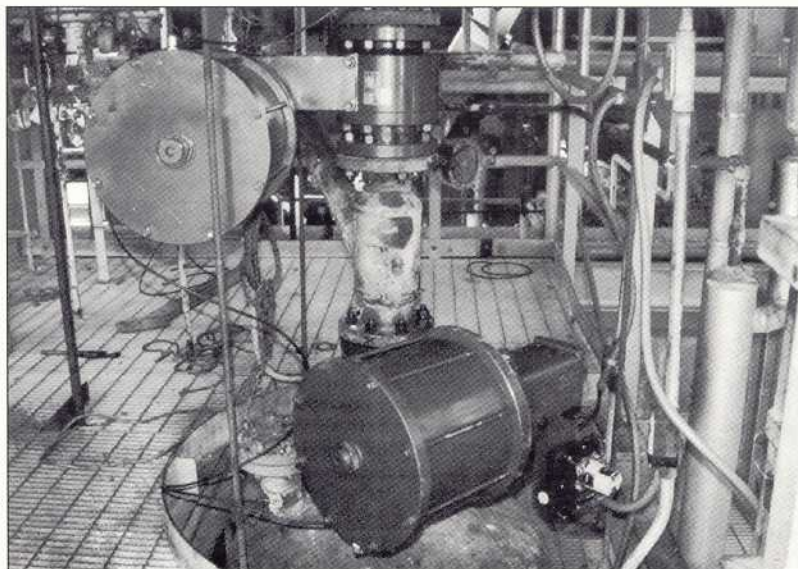
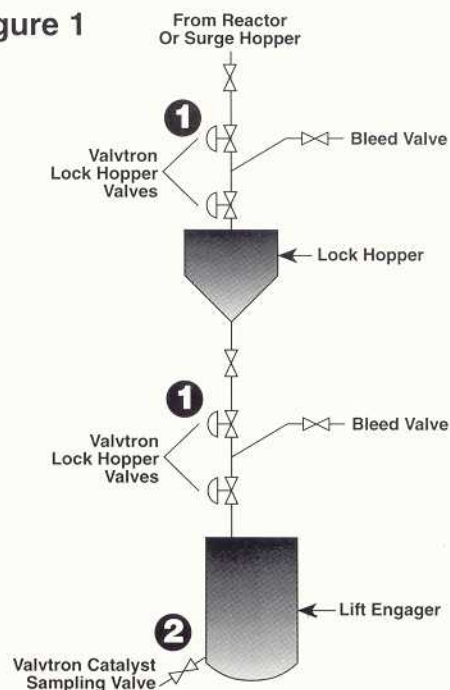


Application Data



Two Valvtron lock hopper valves are shown installed on UOP licensed CCRSM unit.

Figure 1



CCR Licensed Processes

Because of refiner's need to increase production of 'lead-free' gasoline in order to meet environmental demands, UOP®'s Continuous Catalyst Regeneration or 'CCR' was developed. UOP® is the industry leader of several licensors for this technology. The catalytic reforming process transforms low octane naphtha into high octane, gasoline-blend material. Most refiners use a semi-regenerative unit that requires the catalyst to be manually replaced when it becomes contaminated with coke. These units must be shut down to change out the old catalyst with the new. The advanced technology of the CCR Unit allows catalyst injection and withdrawal by burning off the coke through a regeneration process while the system remains on-line. Platinum catalyst, commonly used in these systems, is

extremely expensive. Through regeneration, the refinery obtains longer cycle life from the catalyst. Figure 1 focuses on the lock hopper valves. These are considered to be the most difficult application on the unit.

