De Dietrich
PROCESS SYSTEMS

CLEAN VALVE
CASE STUDY

Maintaining high levels of cleanliness and preventing cross contamination between batches are critical aspects of pharmaceutical manufacturing. In many instances, production is delayed while equipment is taken apart, cleaned, and reinstalled in order to comply with GMP (good manufacturing practice). This inefficiency wastes valuable time, money, and resources.

The Problem

A global pharmaceutical company had a reaction/mixing application that involved a glass-lined steel reactor with a standard bottom outlet flush valve. With this arrangement, maintenance personnel had the task of removing, disassembling, and cleaning the valve by hand between each campaign. This procedure, although time consuming, was necessary because product would get trapped between the valve seat and nozzle as well as inside the valve body, leaving residue that could contaminate the next batch.

The Solution

DDPS provided an innovative solution to this problem by introducing the Clean Valve - a bottom flush valve with CIP (clean-in-place) capability that does not have to be removed for cleaning between batches. The unique lip seal design on the valve seat prevents product buildup between the seat and the bottom outlet nozzle. The valve neck has an o-ring seal located in front of Chevron packing to provide primary sealing against the valve stem. The neck ring also provides positive sealing against the valve body to eliminate hold up of material above the Chevron packing. The valve has an extra port that can be used to inject cleaning solution into the valve body to allow cleaning to take place with the valve closed. An additional benefit is the optional temperature sensor that can be replaced without removing the valve from service.

Results

The customer first purchased nine preliminary valves for testing purposes. After a thorough evaluation and satisfactory test results, they validated and approved the use of the Clean Valve with all of their applications. They are now recommending these valves to their other plants not only for the clean-in-place advantage, but for the increased productivity and savings on labor hours.

1 - Extra port for clean-in-place or other purpose
2 - Removable temperature sensor
3 - Self-draining valve body
4 - Lip seal design on valve seat

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