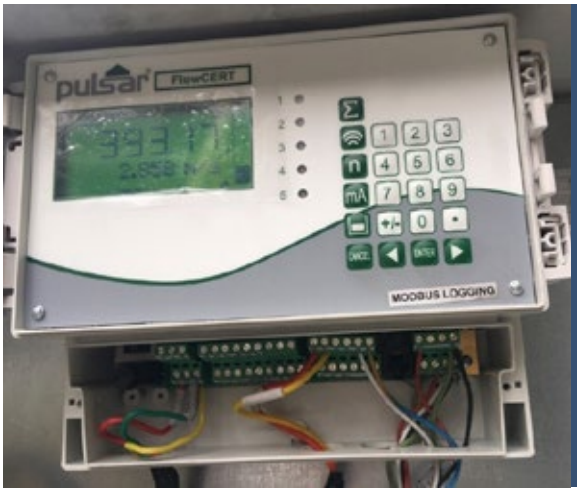
Rainwater Drainage, Flow Monitoring for a chemical plant in Changshu, Jiangsu Province, China.

Globally, businesses in the industrial and chemical industries are facing more pressure to comply with environmental regulations. This was very much the case at a chemical plant in Changshu, located in the Jiangsu Province in China.

What did they need for their application?

Due to the environmental protection system for the measurement of rainwater drainage, the plant must monitor the flow of rainwater that is discharged from the effluent channel. The open channel is 1.8 m (5.91 ft) wide and 1.8 m (5.91 ft) deep. When there is a lot of rain, the plant needs to collect the rainwater and discharge it into the Yangtze River that runs nearby. As the chemical plant covers such a vast area, the drainage is very unstable. There is a lot of rain in summer, and the water level of the internal channel may reach 1.3 m - 1.4 m (4.27 ft - 4.59 ft), whereas, in the dry season, there is no rainwater to be collected.

Open channel weirs and troughs will lead to unfavorable drainage during the rainy season due to the elevated water level, especially when the water level of the Yangtze River is already high. Discharging into the river when it is already suffering from a high-water level can cause logging and build-up in the river and effluent channels. This scheme can measure rainwater drainage at both high and low river water levels. However, the rise of the river itself will not lead to the obvious wrong measurement of the weir and trough flow.



"The flow data received from the MicroFlow velocity sensors provide flow readings that are consistent with the actual flow through fieldprocess verification."

Finding the right flow measurement solution.

To help provide a measurement solution to identify the flow rate of the River Yangtze, a non-contacting solution was adopted. To monitor wide channels, two MicroFlow velocity sensors were chosen, along with a dB ultrasonic transducer to identify the level of the river. All these signals were fed into the Ultimate Controller where it averages and calculates the two velocity signals from the MircroFlow sensors, and the height of the liquid level is converted into a cross-sectional area.

After calculating all three readings, the instantaneous flow and cumulative flow can be displayed, with options to display the single-day cumulative flow.

This installation has been installed at the chemical plant for several months, and far exceeds the application requirements.

More Information

dBMACH3 Level Sensor: https://pulsarmeasurement.com/dbmach3-db3-with-sun-shield

MicroFlow Velocity Sensor: www.pulsarmeasurement.com/microflow

The Ultimate Controller: www.pulsarmeasurement.com/ultimate-controller

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By taking a step forward in echo processing technology, Pulsar Measurement addresses applications previously thought to be beyond the scope of ultrasonic measurement. This technology improves signal processing at the transducer head which has made it possible to increase resistance to electrical noise, enabling the transducer to 'zone in' on the true echo.

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