APPLICATION REPORT

Nuclear

Redundant level indication of wastewater from a conversion plant

- Increased safety by using redundant level monitoring of treated effluent from uranium conversion
- Tailored magnetic level indicators for 12 m / 39.4 ft high plastic tanks
- Local level indication without power supply to back up radar level measurement
- Corrosion-resistant PVDF material ensures maintenance-free operation and long service

orano

1. Background

Orano Tricastin is one of the largest industrial platforms in Europe. Located in southern France, the facility carries out the conversion, defluorination and denitration as well as the uranium enrichment activities that precede the final stage in manufacturing fuel assemblies for nuclear power plant reactors across the world. The industrial facility meets the most demanding standards in terms of nuclear safety and environmental protection.

2. Measurement requirements

During the wet conversion process to produce uranium hexafluoride (UF_6) for enrichment, wastewater is generated. It is thoroughly treated in an on-site wastewater treatment plant to precipitate all harmful substances. The treated wastewater is then stored in two 12 m / 39.4 ft high resin tanks for analysis prior to reuse or discharge.

To adhere to the highest safety regulations, the operator decided to have redundant level measurement installed on the tanks. In addition to radar level transmitters mounted on top of the tanks, the company required an alternative level technology that works without power supply and allows permanent visual level indication on-site.

KROHNE

3. KROHNE solution

Orano have chosen 2 BM26A-3000 magnetic level indicators (MLI) to monitor the wastewater tanks redundantly. For this application, KROHNE recommended the PVDF variant of the level indicators. They offer high corrosion-resistance for a long service life.

In order to achieve the measuring height of 12 m / 39.4 ft, a customized installation was selected using 3 BM26A-3000 in a row. To build one single indicator, the 3 PVDF measuring chambers were connected to each other and supported by several brackets. The flaps are housed in hermetically sealed glass tubes (IP68) and provide highly visible level indication that works without power supply.

Magnetic level indicator tailored to 12 m / 39.4 ft tank hight

Level indication of treated effluent from uranium conversion

The visual level indication of the MLI is compared to the measuring values from the radar level transmitters installed on top of each tank. The radars are monitored remotely.

4. Customer benefits

The tailored magnetic level indicators help the customer expand their safety concept. In case of "questionable" radar level values or an interrupted transmission of readings to the control room, the BM26A-3000 provides the redundancy required by the operator to keep their process and environment safe.

The customized magnetic level indicators work without power supply and maintain continuous level indication on both tanks, even in the event of power outages or when radar level measurement fails. The PVDF material of the level indicators offers good chemical resistance in case there still happens to be unwanted residuals in the treated wastewater.

BM26A-3000 with PVDF measuring chamber

5. Product used

BM26A-3000

- Magnetic level indicator for corrosive liquids
- Made of PVC, PP or PVDF for high corrosion resistance to aggressive chemicals
- Measuring range: 0.5...4 m / 1...13 ft (others on request)
- Highly visible level indication, works without power supply
- Flaps housed in hermetically sealed glass tube (IP68)
- Support brackets for long devices
- Available with optional reed switches (3-wire, NAMUR) or reed-chain level transmitter (4...20 mA/HART®7, FF, PA output)

Contact

Would you like further information about these or other applications?
Do you require technical advice for your application?
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