STEBATEC®
Measure - Control - Regulate

ARA Radet in Wallis (Switzerland)

High-precision overflow measurement with IDM

- Highest, hydraulic lab validated functionality and measuring accuracy
- Widest possible measuring range
- Plausible mass balance
- Results can be used as evidence in court

Installation of the IDM unit of the stationary flow metering system and of the impoundment pipe in one of the two shafts.

Starting situation

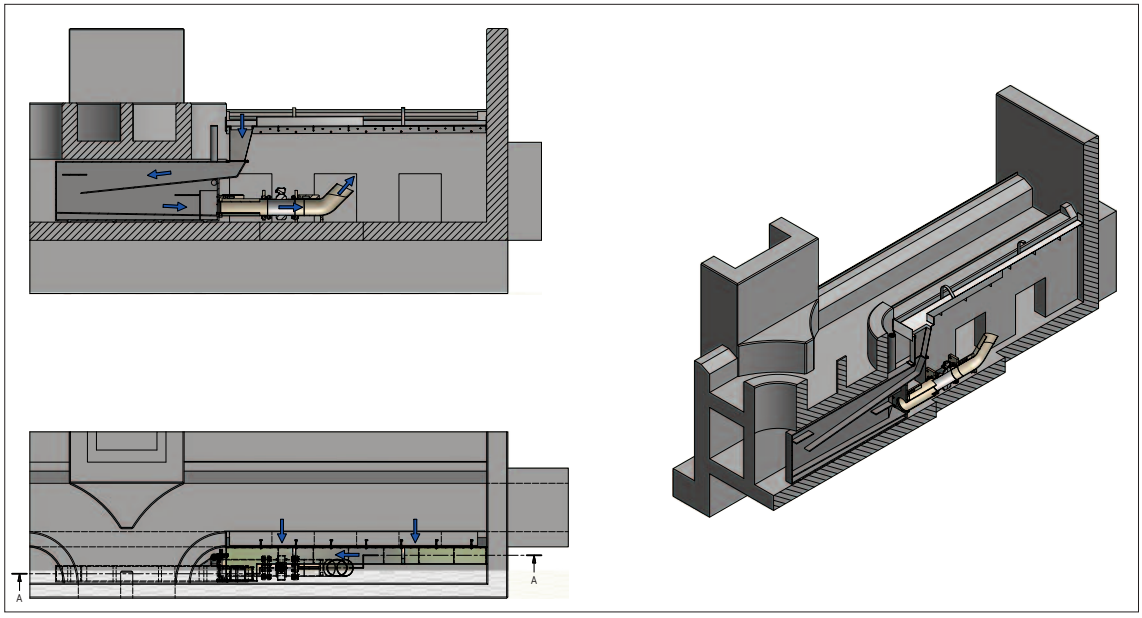
The waste water treatment plant Radet near Leuk in the canton of Wallis treats the waste water of 12 municipalities. Recently, the administration union had installed additional measuring points in the sewerage system to improve the billing accuracy. However, the inflow to the treatment plant was still not measured. That would have required substantial input at the construction end and caused unreasonable cost. For that reason, another solution was needed. As outflow data was available, the total flow could be calculated if the so far unknown overflow volume was known. Overflow occurs at times of heavy rainfall when the waste water treatment plant cannot take in all the water and part of it is only treated preliminarily. To ensure that the overflow is as clean as possible, the water passes over an edge directly below the water surface. However, the width of the edge and the air entrained when the water is falling make the measurement difficult.

Requirement

- Hydraulic conditions suitable for measurement
- High-accuracy flow metering
- Measuring range from 0 to 250 l/s
- Guaranteed function based on tests in the STEBATEC hydraulic lab

Implementation

At first glance, the wide, air entrained overflow fall is not suitable for magnetic inductive flow metering (IDM) which needs a continuous flow and a fully filled pipe. To meet these requirements, a special construction had to be developed in which the water, after passing the overflow edge, flows through a channel before it collects in a shaft beneath the channel. With this arrangement, the air bubbles entrained when the water falls from the overflow edge can escape and the water back-up is high enough to completely fill the pipes leading out of the shaft. This complex hydraulic situation was at first tested thoroughly in the STEBATEC hydraulic lab to be sure that the flow capacity and the measuring accuracy of the arrangement were under reliable control. Together with the outflow metering, the waste water treatment plant in Radet can now calculate the total volume of treated water also in rainy spells and by estimating the water eliminated with the sludge determine the actual inflow with sufficient accuracy. Thus, the precision of billing by the administration union has again be improved.



One half of the overflow measuring system positioned underneath. The water run is marked blue in the section and in the elevation (left).

Captions

View into the right, dry outflow channel downstream the preliminary sedimentation section.

The left channel during the installation of the IDM measuring unit. High water flows over the edge that is running from the right lower edge upward in the picture.

With the overflow measurement, the Radet waste water treatment plant can now reliably determine the inflow during rainy period.

The short video which you can view by clicking on the photo shows the work on the project.