Application Notes

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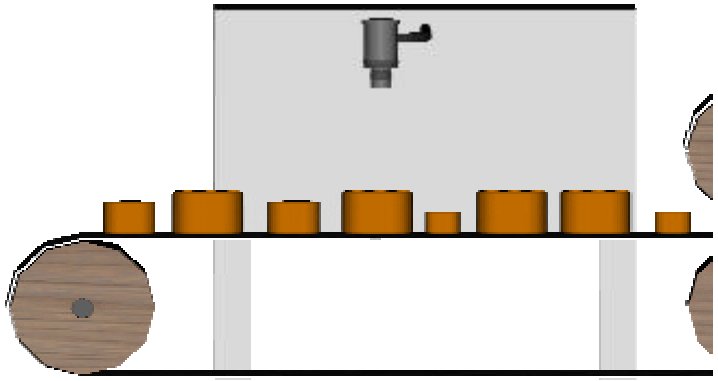
Application Problem: To measure thickness and shape of cheese on a belt conveyer.

Application history: These customers used several ultrasonic level devices that did not give them accurate measurements on thickness and shape of cheese. It was due to their slow response.



Solutions: ABM300-70UC2 was used, its response is so fast (20-30 shots/sec), it can accurately measure the thickness of cheese and its profile.

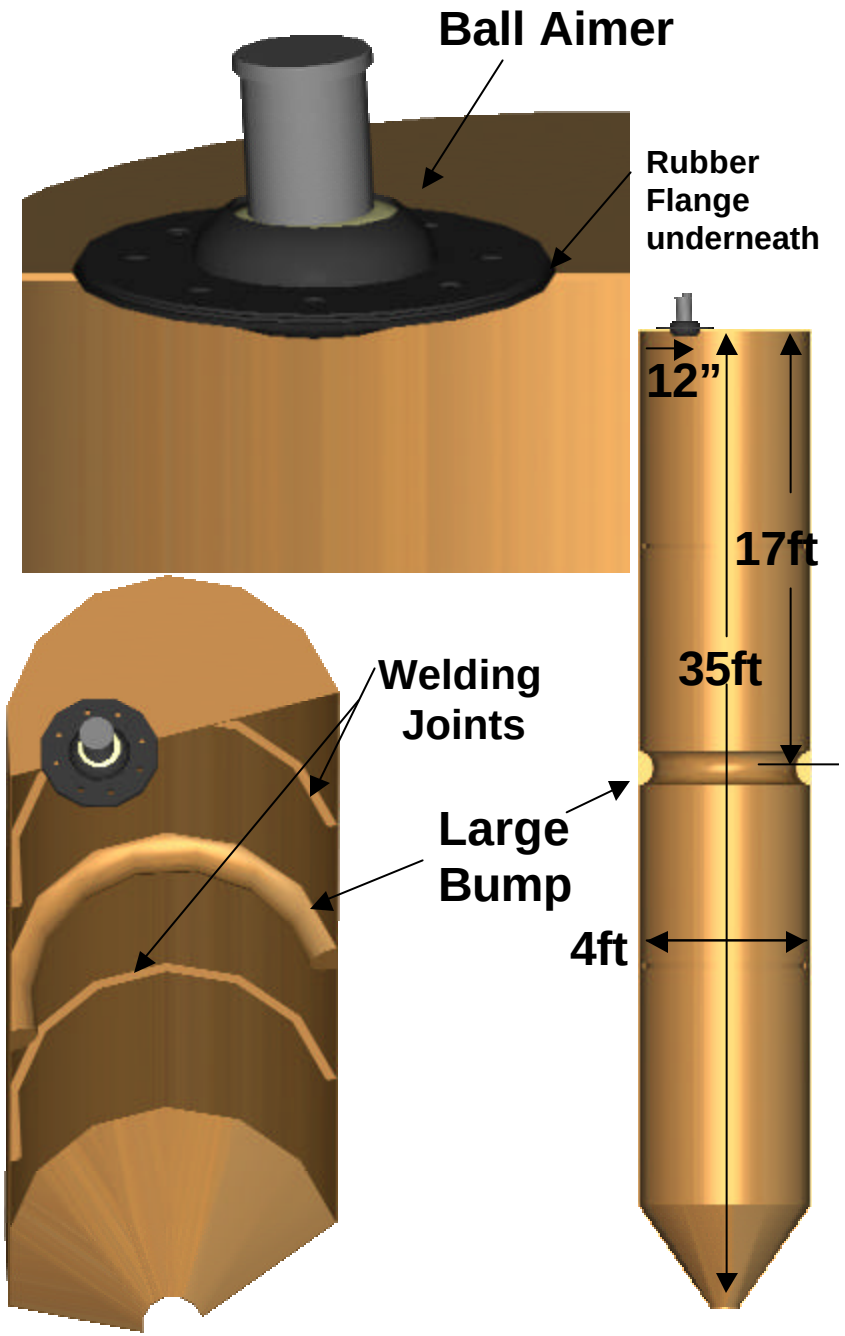
Customer comments: “When we had other ultrasonic sensors we faced frequent shutdowns of the belt conveyers. Those sensors were not able to measure the thickness and shape of our cheese.”

