

# NIVELCO CASE STUDIES

## HIGH PRECISION LEVEL MEASUREMENT AND CONTROL WITH GUIDED MICROWAVE LEVEL TRANSMITTER IN OIL EXTRACTION PLANT

In the process of the vegetable oil production the mass remaining after the first-pressure still contains a large quantity of oil. To extract this oil the mass is leached with some kind of solvent. The solvent solutes the remaining oil from the mass resulting in a mixture of oil and solvent.

In the next step of the process the solvent is eliminated by a distiller from the oil.

In the vegetable oil plant of NT Élelmiszertermelő Kft. at Kiskunfélegyháza (Hungary) sunflower oil is produced. The extraction unit consists of 4 extraction heat exchangers.

The level of the oil and solvent mixture has to be maintained at a constant level and has to be heated. As a result of the steam pipe heating the solvent evaporates. The solvent is hexane and it is flammable. The evaporation temperature is +150°C. Because of the coil pipe a level transmitter could not be installed into the heat exchanger. That is why a stand pipe was installed to receive the transmitter.

### Instruments used:

- 4 pcs MicroTREK HHA-410-8 Ex, Explosion proof high temp guided microwave level transmitter with 1 m coaxial probe
- 4 pcs MTL 5042 type Ex repeaters
- 4 pcs NIPOWER PPK-331 power supplies
- 4 pcs UNICONT PMG-411 controllers

### The control process:

The MicroTREK continuously measures the level with 5 mm accuracy, the 4...20 mA level signal controlled by a PMM controller and a frequency converter modifies the rotation speed of the dosing pump. The measurement of a 1 m range without dead zones made necessary the use of a coaxial probe type.

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