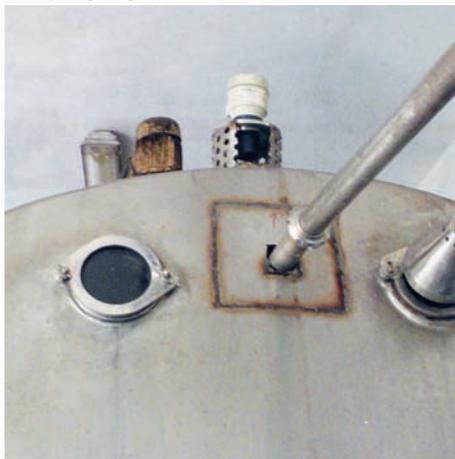


# NIVELCO CASE STUDIES

## Ultrasonic level transmitters for milk applications – India

### Meeting high hygienic requirements with EchoTREK transmitters

The safety and wholesomeness of dairy products is highly dependent upon the effective control of unwanted micro-organisms in the dairy plants. One method is Pasteurization which destroys disease-causing bacteria and significantly reduces the number of spoilage organisms.



As everybody knows, food industry products like milk demands high hygienic requirements and it has to be handled with utmost care against contamination.

Hence in such cases contact type level transmitters like NIVOCAP capacitance (due to insulated sensor as well as counter weight) or float operated NIVOTRACK (due to contamination around float) cannot be used for this application either with PFA plastic coating, because bacteria can adhering on the probes. Conventionally in milk applications the differential pressure (DPT) transmitters or flush diaphragm based hydrostatic level transmitters like NIVOPRESS D are used.



In this second case the devices are equipped with sensor filled with food industry compatible oil (as pressure transmitting medium) and DIN 11851 pipe coupling or Tri-Clamp sanitary process connection. But still as the density of the milk varies batch to batch there can be effect on the accuracy of these transmitters. Also the cost of needed regular

maintenance is quite high in these cases. Hence more and more users prefer the non contact measurement solutions. In the milk plant in Mangalore, India there are three milk storage tanks with 15000 litre capacity which should be continuously measured.

We have offered our ultrasonic level transmitter EchoTREK SGV-380-2 for these applications suggesting the specific type of installation as there were criticality of CIP process where there can be steam and the temperature can go up to 90-95 °C.

C.I.P. stands for "cleaning-in-place" generally done with specific chemicals in first stage and then hot water /steam is used for defined time for sterilization depending on silo structure. But in certain cases it may shoot up to 90–95 °C. Also due to the temperature factor and the acid/caustic used for tank/silo cleaning it was necessary to use PVDF transducers, which is more resistive than the standard PP plastic.



Another really important aspect of the application which made ultrasonic principle suitable is that the milk is cooled in the tank and the filling is performed very slowly from the bottom to avoid foaming. Milk usually tends to foaming which could make ultrasonic level measurement impossible. Because of the temperature factor as well as steam, it should be ensured that the flange / transducer surface temperature does not exceed 90 °C and the steam should not get condensed on the transducer surface causing functional difficulties.



To reduce the temperature at flange / transducer a perforated nozzle was used. This also helped to drastically reduce the possibility of settling down the steam on transducer face and getting condensed on it. It is true that this arrangement is not possible in all the applications where perforated nozzles cannot be allowed. But at the majority places the solution was well accepted in order to provide suitable circumstances for reliable and accurate level measurement with EchoTREK ultrasonic transmitters.

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