Application Problems: Very narrow tanks with welding joints on the walls, close mounting of the ultrasonic device to the wall (12inch). Material in tanks is gravel mixed with sand.

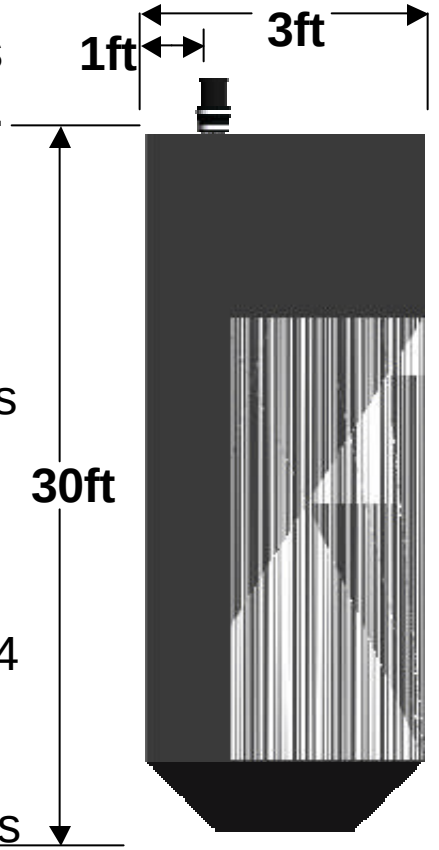
Application history: Several contact and non-contact systems with ultrasonic included were tried. Unstable echoes (tanks' walls, dust, shape of material), gave false reading.

Solutions: ABM400-45UC4 are used, they are connected in network of 7 tanks. For mounting a ball aimer is used to aim toward the discharge hole. Unwanted echoes from a large bump, half way down the tanks height, were eliminated by the Window Out software tool.

Customer comments:" For the last several months we didn't have to climb on top of those tanks to check the level and to correct other level devices!"



Application Problems: Rectangular shape tanks with dusty fertilizer inside. There are a lot of noise sources such as electrical noise from pumps, acoustical noise from material and pumps and also mechanical vibration from pumps. The tanks are very narrow and 30ft tall, with corrugated walls. These customers also want communication network based on RS485 for 24 tanks.



Application history:

These customers tried several contact and non-contact level devices. The level measurements were very unstable due to several noise sources and shape of tank and material (unwanted echoes from tank wall, skip effect from material). Also no one was able to provide a reliable communication network with very long cables (1500ft).

Solutions: -To eliminate echoes from tanks' walls ABM400-45UC4 standard units are used with narrow beam, self adjusting power and sensitivity and special filters to eliminate acoustical and electrical noise. ABM protocol based on RS485 solved customer's network problems.

Customers comments:" From our control room we monitor all tanks using your sensors."

Application Problems:

Sensor mounting is a metal grid, distance to tank's wall is about 2ft, corrugated walls square shape tanks are 30ft tall.

Application history: Due to very difficult mounting and shape of the tanks these customers had problems with other capacitance and ultrasonic sensors.

Solutions: ABM400-45UC4s in network configuration are used. Their echo shape detectors together with signal processing eliminate echoes from tank's corrugated walls.

Customer comments: Customer was happy to notify us that the units work in their application.

Application Problems: 30ft Rectangular shape tanks with sand, material has a steep angle of repose.

