Fluid Catalytic Cracking

Applications of MOGAS Valves

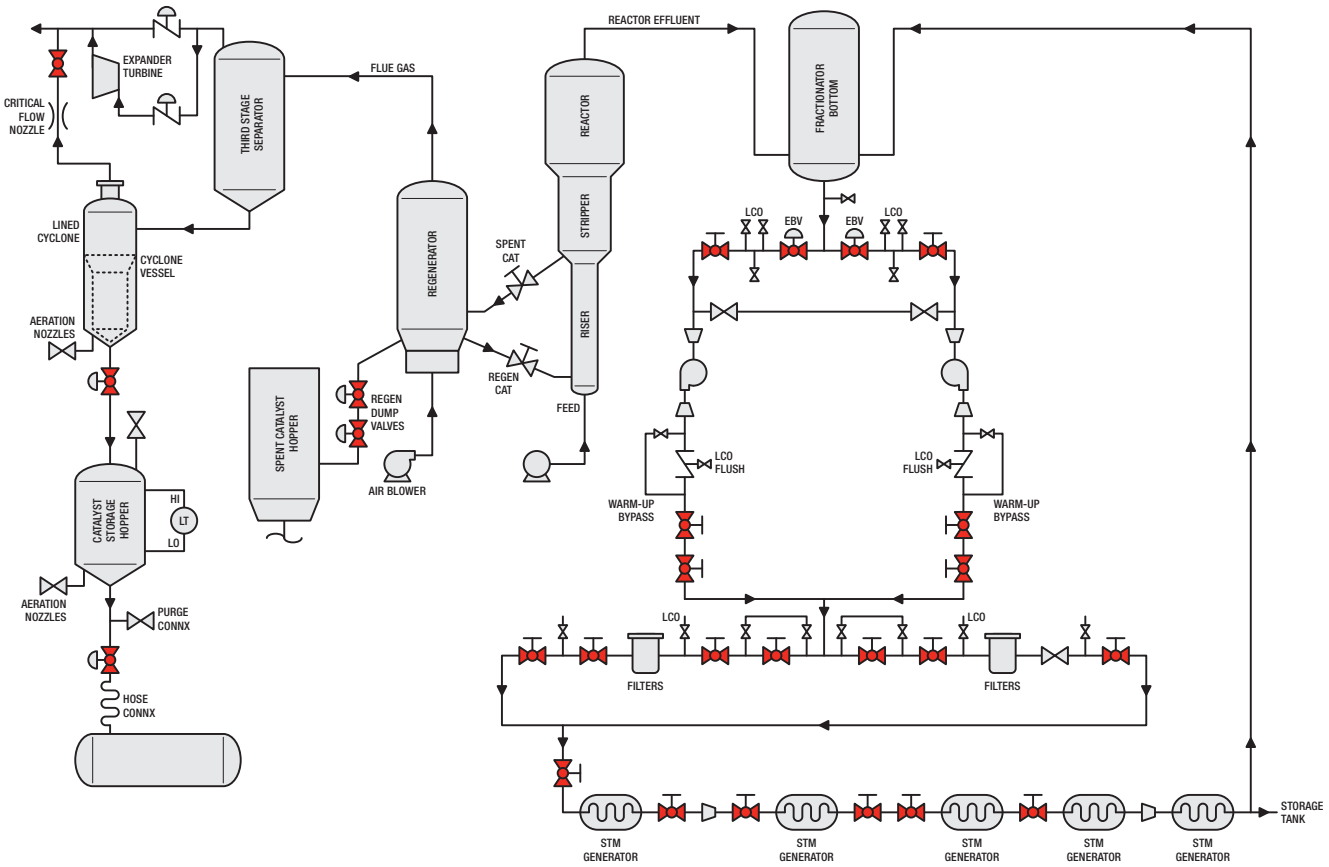
MOGAS Valves Enhance Plant Safety and Reliability

MOGAS designs and manufactures severe service, application specific valves for the Fluid Catalytic Cracking (FCC) process with a continued focus on innovation and improvement. With hundreds of FCC valves currently in service, our research and development efforts have enabled plants to achieve refining objectives effectively and efficiently — maximizing plant profitability.

