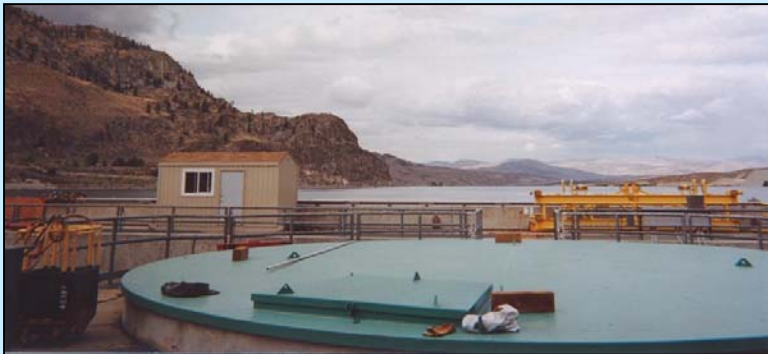


Home of the **Acoustic Scintillation Flow Meter**



AQFlow Flow Meter Successful At Wells Dam

Douglas County PUD, Washington State, have successfully completed tests using the AQFlow Acoustic Scintillation Flow Meter (ASFM) system to measure flow through a large Kaplan turbine with a very short intake. The measurement was at Unit 3 of the Wells Dam, on the Columbia River about 50 miles north of Wenatchee, Washington.

Douglas County PUD wanted to compare the ASFM system to other types of flow measurement before applying this technology in other units at

Wells. Review of the test results shows good correlation with a fixed time of flight flow meter and with a Winter-Kennedy system.

“The ASFM technology is a promising technology for measuring large flows through short intakes.” said Ken Pflueger of Douglas County PUD. “And preliminary test results show that the technology works well. It also has the advantage that one set of frames can be moved from unit to unit for index tests instead of having to be permanently installed.”

For more information on Douglas County PUD, see: www.douglaspudd.org

ASFM Circular™

ASL AQFlow has been developing the ASFM *Circular™*, for discharge measurements in penstocks. In the first stage of this R&D project, being carried out with Hydro Quebec, the transducers are mounted on the outside of the steel penstock.

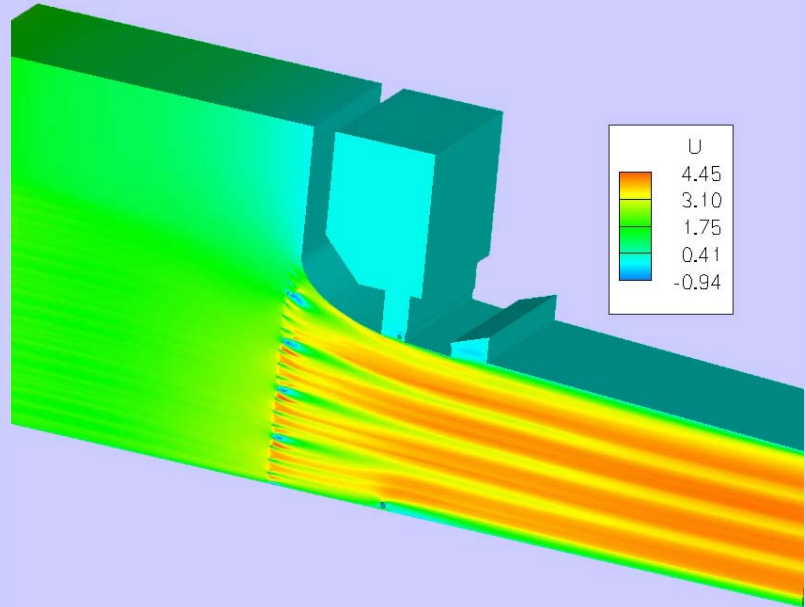
Initial tests were carried out in August and September 2002 at a specially built test tank at AQFlow's facilities. The tests results were positive and showed that with additional system gain, the existing ASFM unit could be used to send acoustic pulses, at sufficient signal strengths through two steel walls and the intervening water.

In the second phase of the project, AQFlow deployed a modified ASFM system at Hydro Quebec's Laforge 1 (LA1) plant. These tests have demonstrated that signals from the ASFM can be transmitted through the walls of a circular penstock, and that sufficient correlation exists in the acoustic signals to compute velocities. AQFlow is presently assessing the absolute accuracy of the results, which requires detailed information about the velocity field in the penstock at the measurement plane.



CFD Modeling

Since joining ASL AQFlow in February 2002, Dr. Latif Bouhadji of ASL AQFlow's Computational Fluid Dynamics (CFD) group has been studying the flow regime in hydro intakes, primarily with 2-D simulations using CFX at University of Victoria's CFD lab. This research is directed at optimization of ASFM technology with application to the hydrodynamics of hydro plant intakes and draft tubes. Recently, Dr. Bouhadji began testing new CFD software called SPARC, which provides the in-house capability of running 3-D simulations. In some cases, the intake complexity and close proximity of the trash rack make full 3-D flow modeling essential. To date Dr. Bouhadji has run SPARC to repeat the 2-D configurations previously run for the Lower Monumental Dam, WA and Stave Falls, BC plant intakes. The results have been very encouraging, and work is now under way on conducting a full 3-D CFD model run for the Stave Falls plant.



Horizontal velocity component (U) distribution within the 2-D Stave Falls intake

Hydro 2002 Turkey



AQFlow attended the conference and exhibition in Kiris, Turkey November 2002. Our Josef Lampa presented a poster paper entitled "Recent advances in estimating uncertainties in discharge measurements with the ASFM". Interest was shown by delegates from France, Croatia, Finland, Germany, Switzerland, Turkey, Austria and Australia.

Other Hydro Solutions

Our parent company, [ASL Environmental Sciences](#), offers a range of related services and products for other hydro applications, such as flow surveys and numerical simulations in forebays and tailraces.

Meet Us At Events

ASL AQFlow will be attending the following trade shows & conferences. We would welcome the opportunity to talk to you.

ICOLD 2003	June 16-20	Montreal
Waterpower XII	July 29-31	Buffalo, NY
Hydro 2003	Nov. 3-6	Croatia



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