Open Channel Flow Metering

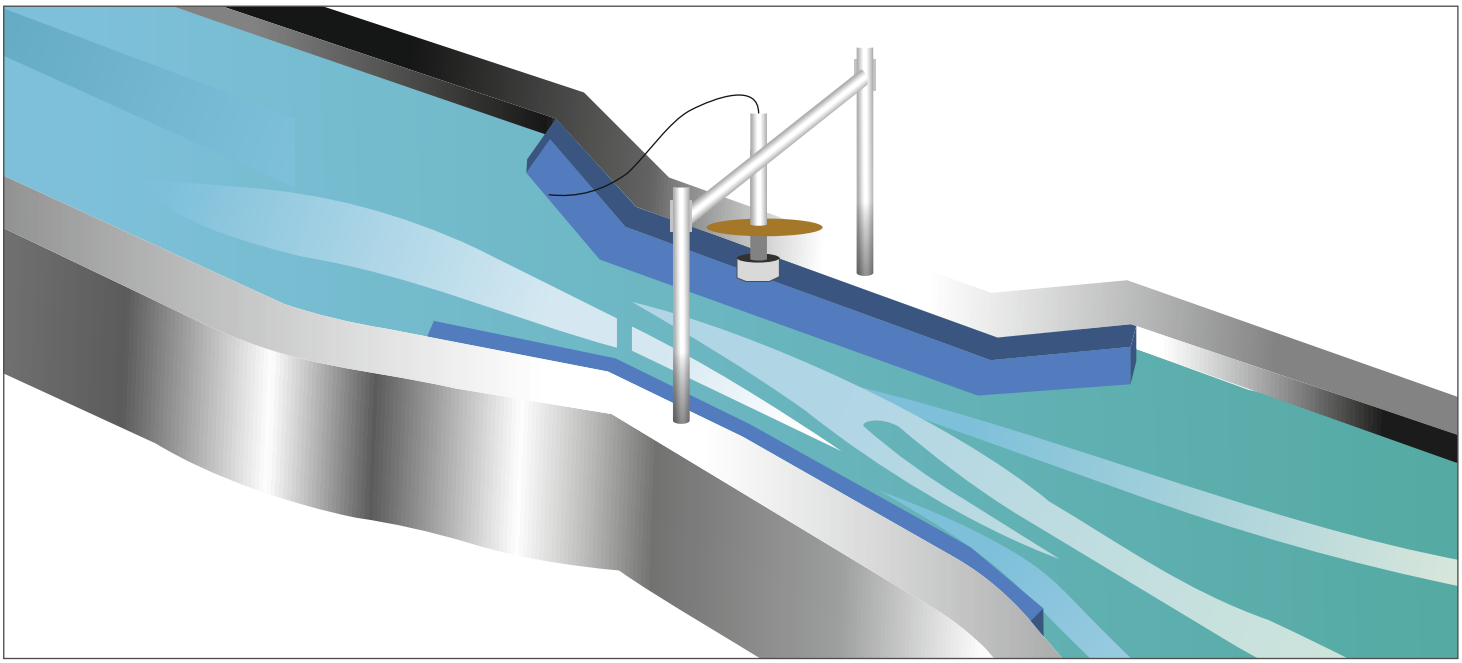
A Parshall Flume Based Solution

Industries like textiles, tanneries, specialty chemicals, food processing and paper, among others, consume large quantities of water in their processes. As a result, they also generate a huge amount of effluent or waste water. This effluent is extremely harmful to the environment, and hence need to be properly treated with respect to various analytical parameters, so that the impact on the environment is minimised.

Many times, it is not economically viable for plants to have their own effluent treatment plants, especially if they are relatively small. Some industrial clusters have come together to set up common effluent treatment plants (CETP) under a centralised body. Setting up a CETP helps these plants save on capital and operational costs of individual treatment plants. Also, less land than what would be taken up by individual treatment plants, is occupied.

In such cases, the effluent from individual plants needs to flow from the premises directly into the main sewer network. It cannot be allowed to enter water bodies like rivers, reservoirs, streams or lakes before first being cleaned and treated to avoid water pollution. Overflow of the effluent getting transferred to the CETP in open channels as a gravity flow needs to therefore be prevented. Flow measurement plays a key role in ensuring that the flow in these open channels is contained within limits.

The Forbes Marshall Solution



With a wide experience in the field of process instrumentation, Forbes Marshall provides end-to-end solutions in the form of integrated automation packages for instrumentation and control. A strong knowledge base coupled with an application oriented approach and precise engineering has made us a preferred supplier for these packages.

The concept of complete engineering, supply and erection packages for field instrumentation as well as control systems provides an enhanced value to the industry in terms of accurate control over process parameters and ensures safety.

Our unique solution for open channel flow metering uses the Parshall flume based flow metering technique; a fixed, hydraulic structure used to measure volume of flow in an open channel. It is a uniquely shaped artificial channel that can either accelerate or restrict flow rates by either contracting or opening the parallel side walls adjusting the floor elevation.The primary flow element is designed for discharge characteristics using various industrial standards such as ASTM D1941, ISO 9826 etc. These flow meters do not have any moving parts and can be provided with wetted parts in FRP so as to withstand the harsh corrosive effluent water.

The Forbes Marshall flume based open channel flow metering solution can be provided with either an ultrasonic or radar based level transmitter with a flow computer and totaliser. The flow computer would derive the equation between the level and flow measurement, and can also provide flow totalisation and remote transmission if required. All the necessary sizing calculations are provided in order to achieve a good accuracy on open channel flow measurement.

Special analysers can be provided as an add on to monitor the quality of effluent being discharged.

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