

NIVELCO CASE STUDIES

THERMOPOINT Temperature Transmitters in Dubai

Configuration a NIVISION system in the Middle-East

NIVELCO's major distributor in the Middle-East region is the Dubai headquartered Dutco Tennant LLC., who is introduced on the 21st page of our Magazine. Recently they have won a remarkable instrumentation project, where NIVELCO's fresh developments – the THERMOPOINT multipoint temperature transmitters for liquids – played a big role beside the level measurement tasks.

About the measurement task:

The task was quite simple. The level and the temperature of all the 11 tanks – containing basic oil and lubricants – have to be measured together with volume and temperature compensation. The measured values wanted to be displayed on site; moreover the data should be transmitted to further PC based displaying and data management. As per the requirements the following parameters are measured and calculated with the software:

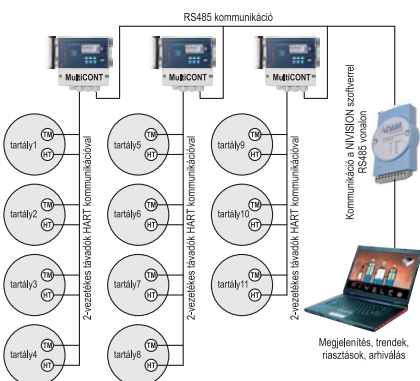
- Level
- Temperature at multi points
- Volume
- Mass
- Volume and mass compensated to 15°C

The interesting characteristic of the measurement: if the temperature changes, the volume and consequently the level of the oil also changes. Since our transmitters measure simple level values, we could receive wrong values in case we calculate the volume with a simple multiplication from the level values. So the measurement has to be temperature compensated to 15°C in accordance to the international standards.

Operation:

The picture below shows the schematics of the measurement system. The 14 m tall tanks are equipped with MicroTREK guided microwave level transmitters and the temperature is measured at three points with THERMOPOINT transmitters.

According to the customer demands the temperature sensors are placed in a customised low, middle and high position inside the 14 m long flexible cable probe.



The MultiCONT multichannel process controllers collect and display the level and temperature values of the 4 tanks.

The 3 MultiCONTs are connected to RS485 line with chain topology and the measurement data is forwarded to the central controller computer.

Applied instruments:

- 11 MicroTREK HTT-414-4 guided microwave level transmitters
- 11 THERMOPOINT TMK-53E-4 multipoint temperature transmitters
- 3 MultiCONT PEW-28A-1 multichannel process controllers
- NIVISION process visualization software

temperature sensors are considered which are immersed in the oil. This procedure is needed because this way the heated air in the tank cannot have any effect on the temperature of the measured oil.

The software also calculates the volume in litres and tonnes while a background sub-application calculates the volume and mass compensated to 15°C (depending on the actual measured temperature) in accordance to the ASTM 54D (American Society for Testing and Materials) table.

Thanks to the reliable measurements of the NIVELCO transmitters the calculated volume and mass values are accurate enough to satisfy the customer. The implemented measurement system meets all requirements of the registering and transfer demands



The NIVISION software provides the following features:

The NIVISION software displays the stored media names and the corresponding measurement data of the tanks based on the level and temperature data forwarded from the MultiCONT controller. The NIVISION calculates average temperature but only those

furthermore the spectacular graphical interface makes the work easier and more efficient for the operators.

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