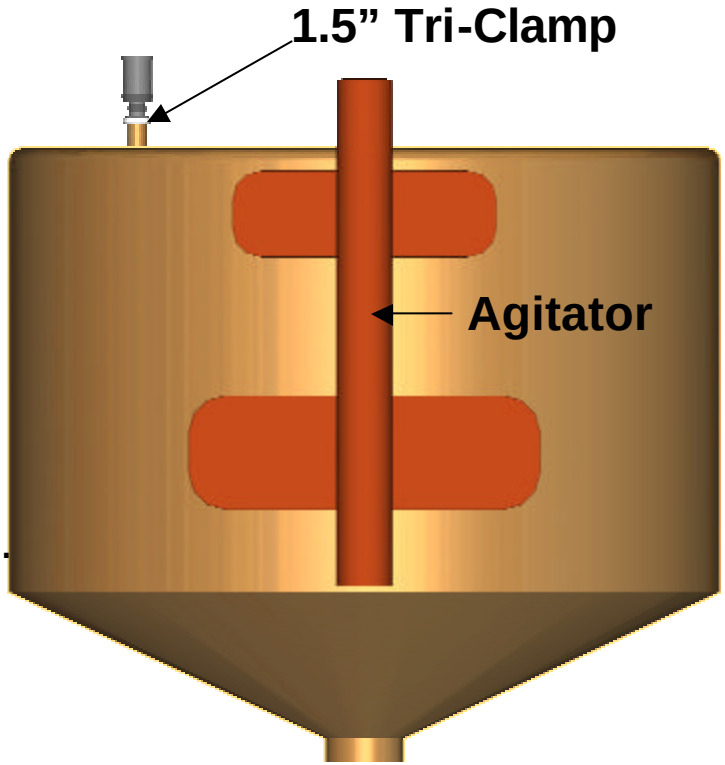
Application history: Due to a steep angle of repose contact and non-contact level devices gave false readings.

Solutions: ABM400-45UC4 ultrasonic level devices are used. They track the material level over the 30ft range. Ultrasonic transducer with uniform polar pattern and wide frequency bandwidth together with optimally matched transceiver and signal processing eliminate skip effect that is caused by solid materials with steep angle of repose.

Customer comments: “Your devices eliminated influence of the material shape on the level readings”

Application Problems: Small chemical reactors with agitators and hot liquids. CIP (Clean In Place) is used for 30 min. The customer needs 1.5” tri-clamp sanitary sensor that is very reliable in level measurement and does not need to be removed during CIP.

Application history: Capacitance and also ultrasonic sensors were used with limited success. These customers had to remove those sensors during CIP. The measurements during agitation and empty tank were very unstable, so the customer had to measure the level manually.



Solutions: SeveralABM200-148US1.5 are used. ABM is the only company in the world that has 1.5” tri-clamp mounting. The units are very reliable and work even when the reactors are empty and also when the agitators are on. CIP doesn’t damage the transducer faces that are made of SS316L.

