De Dietrich
PROCESS SYSTEMS

CIP SYSTEMS
CASE STUDY

The Problem
Designing clean-in-place systems for glass-lined equipment presents a variety of challenges due to the internal vessel geometries and the limited number of vessel openings for cleaning wands/lances. Furthermore, the issue can be complicated by the exotic materials of contruction that are sometimes required when working with special products and chemicals. In addition, every reactor can have subtle differences which can alter the design of the CIP system.

The Solution
An effective CIP system must take the following factors into account:
- Number of spray balls
- Type of spray balls
- Spray ball orientation
- Spray ball material of construction (stainless steel or Hastelloy)
- Selected spray ball pressure, flow, and cleaning time
- Vessel material of construction (glass-lined, stainless steel, Hastelloy)
- Type of vessel (close-welded, clamped-top)
- Size of vessel
- Nozzle openings used for spray ball placement

After completing the design and installing the system, DDPS performs riboflavin testing in our factory to assure the coverage is adequate. Following this initial test, the system can be modified if needed to fully achieve the required performance objectives. The riboflavin test is then repeated and the results are documented and certified.

For most applications we can guarantee at least 98% coverage of the reactor. By utilizing the OptiMix® reactor design, we can improve the cleaning to an even higher efficiency. OptiMix incorporates three baffles onto the vessel wall, thereby eliminating the dead space that is created around the top of traditional baffles. If you are working with a limited number of nozzle openings, this design enables nozzles to be available for CIP system purposes rather than baffle installations.

In addition to testing performed prior to shipment, DDPS can repeat the test in the field after installation. We can also design and test systems to clean associated ancillary equipment, including heat exchangers and piping systems.

Because we know our equipment better than anyone else, we are able to provide the most comprehensive CIP system possible for our vessels. CIP systems are available for both new and existing equipment and can be quoted with any inquiry.

Hastelloy spray ball

Riboflavin testing performed at DDPS facility.

Spray ball installation on top nozzle.

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