CIP (cleaning in place) can use significant amounts of water if it is not optimised and can be the main effluent load. How will CIP be optimised for product recovery, water re-use, chemical recovery and energy use?

A schematic diagram of the layout of the CIP set and process piping circuits is available on the Tetra Plantmaster system. Each individual CIP is monitored via this system monitoring time, temperature and conductivity of each individual clean.

CIP records are maintained to show proper cleaning and chemical dosing.

Manual and automatic records are maintained of time, temperatures and chemical dosing concentrations.

Chemical concentrations are verified by the laboratory.

CIP operations for the internals of the production equipment are PLC controlled.

Equipment is cleaned according to a documented matrix to ensure there is no potential cross contamination and that equipment is not “over cleaned”.

The CIP system was fully validated on installation and is annually verified to ensure that it operates effectively including no dead areas and good system drain ability.

The set is made up of three tanks.

A recovered water tank which is used for initial rinsing of the equipment.

A detergent tank whose temperature and chemical level is monitored and only heated and topped up with chemical when required.

A final rinse tank which is clean potable water to carry out the final rinse of the equipment, this water is recovered to become the initial rinse of the next clean.

Water use in the CIP set tracked daily and any unusual use measured against a standard expected usage is flagged up via a daily operations meeting.

Where quality rules allow it equipment is rinsed between flavours rather that fully CIP’ed as this is significantly less water use.