



## Reliable measured values despite cramped conditions

In the extensive area covered by [Abwasserverband AIZ](#), many pumps are constantly at work moving wastewater into the right channels and ultimately to the sewage treatment plant. [VEGA level sensors](#) deliver reliable measured values that ensure that the pumps switch on and off at the right time.

Achental, Inntal, Zillertal – these Tyrolean valleys on the northern edge of the Alps are extremely popular with tourists. Their unique nature and idyllic location attract around 8.5 million visitors every year. Countless hotels, guest houses and restaurants, as well as small businesses such as alpine dairies and yoghurt producers, do their best to make sure the guests have a completely enjoyable experience.

The local [sewage treatment plants](#), however, face a special challenge. Wastewater produced in the area has a high fat content. Although cleaning out and processing this material is not a problem technologically, the process conditions are quite challenging for level sensors. The high fat content in the wastewater creates a lot of foam – this makes the liquid levels in the various basins and pump shafts difficult to detect.

## At one with nature



Responsible for the measurement technology at the AIZ: Josef Brandacher

Nevertheless, level measurement in wastewater treatment processes must be exact and reliable. Level data form, among other things, the basis for pump controls. The sewage treatment plant treats not only the wastewater produced by the visitors, but also that produced by the approx. 53,000 permanent residents of the 32 local communities. The latter are also connected to Abwasserverband Achenal-Inntal-Zillertal, AIZ for short. "All in all, we treat 10 million cubic meters of wastewater per year," explains Josef Brandacher, who is responsible for the measurement technology at AIZ. "The environment is our greatest asset, so it is incumbent upon AIZ to ensure that the collection and handling of wastewater as well as its subsequent clarification is environmentally compatible and economically viable." The wastewater is fed to the Strass sewage treatment plant via a 161 km-long sewer network and 14 pumping stations distributed throughout the association's territory. "Thanks to the state-of-the-art process technology in our facilities, we've achieved absolute top performance in the entire pan-European wastewater sector," adds Brandacher, clearly with great pride. As a result, the total energy consumption of the wastewater treatment plant has dropped noticeably since 2003, despite increasing loads. The specific energy consumption in kWh per inhabitant and year has been reduced from an initial 30 kWh to approximately 20 kWh.



## On the way to the sewage treatment plant



Limited conditions in the pump shaft in Hart

In the network the wastewater is collected via canals and then directed from the collecting basin to the Strass sewage treatment plant. There are about 100 pumping stations in the network and a variety of level sensors are installed in each one. These monitor the level – which can be from around 50 cm to 1 meter depending on the pumping station – and switch on the pumps according to the set limit value. “The pumps sometimes start up only 2 or 3 times a day, but sometimes 50 to 60 times,” explains Brandacher. For reasons of explosion protection, VEGAPULS WL 61 is installed in many of these shafts. This sensor is considered an all-rounder in the water and wastewater sector. The application spectrum of the radar sensor, which is designed specifically for water and wastewater measurement, ranges from level measurement in [pump shafts](#) and flow measurement in open flumes to [river and lake gauging](#) or level and discharge measurement at stormwater [overflow basins](#). It has proven its worth above all through its robustness: The measurement is affected neither by changing medium properties nor by fluctuating process conditions such as temperature and pressure. In addition, the flood-proof IP68 housing ensures continuous, maintenance-free operation.

## New compact level sensor in use

Although the association very much appreciates VEGAPULS WL 61, it wanted to try out the new compact [VEGAPULS C 21/C 22 radar sensors](#). "We were just plain curious. The sensors are very interesting in terms of price, and in the wastewater sector, we increasingly need continuous level measurement, especially for simple applications."



Round shaft in Buch

The compact series is intended for simple, non-contact level measurement where a high protection rating is required. They are particularly suitable for use in water treatment, pumping stations and rainwater overflow basins, as well as for flow measurement in open flumes and river level monitoring. The sensor delivers exact measuring results without effect from the medium, the process or the ambient conditions, is maintenance free and thus ensures high plant availability. It is also based on VEGA's 80-GHz radar technology, which has been revolutionizing level measurement for several years now. This is thanks to the extremely narrow beam angle which makes it possible for the instrument to deliver very precise measuring results even in cramped measuring situations, in extremely dirty environments or in containers with many internal installations.

Exactly such environments exist in the two pump shafts in Hart and Buch in Zillertal. "All the adversities one can imagine are present in the pump shafts. Aerosols, moisture, cold, dirt, etc. and of course the huge quantities of fatty material," explains Brandacher further.

In Hart, the pump shaft has a cross-section of about 3 x 2.5 metres and a depth of 4 metres. In Buch the shaft is round, with a diameter of 2 metres and a depth of 5.5 metres. The situation here is particularly difficult because of the low level of impoundment. The pump is effectively in continuous operation, switching on and off up to 100 times a day. An ideal application site for the new [VEGAPULS C 21/C 22](#) sensor series. The sensors work reliably even with foam, of which there is plenty in the AIZ network, and with buildup on the shaft walls.

Both sensors have been in use since March 2020, delivering the required level data continuously without any problems. A development that is entirely in the spirit of Brandacher's philosophy: "Sensors are there to measure and nothing else."

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Installation was also very simple and straightforward. The sensors delivered the required measured values right from the start. "The new sensor is of course particularly interesting because of its simplicity and user-friendly parameterisation. Since we don't have to worry about level measurement any more, we can concentrate on other tasks," says Brandacher in conclusion. "VEGA has always understood this aspect very well and has realised it expertly in measurement technology."

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Level control in a pumping station

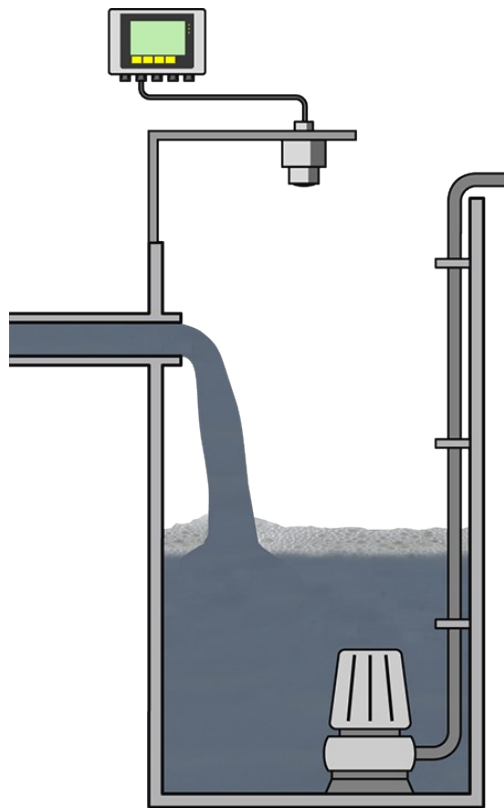
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Wastewater from households and businesses, together with surface water, is carried to the wastewater treatment plant via an extensive sewer network. If the natural gradient is not steep enough, numerous pumping stations are required to create a sufficient height difference. The level measurement in the inlet shaft is used for cost-effective control of the pumps.



Measuring task  
Level measurement  
Measuring point  
Tank  
Measuring range up to  
0 ... 10 m  
Medium  
Wastewater  
Process temperature  
0 ... +35 °C  
Process pressure  
0 ... +1 bar  
Special challenges  
Abrasion, foam, high humidity

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Reliable measurement of the level

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User friendly

Maintenance-free, trouble-free operation

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