UOP
A Honeywell Company

UOP Lock Hopper Control System (LHCS) Retrofit

Equipment and Systems

Background

In 1985, UOP commercialized the Lock Hopper Control System (LHCS) to provide the highest quality CCR™ regenerator control system then available for a CCR Platforming™ unit. Since then, the LHCS has been installed in more than 120 locations worldwide with more than 2000 years of cumulative operating experience.

With the fast pace of technological advancement in recent years, the components in earlier systems are becoming obsolete. The UOP LHCS retrofit has been developed to offer the most current technology, to overcome the spare parts support issue, and to enhance process availability by reducing hardware downtime.

Design benefits

The UOP LHCS retrofit design employs the latest technology in critical control. The system captures the most beneficial enhancements from current CCR regenerator control system technology.

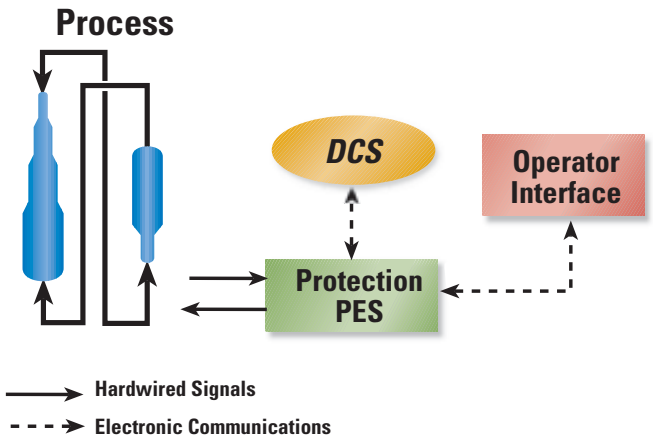
Features such as hot shutdown state, white burn inhibit mode, and regeneration burn zone temperature protection have been incorporated into the LHCS retrofit. These new features provide both operational benefits and enhanced troubleshooting tools.

At the heart of the system is a programmable electronic system (PES) specifically designed for protective applications. It uses a fault-tolerant architecture and incorporates a high level of diagnostics that result in a high degree of availability and reliability. A dedicated local display with the latest human-machine interface software is employed in the LHCS retrofit to provide process graphic, alarm, and timer set-up displays. It also provides online dynamic help screens and “first out” alarming that allows a user to quickly identify specific problems. The system configuration is shown figure 1.

System Features

The LHCS retrofit controls all the valve sequences, heaters, chemicals, protection-related interlocks, and shutdowns in the CCR regenerator. It also includes a distributed control system (DCS) interface that allows operator control from the DCS. A variety of interfaces are available, depending on the specific DCS model. Additional operating data is provided that is used in

Figure 1 ■ **UOP LHCS Retrofit Configuration**



diagnostics to calculate actual circulation rates, lift times, and gas velocities. The LHCS retrofit can receive analog 4-20 mA signals directly from field transmitters with set points for alarms and trips implemented in the LHCS retrofit, allowing replacement of the existing external trip switches. The system is mounted into a single two bay enclosure that greatly reduces overall footprint and can also be remotely located to conserve control room space.

Quality Assurance

All UOP control systems are built with the highest quality standards. Prior to shipment, each LHCS retrofit is configured and given a complete series of logic inspections and operational tests using a specially designed process simulator at our manufacturing facilities. Before the system is shipped, the customer’s representatives are invited to perform a detailed physical and operational inspection of the LHCS retrofit. They can also receive in-depth, hands-on familiarization, troubleshooting, and maintenance training on the actual equipment. The end result is an extensive checkout, which helps assure that when the LHCS retrofit is installed, it will function correctly upon power up for a smooth, on-time start-up.

Economics

The design philosophy of the LHCS retrofit incorporates UOP’s most advanced understanding and accrued knowledge of the CCR Platforming process. It integrates process control and process safeguarding with the goal

to reduce the lifecycle cost of ownership and provide the customer with process, operating, and equipment protection benefits. The economic benefits are seen with increased availability allowing the CCR Platforming unit to achieve the great processing capacity and severity possible. Due to the extensive testing performed before shipment, the system can be installed while the CCR Platforming unit is running.

UOP Experience

UOP has successfully delivered and commissioned more than 40 LHCS retrofits. All were delivered on schedule and on budget.

For more information

For more information, contact your local UOP representative or our Des Plaines sales office:

e-mail: info@uop.com
fax: +1-847-391-2253
phone: +1-847-391-2000

Figure 1 ■ **Typical UOP LHCS Retrofit Cabinet Layout**

UOP LLC
25 East Algonquin Road
Des Plaines, IL 60017-5017
U.S.A.
www.uop.com

UOP 4523-38 0607PPS0T

A Honeywell Company