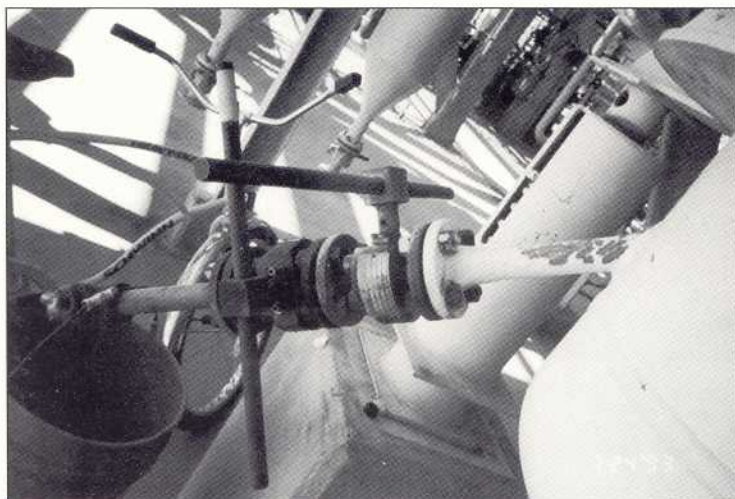
Figure 2 shows the catalyst sampling valves that allow samples of the catalyst to be obtained and inspected without bringing the unit down. UOP® has approved Valvtron products for use on their CCR, CRU, Monirex®, and Octane Sampling units. Valvtron is replacing other UOP® approved vendors whose valves are not performing to customer expectations. A French licensor has also approved and purchased Valvtron products for two major CCR projects in Mexico.

Valvtron Metal-Seated Ball Valves

Chart below lists typical applications, with the schematics (above and on back) identifying valve positions.

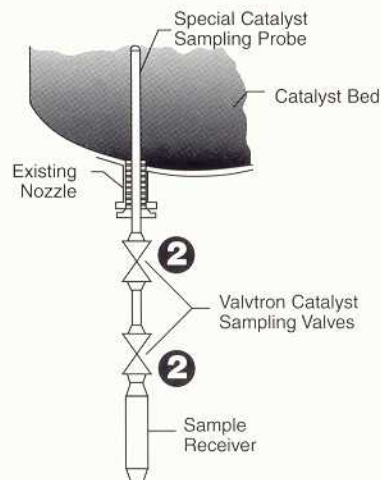
Location	Application	Conditions	Valve Size/Design	Body Material/Trim
1	Lock Hopper	590°F @ 150 psi	3 and 4-inch 300 lb.	316SS/Trim 17
2	Catalyst Sampling	590°F @ 150 psi	1 and 1½-inch 600 lb.	F22/Trim L5

*Note: The application, conditions and sizes of the valve are typical and can vary with each system. UOP® and Monirex® are registered trademarks of UOP.



Several catalyst sampling applications are used, above is one coming off a lift engager on a CCR unit.

Figure 2



How Does A CCR Unit Work?

Feedstock, typically consisting of hydrotreated naphtha, is fed into the catalytic reformers. Catalyst moves down the reforming reactor vessel to the first lock hopper. Hydrogen is used during this process to keep the hydrocarbons in the reactor while allowing the catalyst to drop into the lock hopper. The lock hopper is then depressured and purged allowing catalyst to flow through the Valvtron valves with no pressure drop. The double block and bleed arrangement isolates the changing atmospheres between the lock hopper and the regenerator. Nitrogen is then used to carry the catalyst to the disengaging hopper and into the regeneration tower. The catalyst travels through the regeneration tower where the carbon is burned off. Then, the catalyst

composition is adjusted and ends up in a second lock hopper. Next, the catalyst is emptied into the lift engager as fresh catalyst. The catalyst is then carried into the reactor with hydrogen, and the process begins again. The lock hopper valves are used to separate the process (hydrogen) from the regeneration system. If any appreciable leakage of hydrogen occurs, a dangerous condition could exist. Leakage is normally monitored, and the unit will automatically shut down if leakage is detected.

The condition of the catalyst is monitored on a regular basis by the use of catalyst sampling valves.

Why Other Valves Don't Work

Although UOP® uses the basic ball valve design as its standard, not all

ball valves perform the same in these severe services. A major concern is that the dry catalyst powder will pack around the ball body cavity, settle behind the seats, and lead to valve lockup. In addition, high temperatures and high cycle requirements teamed with dangerous hydrogen gas test a valve's capabilities and limit its performance life.

Why Use Valvtron Valves?

Valvtron has spent years developing and designing specific features to ensure valve longevity. The integral seat design of Valvtron valves eliminates the possibility of catalyst dust settling behind the seats. Valvtron's high cycle package has proven to vastly extend valve life for years over competitors' products.

Valvtron

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