MOGAS FCCU installations include (partial list):

- Frac bottoms pump isolation
- Strainer isolation
- Heat exchanger isolation
- Regeneration spent catalyst dump valve
- 3rd or 4th stage cyclone separator

Fluid Catalytic Cracking Unit with MOGAS Valve Locations



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MOGAS® SEVERE SERVICE BALL VALVES

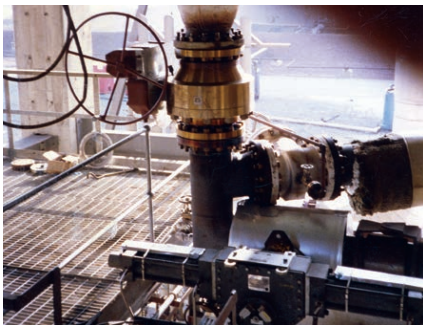
Fluid Catalytic Cracking

Applications / Benefits of MOGAS Valves

Hot Spent Catalyst Handling Valves

Withdrawing Spent Catalyst

Critical to the operation of the FCC Unit (FCCU) is the capability to withdraw spent catalyst even after years of the valve being open. If operations cannot withdraw spent catalyst, it will be recycled through the riser, affecting yields and resulting in more heavy ends and less light ends being produced. This can strongly affect profitability. Refineries receive a high return on light end products, so by lowering the yield of the products, profitability is lowered.



With over 12 years of continuous service in 1400° F (760° C), these 12-inch FCCU 3rd stage cyclone catalyst separation valves have a remarkable life cycle cost when compared to other valve types.

Eliminating Waste

The catalyst used in the FCCU is one of the most expensive costs of operation. Having a valve that can dependably isolate will ensure good catalyst is not wasted. This also minimizes the need to add fresh catalyst to replace catalyst being lost through a leaking valve.

Reliable Isolation

Spent calalyst needs time to cool in the hopper, so a reliable block valve is important. If a constant flow of hot catalyst is passing through a leaking valve, operators will have a hard time emptying the hopper into a truck for disposal.

These FCCU regeneration dump valves are still leak-tight after 60 months in 1400° F (760°C) service. Prior to the MOGAS metal-seated ball valves, the previous record was 3 months before lock-up or leakage occurred.

Frac Bottoms Isolation Valves

Emergency Shutdown and Pump Isolation

The upstream isolation valves to the slurry pumps are used to isolate the pumps for maintenance, and more importantly, as emergency shutdown valves. If a fire breaks out in this area of the unit, these valves are required to close quickly at the push of a button. If the valves cannot operate due to coke / tar build-up, the problem will be magnified.

Equipment Repairability and Safety

Run-time is absolutely critical to the profitability of the unit, with a goal to run continuously for 4 to 5 years. This can only be achieved if the operators can repair and clean equipment online. The equipment used to control the temperatures of the fractionation tower is organized so there are redundant pumps, strainers and heat exchangers. The isolation valves are used to switch between redundant lines. If the valves do not provide a positive isolation, the equipment cannot go off-line for repair, or cleaning online. After they have exhausted their redundant equipment, eventually the unit will have to come off-line to perform the necessary repairs.

Controlling Temperature Helps Control Profits

The bottoms recovery system's purpose is to maintain a constant temperature in the frac tower. The vapor coming from the stripper is about 1200° F (650° C). This temperature needs to be brought down to maximize the yield of the end products produced in the frac tower. If the strainer is clogged or the pump is not circulating, the heavy bottoms or the heat exchanger is fouled, then they will not be able to lower the temperature, affecting yield, which in turn affects profitability.

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