

ABB MEASUREMENT & ANALYTICS | REFERENCE CASE STUDY

Laser level transmitter LLT100

In use at the bar screen of the Dortmund-Deusen sewage treatment plant



Measurement made easy

LLT100

Introduction

The LLT100 is specifically designed for industrial use in harsh operating environments.

It is used in sectors such as mining and aggregates, oil and gas, chemical, food and beverage, power and steam generation, paper and pulp, pharmaceutical as well as water and wastewater for continuous and contactless level measurement in process automation and inventory management.

Additional Information

Additional documentation on LLT100 is available for download free of charge at www.abb.com/level.

Introduction

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01 Bar screen (head water)

The Dortmund-Deusen sewage treatment plant is the first sewage treatment plant built on the Emscher river within the scope of the Emscher system conversion project. Emschergenossenschaft is the operator of the facility.

Until 1994, wastewater from Dortmund's Innenstadt and Nordstadt flowed into the Emscher river untreated, along with wastewater from the industrial facilities domiciled in Dortmund. The catchment of the sewage treatment plant is 4620 hectares.

The plant is equipped with two silver digestion towers that can be seen from far away was completed in 1994 and expanded between 2007 and 2009. The capacity of the sewage treatment plant corresponds to a population equivalent of 705,000.

Instrumentation

To measure the level, Emschergenossenschaft uses the LLT100 laser level transmitter from ABB.

The laser impulse hits the measuring medium and is reflected from it. By applying the 'time of flight' measuring principle, the distance to the surface of the medium and back is measured.

This generates the continuous 4 to 20 mA level signal which is used in the sewage treatment plant to control the bar screen system.

The difference between the level before and after the screen is determined.



01

The solids that run through the intake are held back by the bar screen.

The relocation of the screen by these solids causes an increase of the wastewater level on the head water side.

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02 The LLT100 Laser level transmitter on the bar screen

As soon as the level difference up-scales a certain level, the solids in the intake are removed using a gripper arm. Sewage can once again run freely and the level drops. The accumulation process starts over.



02

The laser level transmitter monitors the maximum level on the head water side of approximately 7 meters; the transmitter includes an offset of 1.52 m in the calculation.

Since the laser level transmitter generates a radiation angle of the measurement signal of only 0.3°, the LLT100 laser level transmitter is perfectly suited for measurement of the level close to the concrete wall.

'In the past, hydrostatic immersion probes were used for the task', says EMSR team leader Jens Kapp.

'In the case of greasy wastewater, the probe diaphragms would become heavily soiled. They would have to be inspected and cleaned on a regular basis; the process was complex, very time-consuming and expensive. Thanks to the contactless measurement method, these issues are a subject of the past.'

The new measurement technology means significantly reduced maintenance effort.

ABB Measurement & Analytics

For your local ABB contact, visit:
www.abb.com/contacts

For more product information, visit:
www.abb.com/level

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