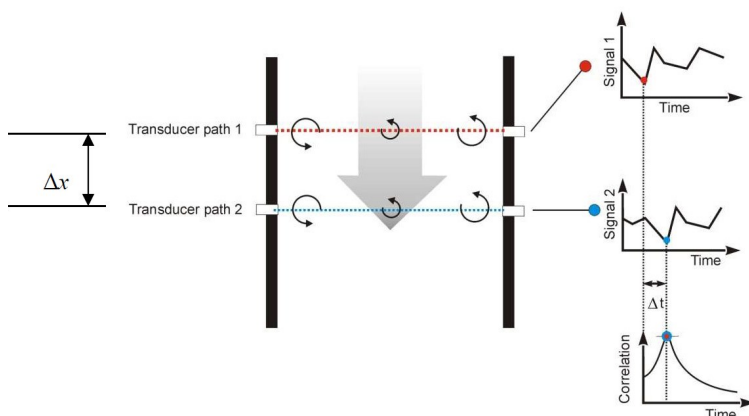




**Figure 1.** ASFM frame at the Beaucaire Hydropower Plant, Rhône River, France.

ASL AQFlow is pleased to announce that our [Acoustic Scintillation Flow Meter](#) (ASFM) is being used by the Compagnie Nationale du Rhône (CNR) to conduct flow measurements at the Beaucaire Hydropower Plant on the Rhône River in France as part of an electrical production optimization program. This site generates approximately 210 MW of hydroelectricity from six bulb turbines. Figure 1 shows the instrumented frame that is lowered into the hydroelectric plant intake to the turbine and is equipped with an ASFM array that measures flow across 30 paths. Prior to this installation, the ASFM was successfully deployed at the Châteauneuf-du-Rhône, Montélimar-Henri-Poincaré- hydroelectric plant, another of CNR's facilities on the Rhône River. The quality of the data collected at this site was considered very high and results were repeatable with an average uncertainty of roughly 0.4%.

The scintillation technique measures the velocity of the water flowing through an intake by sending and receiving acoustic pulses that detect small-scale turbulences in the flow (Figure 2). If the spacing between transducers is sufficiently small, then the pattern of the variations of the embedded turbulence in the flow at the upstream transducer will be nearly identical to the pattern of the variations of the embedded turbulence at the downstream transducer with a measurable time delay. By measuring the highest correlation between these two signals over time, an average flow velocity can be determined by dividing the spacings of the transducers by the change in time at the point of highest correlation. As the ASFM uses an array of three closely spaced transducer/receiver pairs, both flow magnitude and inclination can be resolved.



**Figure 2.** Schematic of the Acoustic Scintillation Flow Meter.

In January of 2022, the ASFM was included in an appendix to the American Society of Mechanical Engineers Performance Test Code under Hydraulic Turbines and Pump-Turbines (ASME PTC 18-2020). The ASFM is non-intrusive, has no moving parts and does not require intake or unit dewatering. It has been used in a variety of hydroelectric plants around the world and continues to offer real-time, accurate and cost-effective flow measurements.

For more details on the ASFM technology and a list of papers and installations, visit our website: [www.aqflow.com](http://www.aqflow.com)