AMETEK®
LEVEL MEASUREMENT SOLUTIONS

AMETEK-Measurement.com

Ensuring Safe & Reliable Level Measurement in Butanediol Production

CASE STUDY

ThePoint *shown with remote sensing element.*

OVERVIEW

As the demand for degradable plastics and fine chemicals continues to grow, chemical manufacturers are investing in highly precise and safe production processes. A chemical company in Asia embarked on a new materials project for the production of 1,4-Butanediol (BDO), PBAT, and PTMEG, key components in multiple industries, including biodegradable plastics.

A critical aspect of BDO production is maintaining precise level control in hydrogenation tanks, where acetylene and formaldehyde react under high pressure (34 MPa) and high temperature (120°C). Without accurate level measurement, the risk of process inefficiencies, tank overflow, or even explosions becomes a serious concern.

CHALLENGE

- **Unstable Readings in Hydrogenation Tanks:** The hydrogenation reaction is one of very low dielectric with heavy gas and vapor conditions where other level instrumentation struggled to maintain consistent and credible measurements.
- **Risk of Overflow & Safety Hazards:** If levels were too high, excess acetylene could overflow, potentially leading to safety incidents and severe plant disruptions.
- **Production Continuity Issues:** Without reliable level control, downstream processes could not function properly, leading to production downtime and financial losses.

SOLUTION

DREXELBROOK®

To address these challenges, we provided **two specialized level measurement solutions**:

- **RF Admittance Level Switches:** Installed in the acetylene silos for precise overflow alarms, ensuring safety and compliance.
- **RF Admittance Level Transmitters:** Used in the BDO hydrogenation tanks, offering stable and reliable level control, even under extreme temperature and pressure conditions.

Additionally, we complemented existing GWR systems by integrating RF admittance technology, allowing for more credible and redundant level measurement in high-disturbance environments.

RF Admittance Continuous Level Transmitter shown in remote configuration

Project Scope & Implementation

- **78 RF Admittance Level Switches** for acetylene high level indication.
- **2 RF Admittance Level Transmitters** for hydrogenation continuous level.
- **Full System** integration to enhance operational safety and efficiency.

USEFUL RESOURCES

- RF Admittance Point Level Measurement
- RF Admittance Continuous Level Measurement

RESULTS & BENEFITS

The RF Admittance technology delivered exceptional reliability and safety improvements, transforming the chemical company's production efficiency:

- **Stable Level Measurement in Hydrogenation Tanks:** Eliminated inconsistencies caused by process disturbances, ensuring accurate control, unaffected by gas and vapors.
- **Significantly Reduced Risk of Tank Overflows:** Enhanced safety by preventing acetylene or BDO spills, mitigating potential safety incidents.
- **Improved Production Efficiency:** Ensured continuous BDO production, avoiding costly downtimes.
- **Lower Maintenance Requirements:** Unlike DP transmitters, RF admittance level meters require minimal maintenance, saving operational costs.

Business Impact

- Secured a major project, proving the technology's superiority.
- Prevented safety incidents and avoided regulatory fines and clean-up costs
- Improved process reliability, leading to higher yield and better quality control.

CONCLUSION

RF Admittance technology provided a superior alternative to traditional level instrumentation in these specific hydrogenation applications. Overflow risks were mitigated, ensuring a safer and more efficient production process. Our integrated solution strengthened the customer's confidence, leading to future expansion opportunities.

Contact us today to discover how RF Admittance technology can enhance your plant's safety and efficiency.

With this project's success, more chemical plants in Asia are expected to adopt RF admittance technology, setting a new industry benchmark for safe and stable level measurement in fine chemical production.

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