Professionals in Process /Product Technologies

SM Biosystems

We are '*Professionals in Process/ Product Technologies*' with following expertise-

- **Conceptualization and Engineering of Projects**
- **Module and skid building**
- **Custom-built solutions**
- **Innovative hygiene Products for Pharma/ Dairy Industry**
- **Expertise in Pharma, Food, Natural resource based projects**
- **Business partners of world class products from Europe and USA**

Our Offerings-

- **Bio-Reactors And Fermenters**
- **Bio - Waste Decontamination Systems / Sterilization Systems / Inactivation Systems**
- **PWDS, WFIDS, CSDS Systems**
- **CIP Plants**
- **Pharmaceutical Machinery and Bio-pharma Custom Built Modules**
- **Mixing And Blending Vessels**
- **Dairy/Starch Projects**
- **Drying And Evaporation Projects**
- **Biorefineries**
- **Piping Engineering**
- **Plug-in Temperature / Brix / pH / Pressure/ Flow Control Modules**
- **Electrical And Automation Engineering**
- **Flow Control Equipment**
- **All Types Of Valves And Valve Automation**

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Clean-in-place (CIP) Systems-

"CIP – Cleaning in place" is an essential part of maintaining hygiene in the process plants. In order to achieve optimum cleaning, parameters of the cleaning operation like concentration, temperature and flow rate of cleaning agent (water, acid/ alkali solutions) have to be constantly monitored and maintained with previously defined set points.

SM Biosystems' fixed and portable CIP systems have designed with these very objectives in mind and are skid- mounted for mobility, quick installation and easy integration into a large scale manufacturing facility or smaller operations such as a pilot plant or laboratory. These systems thoroughly clean process-equipment used in biopharmaceutical manufacturing including

- Fermenters, Vessels, Storage Tanks
- Bioreactors, Mixers, silos
- Chromatography Systems
- Media preparation hold systems
- Buffer preparation hold systems
- Formulation systems
- Miscellaneous piping system

Special Features- Our CIP systems offer several options to meet specific needs such as

- Chemical addition to automatically add detergents
- Heat exchange if water at suitable temperature is unavailable
- Conductivity sensors to monitor chemical concentration and purity of water/ cleaning agent for supply and return
- Air blow to expedite drying
- Other options as per the process, cleaning parameters and requirements of the customer
- Full automation and control systems that provide flexibility and adaptability with accurate logging-in of parameters.

Technical Specifications-

1: Single tank, Dual tank, Three tank modular systems
2: PLC controlled fully automatic
3: Spray balls diaphragm valves from M+S Armaturen Germany
4: Easy to install Modular in nature
5: MOC- SS 316L

Standard design-

SM Biosystems' CIP systems met the strictest cGMP and regulatory requirements of the life science industry. Each standard system is designed to maximize the modular approach by incorporating compact design features that provide easy access for service and maintenance. Components and controls are located within the module, and system utilities are incorporated for single-point field tie-ins

Fixed portable systems designs operate on a single use cycle with local recirculation and flow control. All CIP products contact surfaces are 316L SS with a surface finish designed to 0.6 RA or better. All units have configurable cleaning programs and are designed in accordance with GAMP Guidelines.

Fixed systems are available in single, double and triple tank configurations with capacities ranging from 600 to 1,500 liters. Fixed systems are installed in the client's plant and ready to operate after being hard-piped to the equipment to be cleaned. Portable units are available with a 300-liter atmospheric or pressure rated vessel. The units are designed to be easily transported to equipment that requires cleaning, and are connected to the equipment with a flexible hose.

Working principles-

The CIP system operates by cleaning solution through a piping network to provide flow across equipment surface. In addition, spray devices are used to clean vessels, reactors and other process equipment. An automated CIP system may perform other functions such as preparing and circulating cleaning solution through process equipment, and rinsing and drying equipment at appropriate times. These steps occur as follows:

1. Pre-flush or pre-rinse
2. Wash
3. Rinse

   The user enters the detailed sequence of operations required to clean the specific application, which is stored for future use.

Testing-

SM Biosystems operates and fully tests all systems at the site to your satisfaction.

Documentation-

SM Biosystems provides a comprehensive turnover package (TOP) with each system that contains information required to validate the system. In addition to the original set of the document, a CD containing TOP documents is provided in PDF format with hyper links to document sections and tables. Standard elements of the package include:

- Drawing section, including general arrangement, P&ID, vessel drawing and weld maps
- Detailed process design package
- Detailed automation design package
- Valve, instrumentation and equipment manuals and certificates
- Qualification package, including material certification, documentation, welding documentation, etc.

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