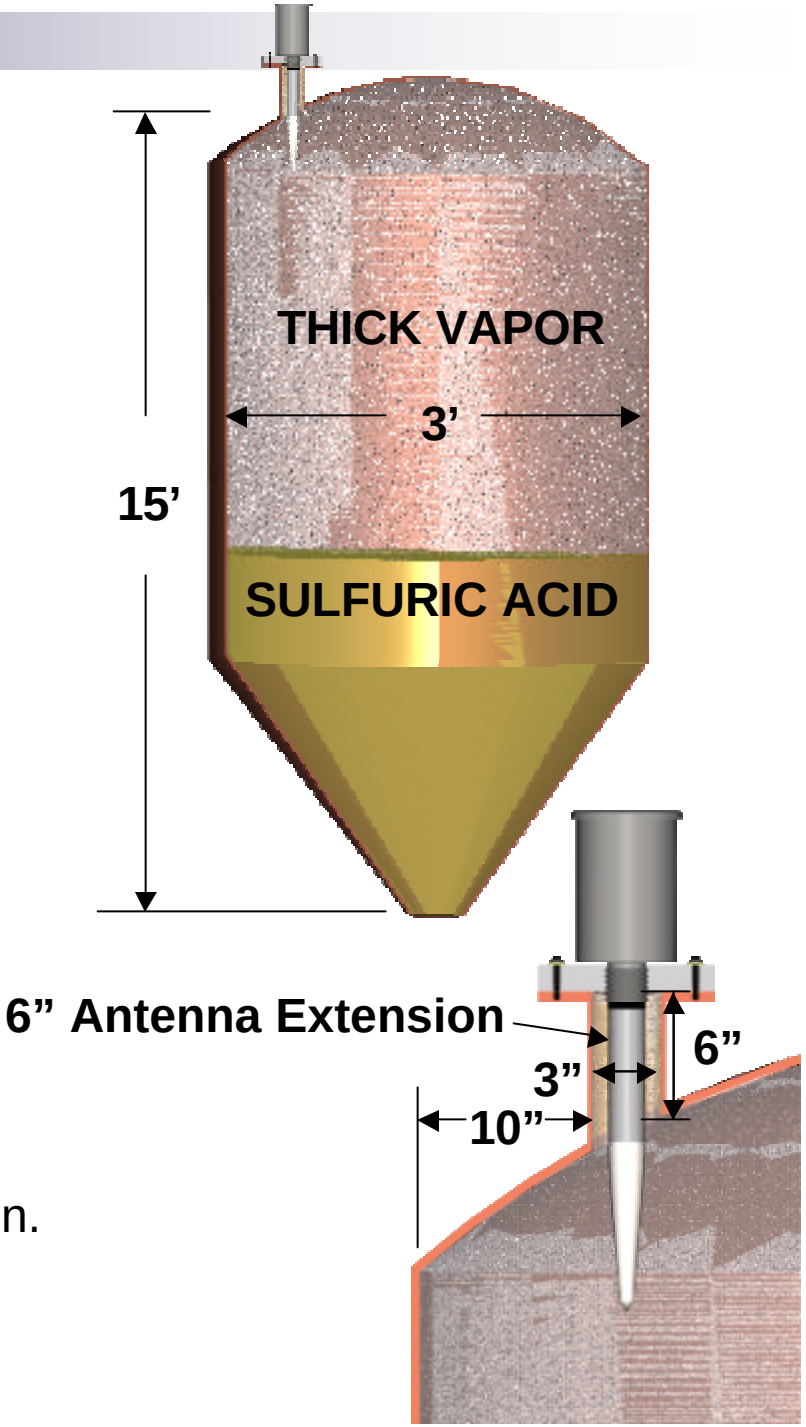
Customer comments:” We use your ultrasonic devices in all of our chemical reactors. Your devices became a standard for our corporation worldwide”.

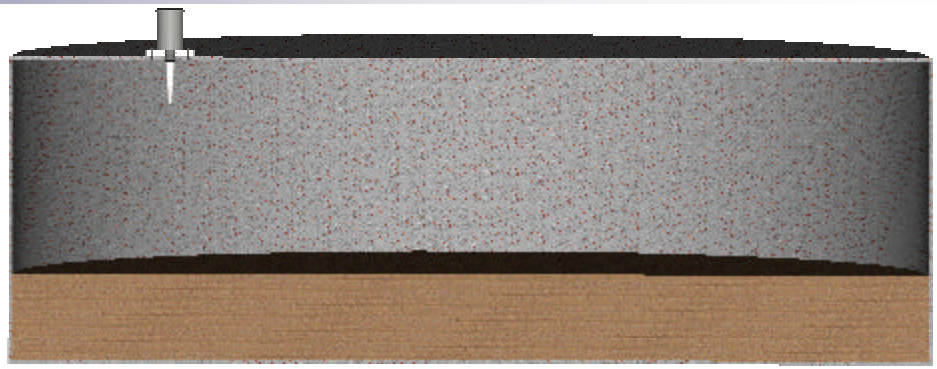
Application Problems: Metal tank consists of Sulfuric Acid with a strong vapor. Mounting hole is only 10” away from tank’s wall, and there is a standpipe of 3” ID and 6” long.

Application History: Some radar units were used before. Those units had fixed transmit power and due to that there were a lot of unwanted echoes from tank wall and when the tank was empty, from its bottom. The stand pipe also influenced the antenna radiation causing a false reading.

Solutions: ABM300-050RC2 radar solves all the problems. The radar uses minimum power and short transmit pulse to get a constant level of the received echoes from the Acid. This eliminates echoes from tank’s wall and bottom. Antenna extension gets rid of the standpipe influence on the antenna radiation.

Customer comments: "Our confidence in radar level measurement is back.”





Application problems: Digester for sludge treatment. Inside is sludge mixed with water. The process generates methane that absorbs ultrasonic waves. The environment is explosive so equipment with EX (Class 1 Div 1) approvals is required.

Application History: These customers tried several ultrasonic level detectors that didn't work because of methane. Some radar units were also used, they had echo stability problems which gave false readings.

