

NIVELCO CASE STUDIES

NIVELCO in the Ice Cream Factory

EISPRO Kft.

Ice cream is a very popular confectionary since the ancient times. Nowadays ice cream has wide selection in taste and also in form or package.

The Hungarian EISPRO Kft. produce many types of ice cream in its factory located in Törökbalint, near to Budapest. They are leading players of the ice cream market in Hungary, they have over 100 employees. This article allows detailed insight into the production of ice cream and presents the applied NIVELCO instruments.

Steps of the ice cream production:

- Storage of the raw materials and other components
- Blending the ingredients and create mixture
- Heat treatment (pasteurization)
- Cooling
- Aging
- Frozen foaming
- Batching, forming and hardening
- Packaging
- Storage and distribution



The EISPRO Kft. has a long-period cooperation with NIVELCO, therefore there are no any process in their ice cream production technology where we could not find NIVELCO instruments.

Ingredients (liquid and dry) storage:

- The main ingredient of the ice cream is milk which is stored in outside silos. These dual-wall silos are continuously measured by NIVOPRESS DTO-561 hydrostatic level transmitters at the bottom and THERMOCONT TSP-121 resistance thermometers. The measurement values are displayed with UNICONT PMM-311 universal controllers.
- The additive powdery materials are stored in open containers.

Blending: Based on the proper recipe the ingredients are mixed then the mixture is forwarded into closed tanks. In this phase the level and temperature of the mixture is measured similarly to the previously described: NIVOPRESS D hydrostatic level transmitters and THERMOCONT TSP temperature sensors are used.



Heat treatment: The main purpose of the pasteurization is to create suitable microbiological state for the ice cream. The pasteurization is performed by a heat exchanger at minimum 80.6 °C temperature for 20 seconds. After the pasteurization the mix is homogenized by means of high pressure (100-120 bar) and then it is passed across a double type heat exchanger for the purpose of cooling the mix to refrigerated temperatures.

The temperature is controlled by a UNICONT PMM-311 device. The temperature sensor is a fast response THERMOCONT TSG-111 Pt100 sensor. Cooling and aging: In this phase the additional components – which are less tolerant to the heat treatment – such as fruit pieces and juices are added to the mix as well the other auxiliary materials.



Then the ice cream is filled into 2.5 m tall tanks and frozen to -25 °C for 24 hours. These tanks are equipped with MicroTREK HTS-425-4 guided microwave level meters which transmit 4-20 mA output signal proportional to the mass of the stored ice cream. Of course the temperature is also measured and controlled by UNICONT PMM-311 instruments.

Cleaning: Technological equipments are cleaned with CIP (Clean-in-Place) process. The level in the CIP tanks is measured by EchoTREK SEA-380 compact ultrasonic transmitters. Temperature control of the washing liquids is done by UNICONT PMM-311 universal controller. NIPRESS DRC-2A22 transmitters are used for pressure measurement in the washing system.

Waste management: During the production many unwanted by-products and waste are generated. It was an interesting task to measure the dense impurities resulted by the cleaning process and the remaining organic waste which accumulate at the bottom of the tanks.

From all technological processes the mentioned slurry-like material is pumped into two 4 m³ concrete pools where it is thickened.

This sludge waste – waiting for annihilation – is pumped into mobile metal outside containers. The containers have lids that can be opened so the measurement solution was an EasyTREK SPA-360 ultrasonic level transmitter mounted on a NIVISONAR SAA-108 console.

This way the transmitter measures the level through the open lid. Further signal process is done by a UNICONT PMG 411 universal controller which indicates the fullness in percentage and stops the pump in case of reaching the high fail safe level.

The EISPRO Kft. is very much satisfied with the NIVELCO instruments and this was proven by letting our Marketing team to shot pictures and videos about the ice cream production and of course our instruments in action.

Thanks to this the food and beverage application section in the NIVELCO reference movie could be expanded with a new and interesting scene.

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