

Home of the **A**coustic **S**cintillation **F**low **M**eter

AQFlow Sells ASFM Advantage to Wells Dam

Douglas County PUD, Washington State, have just placed an order for a 3-bay, 10 paths/bay ASFM Advantage system. After running comparison tests between the ASFM system and other types of flow measurement on Unit 3 at Wells Dam in the fall of 2002, Douglas County has chosen the ASFM for further flow measurements through short intakes. The ASFM 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. Wells Dam has 10 Kaplan turbines.

Power Plant Efficiency at Little Goose



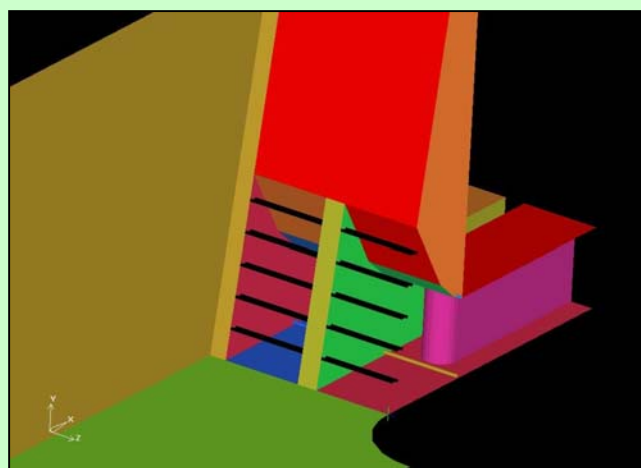
Turbine efficiency tests for the Little Goose Dam powerhouse have been conducted by the Walla Walla District Corps of Engineers, using the ASFM, as part of the Power Plant Efficiency Program. With the ASFM installed in the turbine intake operating gate slots, index tests, with and without fish screens, were conducted. The turbine flow measurements are needed to determine the best operating efficiency for the turbines. Two turbine units - #3 and #4 – were tested.

Measurements included: determination of boundary conditions, the average velocity at each path, the total flow through the intake bays and total discharge of the test turbine for each test. In February 2003, a second ASFM was installed and operated in the draft tubes of unit 4, marking the first time an ASFM has been operated in a draft tube.

Latest Computational Fluid Dynamics Modeling Project

AQFlow's CFD group has begun developing a model on the Hydro Kennebec intakes (see article next page).

They are expecting to run it with two different programs; CFX and SPARC to compare the turbulence and mean velocities with the ASFM data collected June 2003. The configuration has been gridded with ICEM-CFD Grid Generator



Hydro Kennebec intake to pit turbines, with trash racks.



Flow Measurements for Hydro Kennebec

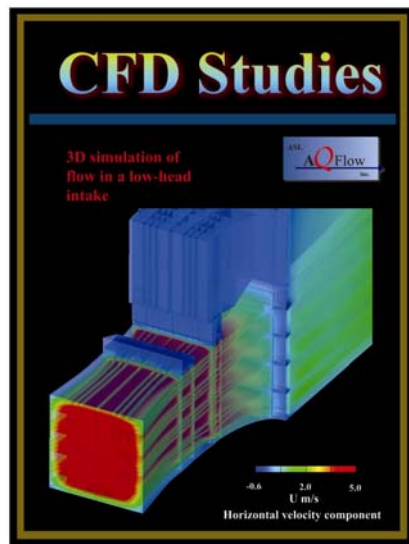
AQFlow has just returned from the UAH/Hydro Kennebec plant in Winslow, Maine, VT. Two projects were undertaken there: 1) Flow measurements for Hydro Kennebec, and 2) A research and development project, Q-Turbulence, for AQFlow.

The flow measurements were done with a 1-bay, 20 path ASFM system at each of two units for optimization of the plant. The HKPL plant has two Voith Hydro, Inc., 3,900mm 4-blade Pit Kaplan runners with a rated head of 27 Feet, speed of 116.6 RPM and a rated discharge of 3,767 cu feet/sec. Each runner shaft is connected through a speed increaser to a General Electric Canada, Inc. generator with a rated output of 7.7 MW and a speed of 600 RPM.

The R&D Q-Turbulence project consisted of two parts: 1) Direct measurements of turbulence at a series of locations in the intake, and 2) Calibration of AQFlow's CFD model of the intake.



Lowering ASFM frame into intake at Unit 1 Hydro Kennebec, Maine



Our paper on CFD modeling of intake flows will be presented in Session 8E Thursday at 1:30pm

AQFlow Out and About

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

ASL AQFlow Presenting:

Waterpower XIII 2003	July 29-31 2003	Buffalo, NY	"CFD analysis of turbulent flows in hydroelectric plant intakes – application to ASFM technology"
Hydro 2003	Nov. 3-6 2003	Croatia	"The Acoustic Scintillation Flow Meter – a breakthrough in short intake turbine index testing"
IGHM 2004	July 14-16 2004	Switzerland	Technical results of recent improved understandings of conditions for optimal absolute ASFM accuracies will be presented
Hydrovision 2004	August 16-20 2004	Montreal	Overview of latest research on ASFM accuracies in short intakes.

Other Hydro Solutions

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



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