STEBATEC®
Measure - Control - Regulate

Dynamic outflow for controlled inflow to the Region Oberes Simmental sewage treatment plant

- Dynamic throttling to account for hydraulic conditions
- Variable return value in case of power or communication failure
- Link-up to higher level control system via cellular network

The partly filled pneumatic outflow control measures and limits the flow dynamically.

Starting situation

The Region Oberes Simmental sewage treatment plant treats sewage of the municipalities of Lenk and Zweisimmen. The largest inflow passes through the Galgenbühl storm overflow basin, other inflows originate in the area of Mannried and the Grubenwald pumping station. During rainy spells the inflow from Mannried often causes overload conditions in the sewage treatment plant. Separation of the rainwater in Mannried and active throttling in the Galgenbühl storm overflow basin should solve the problem. Needed was a dynamic control system on the basis of the volumes measured as well as better measuring equipment and control of the sewage treatment plant. To this end, the hydro-mechanical throttle in the Galgenbühl storm overflow basin was replaced by a pneumatic outflow controller so that the inflow to the sewage treatment plan was adaptable to the hydraulic conditions irrespective of the weather.

Requirement

- Control of the inflow to the sewage treatment plant during spells of rain
- Measuring the outflow from the storm overflow basin
- Transmission of the measuring data to the control system of the sewage treatment plant
- Keep within the maximum data quota of 500 MB a month

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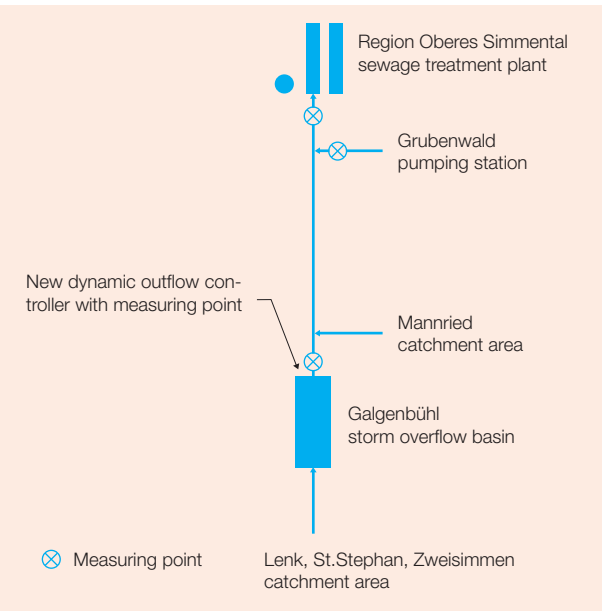
Implementation

The widely fluctuating inflow from the area of Mannried cannot be controlled without a retaining basin. The installation of a controller at the Galgenbühl storm overflow basin, which also measures the outflow, avoided the expensive solution. The new measuring point, together with those at the sewage treatment plant and at the inflow from the Grubenwald pumping station, calculates the Mannried inflow. If that, plus the other inflows, exceeds the permitted target of the sewage treatment plant, the controller automatically – i.e., dynamically – restricts the outflow from the storm overflow basin. Normally, when the waste water flows through the dry weather duct of the outflow controller, the throttle is open. Outflow data is constantly transferred to the control system of the sewage treatment plant by cellular network; the control system sends a setpoint level to the outflow controller which when exceeded starts throttling. In the event of power or communication failure, the system changes to a level that can be predefined. Besides, the throttle regularly flushes the outflow controller. Water is impounded and, when released, produces a surge that purges the controller. The parameters of the surge are set locally at the controller.

View of the booth with the control cabinet of the pneumatic outflow controller of the storm overflow basin at Galgenbühl.



Schematic of the Oberes Simmental sewage treatment plant with inflows.