Radiometric measurements and weld inspections
Radiometric level gauges have proved themselves indispensable, especially in the chemical industry, due to their universal usage and reliability. The measurement is contact-free and requires no changes to the vessel. They are therefore widely used, particularly in difficult processes.

Problems can occur however, when weld or material inspections are performed at the plant site. During these inspections very strong radioactive sources are employed, sometimes 10,000 times stronger than the source of the measuring system. This additional radiation field during weld inspections leads to a strong rise in count rate at the detector and a seemingly dropping fill level. As a result, considerable problems in the process can occur - in the worst case, vessel overflow with severe consequences for plant and personnel safety.

Up to now, detectors were often covered with heavy and expensive lead shieldings. Weld tests were strongly regulated and the production was often stopped or severely hampered. Both approaches are not safe: The detector side facing the vessel cannot be covered by lead, and therefore is always susceptible for interference radiation. Regulations are not always observed and function extremely inadequately if weld inspections are taking place in other companies close by.
The Nuclide makes the difference

The nuclides employed for weld inspections are different from the ones typically used in radiometric level gauges. Berthold Technologies’ patented level system LB440-RID exploits this difference to suppress the influence of interference radiation on the measurement. Nearly all weld or material inspections are performed with Iridium-192 or Selenium-75 sources. The energy of their radiation is low (<600 keV) compared to Co-60 (>1000 keV), commonly used in level gauges.

In the detector, the radiation generates voltage pulses - their pulse height depends on the energy of the impacting radiation.

Pulses from weld inspection sources do not exceed a certain height and are thus not recorded in channel 2.

Always in control

In normal operation, the vessel level is detected from the count rate in channel 1. If interference radiation is registered by the detector, the evaluation unit switches over to channel 2 and in this manner continues to accurately determine the fill level in the vessel.

With LB440-RID, the problem of weld inspections is considerably reduced. You have full and accurate information on your process - continuously!

LB440-RID is already being successfully operated in many plants world-wide.

Get RID of your problems

All continuous level measurements employing rod detectors or the SuperSens point detector can be equipped with the patented Radiation Interference Discrimination LB440-RID.

The system works only with Co-60 sources - the energy of the Cs-137 radiation (660 keV) is too close to the energy of sources commonly used in weld inspections to be reliably discriminated.

Existing Berthold Technologies equipment can be easily upgraded to include the RID technology.

1) US patent No. 6,753,532 B2
European patent pending