

APPLICATION BRIEF - 80 GHz RADAR FOR CHEMICAL



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Accurate level measurement and control are crucial across the chemical industry. However, it goes without saying that there are a number of complications that must be overcome in many applications. **Vapour, corrosiveness, condensation** and other such factors are challenges for level measurement equipment, and a poorly-selected device can quickly succumb and fail.

Hycontrol's RF Series is a two-wire 80 GHz FMCW radar level measurement transmitter, designed to suit challenging liquid level applications involving narrow tanks with long nozzles and internal obstructions such as agitators, ladders or heating coils. **The PEEK lens antenna is resistant to build-up and well-suited to corrosive environments.** The minimal beam angle and dead zone make this an optimal choice for continuous, non-contact level measurement in both very small and very high tanks (up to 100 m/328 ft).

80 GHz is rapidly becoming the industry standard for radar level control; with the flexibility, power and reliability offered by this technology, it is easy to understand why.

RADAR LEVEL MONITORING OF PHOSPHORIC ACID

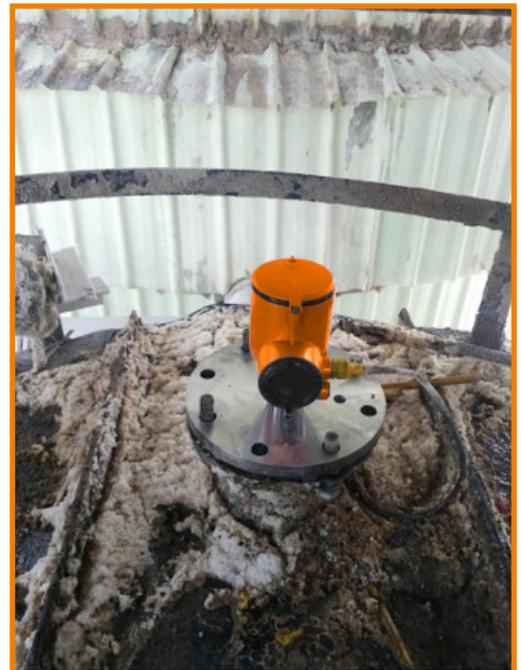
A recent installation at a customer's site highlights the power of Hycontrol's new RF Series 80 GHz radar in difficult chemical applications.

In this application, a phosphoric acid defluorination tank was used as support to a main phosphoric acid storage tank. The process adopted the principle of feeding and discharging at the same time, and therefore it was essential to monitor the liquid level in the tank in real-time. The support tank was 5 metres high and flat-bottomed. The product being measured was a liquid mixture of phosphoric acid slurry and defluorinating agent.

This was a very harsh process. Due to the presence of the strong phosphoric acid, mixed with some fluosilicic acid and other chemical agents, any level measurement device utilised would be exposed to corrosive steam gas, foam, and crystallisation.

The RF Series' PEEK antenna and powerful 80 GHz signal have proven a perfect match for the challenge. The level readings in the vessel can shift rapidly, and when the contents were at their highest foam can actually reach the antenna. The resulting crystallisation on the lens can reach a thickness of 5mm. To overcome this, a purging system was added to get rid of the crystallization and the condensation.

The system is now providing the customer with accurate measurement that has almost no influence from other interference factors, resulting in an optimised production process.



FEATURES AND BENEFITS OF HYCONTROL 80 GHz RADAR

- ◆ **Measuring range of up to 100 m (328 ft) with accuracy of +/- 2 mm (0.08")**
- ◆ **Versatile technology for powdered solid product and liquids**
- ◆ **Measures level, distance or volume**
- ◆ **Selection of antenna types to suit differing, challenging applications**
- ◆ **Powerful signal with narrow beam angle, ideal for narrow tanks**
- ◆ **Suitable for low dielectric materials or materials with limited reflectivity**
- ◆ **PEEK antenna for corrosive applications**
- ◆ **Empty tank spectrum stops false reflections from internal structures**
- ◆ **Durable IP66/68 design suitable for tough industrial environments**

