

WFI Storage and Distribution Control Systems

MAAK Technologies Group Inc. has supplied several control systems for the storage and distribution of WFI (Water-For-Injection) used in pharmaceutical applications. The typical process equipment consists of one or more storage tanks, pump(s), distribution piping and heat exchangers. The WFI is pumped around the distribution loop to various points within the facility where the water can be drawn off as required by the users. The loop typically includes manual and automated valves. Depending on the application, an installation can comprise of separate hot and cold WFI loops, or on-demand cold WFI production loops.

The primary automation requirements are the precise control of loop temperature using heating and cooling exchangers. Hot WFI loops are typically maintained at 65°C, while cold loops are maintained at 25°C or less. Daily sanitization is performed by raising the loop temperatures to 85°C or more. In some systems, secondary control requirements are placed on the plant utilities such as chilled water to ensure that the plant chillers are not overloaded by excessive heat loading during WFI cooling phases.

The control system equipment typically consists of a Programmable Logic Controller (PLC) and an Operator Interface Terminal (OIT). The PLC and OIT are housed in a control cabinet with other control equipment, manufactured, tested and installed by MAAK technicians.

In some systems, no operator action is required, while in on-demand cooling, each user station consists of a simple pushbutton & status lamp panel. Maintenance staff monitors and configures the control system through the OIT located at the control panel. Through the OIT, users can monitor process values and set system parameters such as loop temperatures, sanitization times, etc.

Various forms of data and alarm management can be provided, ranging from audible alarms and chart recording to fully electronic systems.

All control systems supplied by MAAK Technologies Group Inc. for WFI applications are validated for use in GMP facilities. Documentation provided by MAAK includes Function Requirement Specifications, Detailed Design Specifications, Operating & Maintenance manuals, drawings and software documentation.

