



Level



Pressure



Flow



Temperature



Liquid Analysis



Registration



Systems Components



Services



Solutions

## DP Level Measurement in Vacuum Distillation

Cerabar S PMC71 Ceraphire™ absolute pressure transmitters withstand high temperature vacuum applications



Various chemicals are used in plastic manufacturing



Cerabar S PMC 71 with flange



Typical chemical plant

### Reliable level measurement in distillation columns is critical in plastics manufacturing.

#### Customer profile

A major producer of plastics.

#### Application description

Measuring level in vacuum distillation columns used throughout the plastic production process.

Process material: Various intermediate chemicals used in plastics production

Temperature: 220 to 338°F  
Head pressure: 4 mmHg  
DP Level: 24" to 100"

#### Application challenges

The customer previously used differential pressure transmitters with metal diaphragm remote seals to measure level. The remote seal metal diaphragm would frequently bulge (jiffy-pop) due to boiling of the fill fluid at high temperature and deep vacuum. Redundant metal diaphragm DP transmitters on the same distillation column often differed in level measurement by as much as 30% in a 100" span or less.

#### Solution

Replace metal diaphragm remote seal DP transmitter with two PMC71 ceramic

absolute pressure transmitters. The differential pressure level measurement is now made electronically in the control system using the output from the two absolute pressure transmitters.

In the old installation, two sets of diaphragm remote seals plus an absolute pressure transmitter (installed in the head space) were used. In the new installation, two PMC71 transmitters are installed, one at the bottom sidewall of the distillation column and the other at the top in the head space.

#### Instrument description

The Cerabar S PMC71 with Ceraphire ceramic diaphragm technology provides highly accurate and stable pressure measurements in difficult gage or absolute pressure applications. The dry (no fill fluid) ceramic sensor accurately measures deep vacuums at elevated temperatures without damage to the diaphragm. The Ceraphire ceramic material used in the sensor is 99.9% pure aluminum oxide (Al<sub>2</sub>O<sub>3</sub>) for best-in-class chemical compatibility. The physical durability of the ceramic sensor makes it ideal for abrasive slurries or applications requiring frequent cleaning of buildup on the diaphragm. With a wide variety of process connections and materials

to choose from, the Cerabar S PMC71 can be customized for almost any application.

#### Results

The two PMC71 transmitters provide a more accurate and reliable differential pressure level measurement than the previous metal diaphragm remote seal transmitter. This provides several benefits to the customer:

1. Cost savings from not having to replace remote seal transmitters on a routine basis due to fill fluid boiling.
2. Fewer process interruptions since level measurement is more tightly controlled in the distillation columns.
3. Simplification of instrumentation and control since two remote seal DP transmitters and one pressure transmitter (for measuring head pressure) have been replaced by two absolute pressure transmitters (3 transmitters with 5 process connections have been replaced by 2 transmitters with 2 process connections).

For more information, contact  
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Cerabar S PMC71 absolute pressure transmitter mounted on distillation column

ISO 9001:2000 Certified

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