



# APPLICATION REPORT Food & Beverage

## Equipping a cleaning in place (CIP) system with flowmeters

- Control of disinfection processes in food production
- Electromagnetic flow measurement of water, acid and brine
- Cost-effective and reliable instrumentation for dosing of CIP agents



### 1. Background

The Turkish company Ünsa Makina engineers and builds turnkey equipment for food producing companies. Among other things, the company specialises in the design and manufacture of CIP (Cleaning in Place) units. The CIP plants are completely equipped ex works with instrumentation in accordance with customer specifications.



Ünsa Makina manufacturing plant

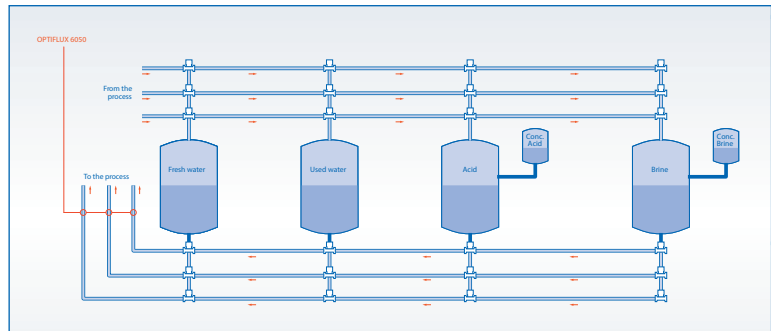
### 2. Measurement requirements

For the new CIP plant of a customer, Ünsa Makina was searching for tried and tested flowmeters to enable flow control of the various CIP agents. The CIP system in this project comprised four different lines that can be operated simultaneously to run different cleaning procedures at the same time. The CIP agents to be measured are fresh water, used water, acid and brine.

Application Parameters	
CIP agents	Fresh water, used water, acid, brine
Flow rate (max.)	20,000 l/h
Temperature	+65...80°C / +149...176°F
Pressure	6...7 bar / 87...101.5 psi

## 3. KROHNE solution

The equipment manufacturer decided in favour of the OPTIFLUX 6050 C electromagnetic flowmeter (EMF). This meter is a cost-effective yet highly reliable instrument for measuring the various conductive cleaning agents. Due to its standard PFA liner, the flowmeter can also handle more corrosive agents like acid, brine and caustic solutions.



General process scheme of a CIP system with the OPTIFLUX 6050

The KROHNE device has also no crevices, gaps or blind spots and is specifically designed to stay free of contamination. This way, it complies with the most stringent hygienic demands in the food and beverage industry. To meet the customer's requirements in terms of process connection, all flowmeters were equipped with DIN 11851 hygienic connection.



OPTIFLUX 6050 C on CIP skid unit



ÜNSA Makina CIP system

## 4. Customer benefits

The OPTIFLUX 6050 provides the customer with reliable flow measurement to run a state-of-the-art CIP system. The flowmeter monitors the current volume flow rate and the total consumption of the various CIP lines, allowing the operator to control the CIP dosing accordingly. In this way, the right amount of CIP agents can always be calculated and added for safe disinfection. An accidental but costly overdose is prevented in the same way as an undersupply of the CIP lines.

The very cost-effective flowmeter is sufficiently accurate for this basic application, yet long-term stable with a proven track record for measuring CIP agents. Extensive digital communication options were not required. Process control of the CIP process is done using the simple analogue and pulse outputs of the EMF. KROHNE service specialists commissioned the flowmeters prior to delivery of the CIP system.

## 5. Product used

### OPTIFLUX 6050 C

- Cost-effective flow measurement in the food sector
- Meter size: DN2.5...150 / 1/10...6" (3A, EHEDG, etc.)
- Many hygienic fittings
- PFA liner reinforced with embedded stainless steel grid for vacuum resistance
- Maintenance free
- 4...20 mA, pulse, frequency, status, HART<sup>®</sup>, Modbus



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