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SMAR Position Transmitter

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TOASTERS AUTOMATION WITH FLOUR LEVEL MEASURING



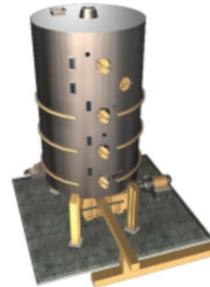
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One of the most important stages in vegetal oil production is carried out in Desolventizing - toasters or DT.

The toaster is formed by a series of trays (normally between 4 to 10) where the flour to be treated is deposited.

The flour is admitted by the toaster upper part and passes to the lower trays through a capped valve that regulates the speed of fall. This flour precipitation is backed by the combined movement of the agitators on a vertical shaft inside the toaster. By injecting steam counter current (from lower to upper plates), the heat generated eliminates the solvent residues still present in the flour, before going to the next process stage.



The flour that reaches the lower plate has been previously treated and is sent over to the next processes.

To get efficient toaster automation it is necessary to measure the flour level in each tray, to regulate the steam flow, and the flour movement through the capped valve.

Level control between plates

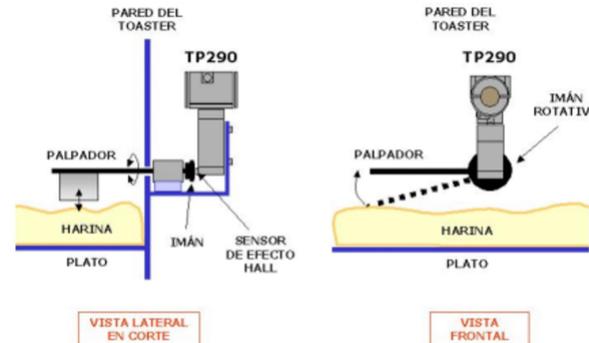
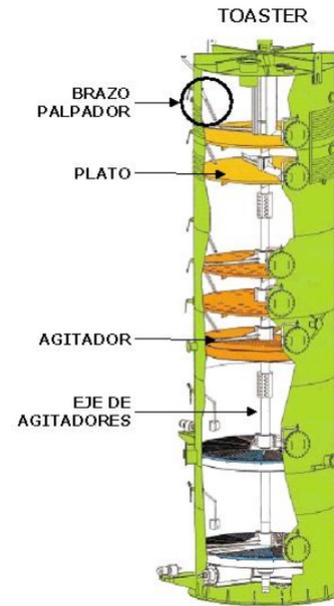
One of the most critical aspects on the toaster automation system consists of measuring the flour level on each plate.

Normally are used feelers that "feel" the flour height and transmit its movement mechanically to a measuring system and send the signal to a control system or PLC. The main problem is that these systems include many mobile parts and mechanical actions that are prone to failure and wear.

The best solution is to measure the level with an electronic position transmitter like the SMAR TP290. The fundamental feature in this position transmitter is that the position "feel" is performed without the mechanical coupling between the feeler and the transmitter.

The TP290 feeler position is measured without contact, through a magnet attached to the feeler shaft and a Hall effect sensor integrated to the transmitter. Therefore it eliminates the direct mechanical connection between both parts and gets a reliable and robust measuring system. Furthermore, as it uses an entirely digital electronics, the TP290 offers a programmable, highly accurate and recurrent 4-20mA output.

The figures show schematically the way of assembling the TP290 in each toaster plate, with emphasis in the solidary magnet on the feeler shaft and the Hall effect sensor.



The closing system of the SMAR TP290 position transmitters is explosion proof, which enables it to be installed in hazardous areas.

The TP290 may also feature an alphanumerical LCD display that constantly shows the feeler position.

The transmitter startup is highly simple, since it only requires moving the feeler to the position corresponding to 0% (4mA) and next to 100% (20mA), which indicates to the transmitter to recognize these positions as the working limits, with a magnetic tool.

The SMAR position transmitters line includes the following models:

- **TP290** – 4-20mA
- **TP301** – 4-20mA + HART
- **TP302** – Fieldbus Foundation
- **TP303** – Profibus PA

Applications in operation

Some of the companies already using the position transmitter in Argentina are:

- Bunge: Planta Pto. San Martin, Planta San Jeronimo
- Louis Dreyfus: Planta Gral Lagos, Planta Timbues
- Germaiz: Planta Baradero
- Arcor: Planta San Pedro
- Cargill: Planta Pto. San Martin
- Molinos Rio de la Plata: Planta San Lorenzo, Planta Santa Clara
- Vicentin
- Terminal 6: Planta Pto. San Martin
- Nidera: Planta Junin y Pto. San Martin

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