

#### ABB MEASUREMENT & ANALYTICS | APPLICATION NOTE

# Guided Wave Radar Replaces Magnetic Level

Interface Measurement, guided wave radar in three phase separators



01 Remote head LWT310

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## Introduction

Horizontal three-phase separators are commonly used in the oil and gas industry to separate oil, gas, and water from a mixed stream. These separators are designed to provide efficient and effective separation of the three phases based on their density differences. There are several types of horizontal three-phase separators available, each with its own unique characteristics and advantages. The most common type is a conventional separator which consist of an inlet diverter, primary separation, secondary separation, and an outlet. When natural gas is introduced, via the inlet, lightened hydrocarbons and water drop out into the primary separation area. The level measurement here is critical to efficient operation of the unit.



## Challenge

During the primary separation phase natural gas condensate and water are separating before an internal weir. It's critical that the level of the water doesn't get too high and carry over this weir and therefore interface measurement must be taken. The level output is controlling a dump valve which is either throttling or dumping off the interface measurement. However, these plants are subject to the various specific gravities of natural gas condensate and the industry is moving towards a digital cost-effective solution. Making field adjustments to the configuration may change over time too depending on the properties of the process. 02 Float being removed from service

03 ABB Ability Smart Device Manager

--04 Example of a remote configuration

05 Diagnostic waveform showing interface level



#### Rationalization

Depending on the level of automation controls, configuring the guided wave radar can be accomplished from the control room via asset management software, HART communicators, laptops with USB communicators, or locally at the display.



## The ABB Solution

It's common in these applications for there to be redundant level measurement via traditional site glass and floats in combination with **magnetic level** gauges and magnetostrictive transmitters. Since these plants are already using the technology mentioned above, floats, indicators, transmitters, and switches can be removed leaving an ideal bridle for installing guided wave radar technology. In many cases there is existing conduit and wiring for transmitters like magnetostrictive already in place. ABB's optional remote head permitted an easy retrofit without any new electrical work needed.









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Notes

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