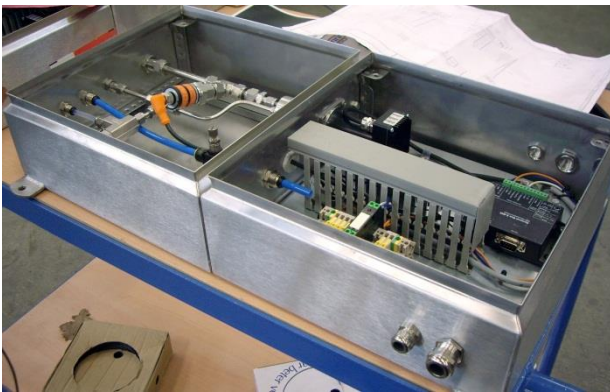


Unit for dispelling air from filled beer bottles

Foodstuffs including beer are subject to oxidation as they come into contact with air. Air contains ca. 20% O₂. Oxidation shortens foodstuffs' shelf life whereby they may perish earlier.

The beer is treated with a product-specific water during the filling process in order to prevent this. It is important that this water is injected into the neck of the bottle in a fast, tight jet so the beer starts to foam and the air is dispelled quickly and effectively from the neck of the bottle.

An additional problem is that water is often used in the food industry for cleaning the installation. The installed appliance can in this way be confronted with corrosion.



Spray unit with a high-performance micro gear pump installed in a splash-proof housing

Problem definition:

The brewer up to that point used membrane pumps for injecting the water into the filled beer bottles in all its bottling plants. Membrane pumps are however relatively large, awkward to install and are characterized by pulsating yield.

Pulsation of the liquid flow (the volume flow is not continuous but interrupted) partly due to the varying pressure hampers the dispelling of the air. Pulsations are therefore also not desirable.

These pumps were susceptible to corrosion as it is awkward installing these relatively large membrane pumps in a splash-free cabinet.

Solution:

The membrane pumps were replaced with an HNP micro gear pump type mzt-7205 from the high-performance series. These pumps are manufactured by HNP Mikrosysteme GmbH in Schwerin, Germany. This micro gear pump does not pulsate and can deliver great differences in pressure.

The gear pump in this way generates a fine, continuous, hard and tight water jet also with varying volume flows and pressures. The beer starts directly to foam over the edge due to the hard and continuous water jet after which the bottle can be capped.

This pump thus also maintains its continuous, uninterrupted volume flow at varied filling speeds of the bottling plant.

It can also easily be installed in a splash-free cabinet due to the micro gear pump's compact construction. Two stainless steel cabinets with passageway have been applied with this in mind. One of these contains the mechanical components, the other the electronics. Dry air is used to prevent condensation. This considerably increases its service life.

Advantages:

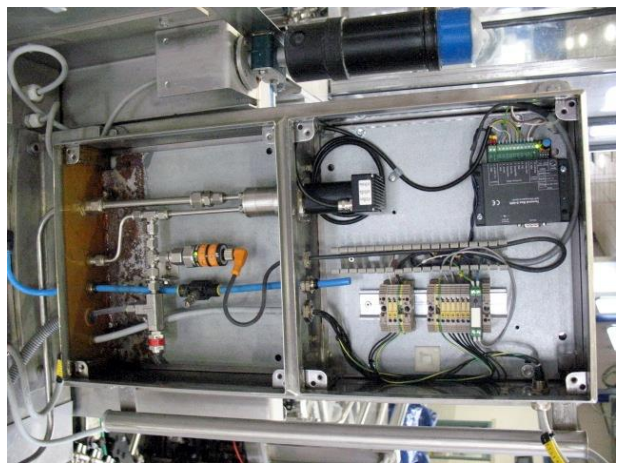
- Better spray performance with micro gear pumps than with membrane and centrifugal pumps (for faster dispelling the O₂)
- A yield with fewer pulsations at higher differential pressure
- Long service life
- Simple installation of the pump in the bottling plant
- Compact pump; therefore simple installation in a splash-free housing; ideal in the food industry where lots of water is used! No corrosion problems.

Specifications in this application:

Flow rate	: 166 ... 250 ml/min
Inlet pressure	: 6 bar
Differential pressure	: 19 bar
Medium	: product-specific water
Viscosity	: 1 mPas
Temperature	: 20°C



Beer bottling plant in which the spray unit is processed



The spray unit consists of two parts: the electronics and the mechanical part