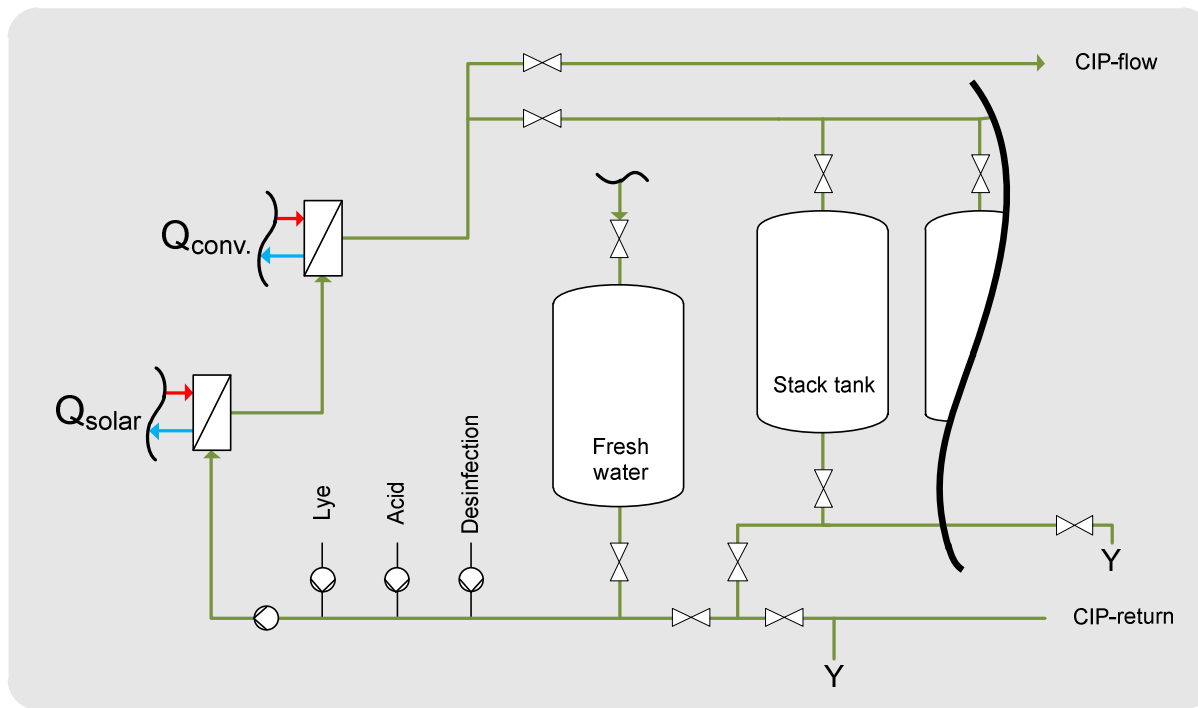


Cleaning of production halls and equipment



Example how to integrate solar heat for cleaning in place installations (CIP) in Food and beverage companies.

Cleaning-in-Place (CIP) is a method for cleaning process plants without removing single components. Therefore different cleaning cycles (daily to weekly) can be applied. Based on the respective production section, the cleaning is done with cold or hot water. A CIP system consists of multiple recovery tanks for acid, caustic, fresh and hot water, circulation and dosing pumps, one or more heat exchangers, and some other peripherals. CIP systems have often an external heat exchanger, which heats up the various media to the required temperature before they are pumped to the plant components that have to be cleaned. Through a circulation loop, the individual recovery tanks can be heated.

CIP systems with external heat exchangers are suitable for the integration of solar heat. If there are longer periods between the cleaning phases, the recovery tanks can be preheated with a smaller sized solar heat exchanger. If the set temperature is not reached through this measure, the conventional heat exchanger can supply the remaining thermal energy.