Ultraflux

Application data sheet

Flow control of turbines and power of electrical groups

Customer: BEP Bestobell
Site: Gariep Injury – South Africa
Industry: Hydroelectricity-energy
Date/Quantity: 2002 / 4 installations

Description of the application:
Reliable and accurate flow measurement on such a site allows the efficiency of the "inlet pipe / turbine / generator" set to be monitored. The diameters of the pipes are very large: 7.4 m (see the picture below). The site is built and working, and access to the penstock pipes is limited.
The probes are therefore installed on the metal parts which are used as expansion joints for the concrete pipes. These sections are located in easily accessible rooms.

Picture: example of DN 1500 mm pipe flow measurement in France

Description of the equipment:
In order to increase the intensity of the ultrasonic signals noted during the preliminary tests, we offered twinned clamp-on probes ref. SE-1599-I. This allows an increase in the signal of about 16 db. A special support was designed, which can be fixed without straps. One single cable per twin probes is sufficient.
In order to optimize the monitoring of the flow speeds and also to obtain redundancy of measurements in the event of defect, we installed two diametric chords in direct mode.
Measurements are carried out by our converter UF 322-L2 with an advanced electronic board.

DN 7,400 mm pipe flow measurement in South Africa

Particular technical specifications:
The maximum flow per set is 160 m^3/s that is to say a power per set of about 100 MW.
The accuracy of the four flow measurements is +/- 1 %, referring to the performance tests of the turbines and generators.
The other big advantages of our installation are the absence of moving parts and a possible installation without the need for difficult work such as the drilling of the pipes which is prohibited for safety reasons.

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