

Emerson™ Solutions Improve Regulatory Compliance While Reducing Hydrocarbon Waste

RESULTS

- Online interlock system eliminates manual tank draining
- Better real-time control versus labor intensive mobile phone control
- Eliminate additional treatment of wastewater
- Ensure environmental regulation compliance
- Traps in bypass reduced to less than 4%

APPLICATION

Removal of water from hydrocarbon products in storage tanks

CUSTOMER

Hanwha Total Petrochemical Co. Ltd, headquartered in Seoul, South Korea, is a joint venture between Hanwha and Total S.A. The company manufactures building block chemicals that go into the making of a host of other chemicals needed to make various consumer products.

CHALLENGE

Hanwha Total Petrochemical has 20 naphtha and Pyrolysis gasoline storage tanks in their Daesan plant. During the process of storing naphtha in the tanks, water collects and accumulates at the bottom of the tanks due to its specific gravity. The water at the tank bottom will need to be drained over time to prevent it from flowing into the process. During water draining, it is necessary to monitor any hydrocarbon leakage so as to prevent oil loss, leakage of naphtha into the drain sump located at the tank area, and eliminate additional treatment work needed to remove hydrocarbons from the drained water.

Traditionally, the company assigned an operator to perform tank draining on a quarterly basis. In the draining process, the water is pumped through a drain pipe. If the operator sees the oil start to flow through site glass of the pipe, he will quickly inform the control room to close the drain valve. This is a very tedious task for the operator as tank draining is a lengthy process of approximately 2-3 hours, that may require the operator's presence during the entire operation. Also, the point at which oil, and not water, commences to drain is not easily determined. Hence, there is a danger where a water drain valve is closed too late resulting to the hydrocarbons flowing into the sumps. This will increase the load to downstream water treatment facility and increase water treatment cost to be certain that before the affluent is discharged it complies with environmental regulations. In addition,



“The solution from Emerson frees up technicians from labor intensive manual drain control and provide significant savings by preventing from losing feedstock.”

Kim Ji-Min

*Manager, Engineering Team
Hanwha-Total Petrochemical Co Ltd*



Hydrocarbon leak detection handled by reliable Rosemount 1066 Transmitter and 402 Conductivity Sensor

leakage of either naphtha or pyrolysis gasoline is equal to losing feed to the process and becoming loss of production.

SOLUTION

Due to the difference in the conductivity of naphtha and water, it is possible to use a conductivity analyzer to monitor hydrocarbon leakage during tank draining. The conductivity of mixing water and naphtha or pyrolysis gasoline is very low microS/cm. Typically water conductivity is around 650 - 1,000uS/cm. When there is a leakage of naphtha, the conductivity level will go down to 100 to 500uS/cm. Using this as a set point, the data control system at Hanwha will automatically close the valve downstream of the conductivity measurement point.

Hanwha implemented Emerson’s Rosemount™ 1066 Single Channel Transmitter and 402 Retractable Contacting Conductivity Sensor with retractable ball valve mounting assembly. This combination of sensor and analyzer provides early detection of hydrocarbon leak during water draining from the tank. Moving from manual control to automated control with proper control set point, the Emerson solution saves the operator time and reduces loss of feedstock than it does with a visual inspection. The Rosemount 402 Sensor with retractable mounting assembly helps Hanwha avoid any leak of process from drain pipe when they conduct sensor maintenance.

This solution provides early detection of hydrocarbon leak during water draining from the tank.

RESOURCES

Emerson Automation Solutions- Chemical Industry

Emerson.com/Industries/Chemical

Rosemount 1066 Single Channel Transmitter

[Emerson.com/Rosemount 1066 Single Channel Transmitter](http://Emerson.com/Rosemount1066SingleChannelTransmitter)






Rosemount 402 Retractable Contacting Conductivity Sensor

Emerson.com/Rosemount/402-Sensor

GSP: https://sales.emersonprocess.com/DocumentCenter/RosemountAnalyticalDocuments/LIQ_QBR_Chem_Hanwha_Total_Improve_Regulatory_Compliance_While_Reducing_Hydrocarbon_Waste_1066.pdf
 Website: <http://www.emerson.com/resource/blob/187654/7e3e1fc49a4a6d0133225b4be2c048d4/proven-results--emerson-solutions-improve-regulatory-compliance-while-reducing-hydrocarbon-waste-data.pdf>

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LIQ_PR_1066, Rev A