

Laser level measurement in chemical industry



Level measurement of a solvent in a chemical reactor

Measurement made easy

Laser level transmitter LLT100 (Aluminum housing with flange in stainless steel)

Introduction

Laser level transmitter solve problem at major chemical company. This measurement has been done in Europe at one location of this big player having many locations around the globe manufacturing inks, coatings and pigments. This customer has some chemical reactors in his site in Europe. On his solvent reactor, they observed level measurement problem with open air radar device. The client wasn't fully satisfied about the level accuracy and observe erratic signal from time to time. This chemical industry was looking to resolve their level with other non-contact technologies. The client was looking for reliable and maintenance free instrument. ABB introduce the laser level transmitter to them, and they accept to make test.

Challenge

In this application, there is presence of dust during the filling process with powder once a day creating perturbation on level measurement. The reactor is pressurized tank rated at 70 Bars and temperature of 70C. There is safety concern for transmitters that have to be installed within the tank.

The laser level transmitter can be easily installed outside of the reactor directly on the existing window. The client like the laser transmitter permitting a flexible and easy installation. The non-contact measurement is required due to presence of stirrer within the tank.

The ABB Solution

Presenting the benefits of the laser level transmitter LLT100 compared to open air radar technology to the customer. Discussing the mounting possibilities of the device on the reactor directly on the existing window located at the top of the tank. A bracket has been used to make easy installation of the laser as close as possible to the window to avoid diffusion. The laser satisfied the reaction classification requirement with his Class 1 Division 1 (also Zone 1) rating.

The customer was looking for easy configuration with has been done directly on the local HMI display (touch through the glass). The LLT100 has advanced signal processing will allow to eliminate the signal glitch causes by the stirrer and waves due to the agitation.

Conclusion

This application was solved successfully. The laser level transmitter LLT100 is working perfectly providing reliable and stable level measurement. Even during the filling process the measurement is remain very accurate. The laser transmitter installed outside of the reactor and isolate with the window provide safety solution as well.

That has been the first experience for this customer to use laser technology. They did test measurement during long period and confirm the laser has the best performance on level measurement within their reactor. This major chemical company is very satisfied with the laser installation and will look for other level tanks. The laser transmitter LLT100 can be used in all industrial applications on any solids and liquids (including transparent liquid).

That offers large range of applications where ABB's lasers can be used.