCS is UOP's expertise in the functional requirements of the Butamer and Penex processes. The DRCS design provides:

- A dedicated control system designed for automatic control
- Catalyst, adsorbent, and equipment safeguarding features
- Effective operation of driers to extend catalyst life
- Optimum regenerations requiring less utilities
- Tailoring for individual projects
- Continuing support

System Configuration

Employing the experience gained from designing and manufacturing more than 200 proprietary control systems, UOP designed the DRCS with an architecture containing a microprocessor-based programmable electronic system (PES). The DRCS monitors and controls the solenoid valves, pressures, temperatures, flows, and levels to achieve proper regeneration.

The DRCS also allows valves to be moved in automatic or manual modes for initial set-up and maintenance purposes. Automated regeneration shutdowns are included which allow the DRCS to respond appropriately to abnormal situations



FEATURES & BENEFITS

- A logic system conforming to UOP engineering specifications
- Opening and closing valves in the correct order during every drier regeneration
- Establishing and controlling correct flows and pressures
- Monitoring vessel filling
- Ramping temperatures and controlling flows to ensure complete regeneration of the adsorbent
- Dynamic help screens for minimizing troubleshooting

The improper operation of even one or two valves during drier operation and regeneration can lead to incorrect process flows or breakthrough of water to the reactors, which will permanently deactivate catalyst.

Customer Interface

The DRCS also provides the interface for two-way communication with the distributed control system (DCS). This allows operators to monitor and control the process from the DCS operator console(s). A local display is also included to allow operation of the DRCS from the cabinet location. It also provides the capability to obtain information for system diagnostics and for process and controller troubleshooting.

Project Services

UOP manufactures and provides full support for the DRCS, starting with the initial project orientation meeting and continuing after start-up. UOP works closely with the customer as the control system is fabricated to ensure that there is a full understanding of the control system design and associated documentation. UOP provides full technical support during installation (by others), commissioning supervision, and is a resource for the end-user after start up. The customer can be confident of continued long-term support of the DRCS by UOP should the need arise for parts or service.

Quality Assurance

All UOP control systems are built with the highest quality standards. After manufacturing, each system is given a complete series of logic inspections and operational tests. Each DRCS is completely configured and tested at our facilities. Before shipping, the customer's representatives are invited to perform a detailed physical and operational inspection of the DRCS. Afterward, they can receive in-depth, hands-on familiarization with the operation, troubleshooting, and maintenance of the actual equipment. The end result is an extensive checkout, assuring that when the DRCS is delivered and installed, it will function correctly upon power-up and be ready for a smooth, on time start-up.

For more information

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UOP4573-5a March 2019

