

Title

A Process Approach to CIP Automation

Abstract

The clean in place (CIP) process is ubiquitous throughout the life science and pharmaceutical industry, yet it is commonly known to be a limiting step in production. From a macro level, the process is well defined and understood, but its implementation within the manufacturing facility is oftentimes difficult to manage, overly complex, and a source of alarming failures. Generally, the issues encountered with the CIP process are not due to the pumps, valves or skids, but mostly due to its control code and recipe structure.

Ideally, the CIP process will be managed by process engineers who simply configure cleaning cycles for new and existing equipment. Once configured, the system should operate with little or no intervention, and can be optimized for cycle time, water consumption, or chemical use. In order to achieve this objective, the automation design must be intuitive for the process engineer — particularly at the recipe level. Understanding the desired top-level procedure will help clarify the approach down the S88 hierarchy.

This presentation will include an overview of the CIP process, an approach to its recipe structure and equipment modules, and some automation strategies for typical CIP control algorithms. There is plenty of literature available that documents a theoretical CIP process; this presentation, however, will add the details for a logical automation design so that, once implemented, it can be optimized and maintained by the process team.

Speaker

Jeff Boesiger is the West Coast Regional Manager for Cascade Solutions and serves as the life science process lead for the company. He has fourteen years of engineering experience in the bioprocess industry, with an extensive background in cGMP equipment and facility design, biotechnology manufacturing and process automation. His focus is on translating the process design into an effective automation strategy and then leading commissioning efforts for new production facilities and process suites. Prior to joining Cascade, he has held positions such as the engineering manager at Nektar Therapeutics, manufacturing supervisor for clinical production at Amgen and manufacturing engineer at Amgen. Boesiger holds a B.S.E. in Chemical Engineering from the University of Michigan, Ann Arbor and is a member of ISPE and AIChE.

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