AS-H Belt Thickener raises sludge handling efficiency at Ruhrverband plant

Arnsberg-Wildshausen Wastewater Treatment Plant, Germany **Case Story**

The Arnsberg-Wildshausen wastewater treatment plant recently replaced an outdated drum thickener with a containerized AS-H Belt Thickener from Alfa Laval. This advanced sludge dewatering solution meets all the plant's requirements in terms of capacity, reliability and performance. It is also simple to operate, requires minimum maintenance, and polymer consumption is low.

Ruhrverbund is one of Germany's largest water management companies, operating 67 sewage treatment plants located throughout Germany's Ruhr region. Their Arnsberg-Wildshausen wastewater treatment plant is located between the town of Arnsberg and Meschede in North Rhine-Westphalia.

Activated sludge process

The Arnsberg plant has a design capacity for 98,000 person equivalent (PE) and treats an average of 35,060 m^3/day of wastewater from households and various industries. It employs the activated sludge process, and nitrogen removal and biological stream treatment take place after the anaerobic process. Phosphorus is also removed and the wastewater undergoes further purification in the facility's polishing ponds.

The sludge obtained is treated in anaerobic digesters and the sewage gas produced is utilized in a cogeneration plant for electricity and heating.

Before being taken for disposal, the digested sewage sludge is mechanically dewatered. Arnsberg's existing mechanical dewatering equipment, a containerized drum thickener, was outdated and had become unreliable.

Modern solution needed

The plant operator, Ruhrverband, decided to replace Arnsberg-Wildshausen's old equipment with an advanced modern solution. They were looking for a new mechanical sludge dewatering system that would comply with local installation norms and meet all the plant's demands in terms of reliability, capacity, and performance.

Ruhrverband representatives visiting Alfa Laval's stand at the 2014 IFAT trade fair saw an AS-H Belt Thickener on display and were impressed by its simplicity. After a competitive bidding process, involving other manufacturers, Ruhrverband chose to install a containerized version of this Alfa Laval solution.

The containerized Alfa Laval AS-H Belt Thickener at Ruhrverband's Arnsberg-Wildshausen wastewater treatment plant.

Containerized all-in-one belt thickener chosen

Alfa Laval supplied a gravity driven AS-H Belt Thickener 100 suitable for all municipal sludge types and all industrial sludge that flocculates. It is supplied as an all-in-one solution in a 40 foot insulated and heated container, which also houses the control cabinet and all necessary electrical fittings and plumbing. The control cabinet also controls the polymer system and other auxiliaries to ensure simple operation of the entire thickening process. The belt thickener also features an integrated polymer mixing valve, which eliminates the need for additional flocculator tank and mixer, and provides better process performance and reduced polymer consumption.

In addition to the Alfa Laval AS-H Belt Thickener, the container contains everything needed for efficient sludge thickening including control cabinet, polymer system and other auxiliaries.

Smooth delivery including interim solution

Installation and commissioning of the complete plant was also included in Alfa Laval's scope of supply, and Alfa Laval's Mid Europe Service technicians provided assistance during the start-up process. To bridge the gap between order and delivery of the containerized AS-H Belt thickener the Arnsberg-Wildshausen plant needed an interim solution for sludge thickening. Alfa Laval therefore provided an ALDRUM G3 Drum Thickener test unit for this.

The Arnsberg Wildhausen plant staf appreciates the simple operation, reliability and flexibility of the Alfa Laval AS-H Belt Thickener and its performance.

An impressively simple solution

Mr. Kemper, plant foreman at Ruhrverband's Arnsberg-Wildshausen facility, mentions the simplicity of the equipment. "The Alfa Laval AS-H Belt Thickener requires minimum operator input, and power and polymer consumption are low. There is not much automation, and systems such as hydraulics which require maintenance have been kept to a minimum. Yet the thickener's patented ramp allows the thickened sludge solids to be precisely adjusted and fine tuned during operation. The system gives us a new level of reliability and performance flexibility enabling us to handle fluctuating load levels."

The new Alfa Laval AS-H Belt Thickener has now been running for more than six months at the Arnsberg-Wildshausen plant. The unit has a throughput of 24-40 m^3/h, a polymer consumption of 3-4 kg/t dry solids and a thickened sludge dry solids content of 5%.

Process	Sludge thickening
Sludge type	Waste activated
Feed concentration	0.5 - 1.0% dry solids
Throughput	20 - 40 m^3/h
Max. flow capacity	50 m^3/h
Max. solids loading	400 kgTS/h
Thickened sludge	5% dry solids

Performance of the Alfa Laval AS-H Belt Thickener BT 100 at Ruhrverband's Arnsberg-Wildshausen wastewater treatment plant

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

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