McHale & ASSOCIATES, INC.

DYE DILUTION

Measurement Services

WHAT IS DYE DILUTION?

The dye dilution method for measuring flow is a method that allows an instantaneous flow to be measured by determining the dilution of a tracer injected into a flow. The dye dilution method is based on a mass balance calculation. A small quantity of fluorescent dye at high concentration is continuously injected at a measured, constant rate into the test flow. Concentration of the fully mixed flow is determined by fluorescence intensity measurements. The ratio of the injected concentration to the final concentration, minus any background concentration in the incoming flow, multiplied by the injection flow equals the fully mixed test flow.

APPLICATION

- Circulating Water Pump Flow
- Waste Water Open Channel Flow
- Surface Water & Ground Water Flow Rate
- Water Dispersion Studies
- Stratification in Reservoirs
- Hydroelectric Power Plant Flow

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WHY USE DYE DILUTION?

Accurately measuring flow rate can often a be a daunting task when the flows are in large pipes, undefined conduits, or if the existing piping configuration prohibits accurate measurement using conventional flow measurement devices (Orifice, pitot, ultrasonic, etc.). When faced with these challenges, consider Dye Dilution as a possible solution.

- Accepted by both ASME and IEC test codes.
- Can be used when there is no ready access to the conduit.
- Does not require long straight runs of pipe.
- Testing is accurate and provides quick results.
- Well-suited for measurement of flows in large conduits.
- Rhodamine WT has been used in numerous EPA studies and is safe for discharge into the environment.

McHale's specialized technical services focuses on providing you with the most accurate flow rate measurement using Dye Dilution. McHale will work with you on conducting a thorough review of the piping/conduit/flow configuration to ensure that dye dilution will work and we will develop a detail testing approach that will ensure success. Our integrated, multi-disciplinary team is made up of dedicated and highly experienced specialists that are trained in their areas of expertise. Together, we ensure that solutions are delivered at the best possible standard.

SELECTED PROJECT EXPERIENCE

FACILITY NAME	LOCATION	FACILITY TYPE
Muskogee Power Plant	Ft. Gibson, OK	Combined Cycle
Salem Nuclear Power Plant	Lower Alloways Creek, NJ	Nuclear
Independence Power Plant	Newark, AR	Fossil
White Bluff Power Plant	Redfield, AR	Fossil