



Petrochemical Refinery Catalytic Reformer Recycle

Application Notes

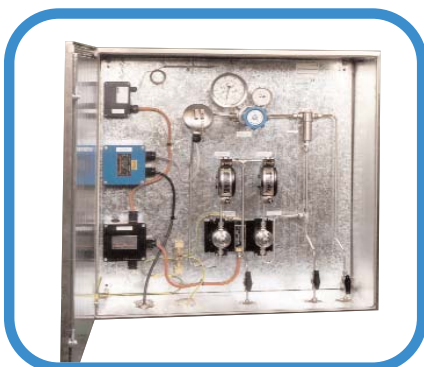


Sasol Refinery, South Africa

Background

In catalytic reforming processes used for the refining of petroleum products, the control of moisture content in hydrogen recycle gas is critical to ensure the efficient operation of the plant. Excessive moisture, greater than 50 ppm_v, will result in poisoning of the catalyst by removing hydrogen so reducing catalyst life time with direct high cost implications. Furthermore, the efficiency of producing the desired chemical reactions and thus output yield of the required petroleum products is adversely affected if moisture content in the recycle gas is not maintained in the optimum range 20 to 30 ppm_v.

Hydrochloric acid is injected into the process gas stream at this phase to replenish hydrogen levels which the refinery process requires for periodic regeneration and conditioning of the catalyst. The sensor should be isolated from the process gas sample to avoid corrosion problems caused by this HCl and the coinciding increase in moisture concentration up to 2,000 ppm_v or more.



Promet Sampling System

Measurement Technique

Using the Michell Ceramic Moisture Sensor, Transmet IS can be installed in a simple sampling system made from high quality stainless steel components. The arrangement of the sampling system should include valves on both inlet and outlet to isolate the sensor during regeneration phases thus trapping the sensor in pressurised dry process gas with only trace levels of HCl. If a remote or local display with alarms is required then the Cermet II monitor can be installed with this system.

The Sensor can be installed at full process pressure to indicate either dew point temperature or moisture content (ppm_v) under actual line conditions.

If indication and output in units of moisture content is required, then the sensor can still operate at line pressure (a pressure can be manually entered into the monitor for fixed pressures or as an option, an additional pressure transmitter can be used for automatic compensation for pressure fluctuations), enabling the selection of either 1-9999, 0.1-999.9, 0.01-99.99 or 0.001-9.999 ppm_v ranges available as standard with the Cermet II Monitor. Other units available are °C, °F, gm⁻³, Lb/mmscf.



Transmet I.S.

Reference Users

BP Oil, BP Research, ELF Oil, Exxon Chemicals, IFP, Mobil Oil

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