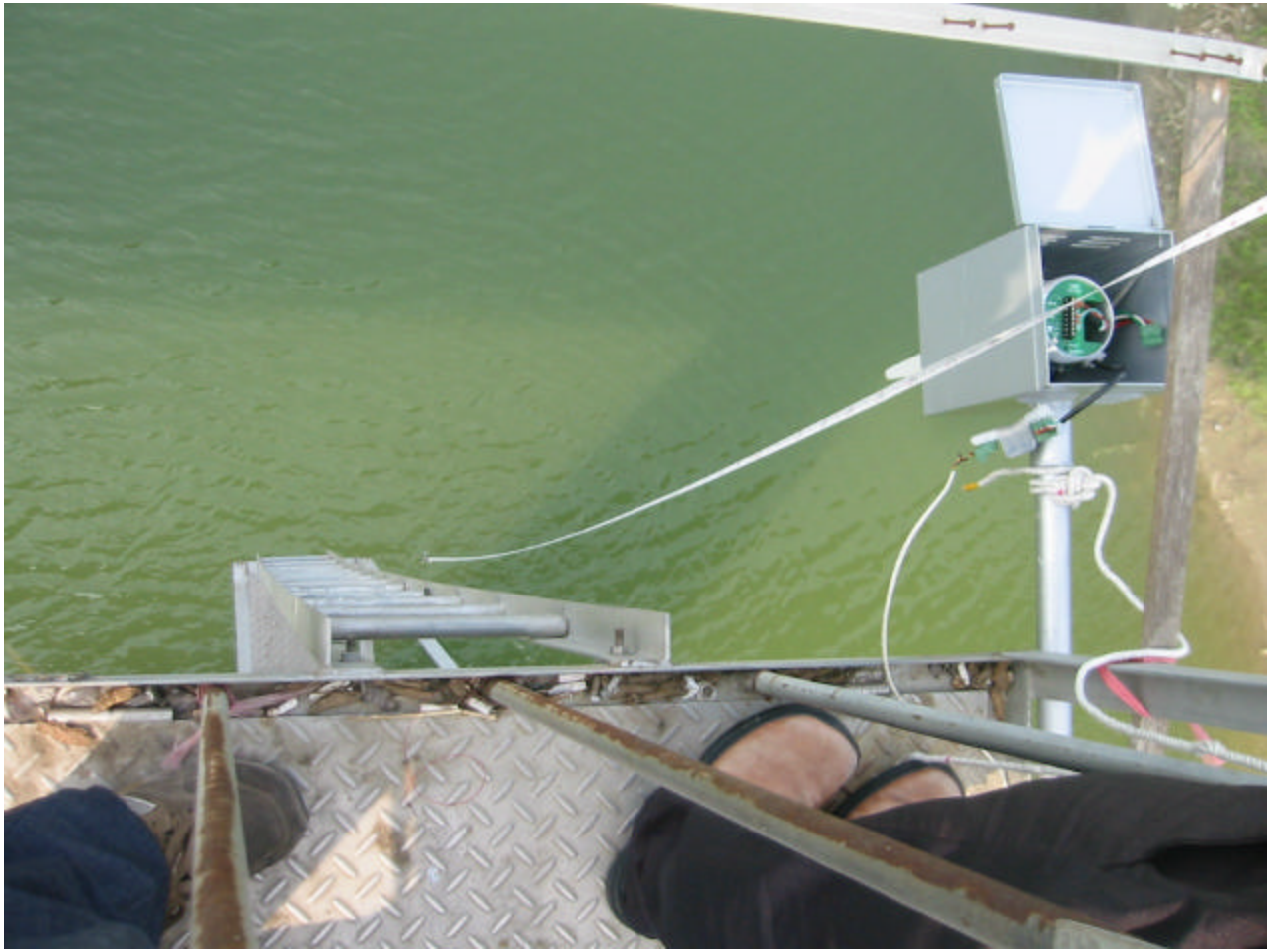
Solutions: ABM300-050RC2 with safety barrier is used. The reading is very stable for the full range of sludge level. The safety barrier caused supply voltage drop to 12Vdc. Even at 12Vdc the radar works great in this difficult application.

Customer comments: "Nothing worked before"

Application problems: to measure liquid level in a below ground (max depth 45 feet) landfill leach ate sump (12-foot diameter, concrete and steel walls). This is contaminated water and atmosphere in the sump is toxic, corrosive landfill gas, 50% methane, 50% carbon dioxide, assume saturated humidity conditions, frequent hose downs of sensor and possible impingement on sensor body by storm water.
Application history: Challenging environment, submersible pressure sensors have all failed.
Solutions: 50Ft EX approved ABM radar solved the problem.
Customer comments: We are very pleased.

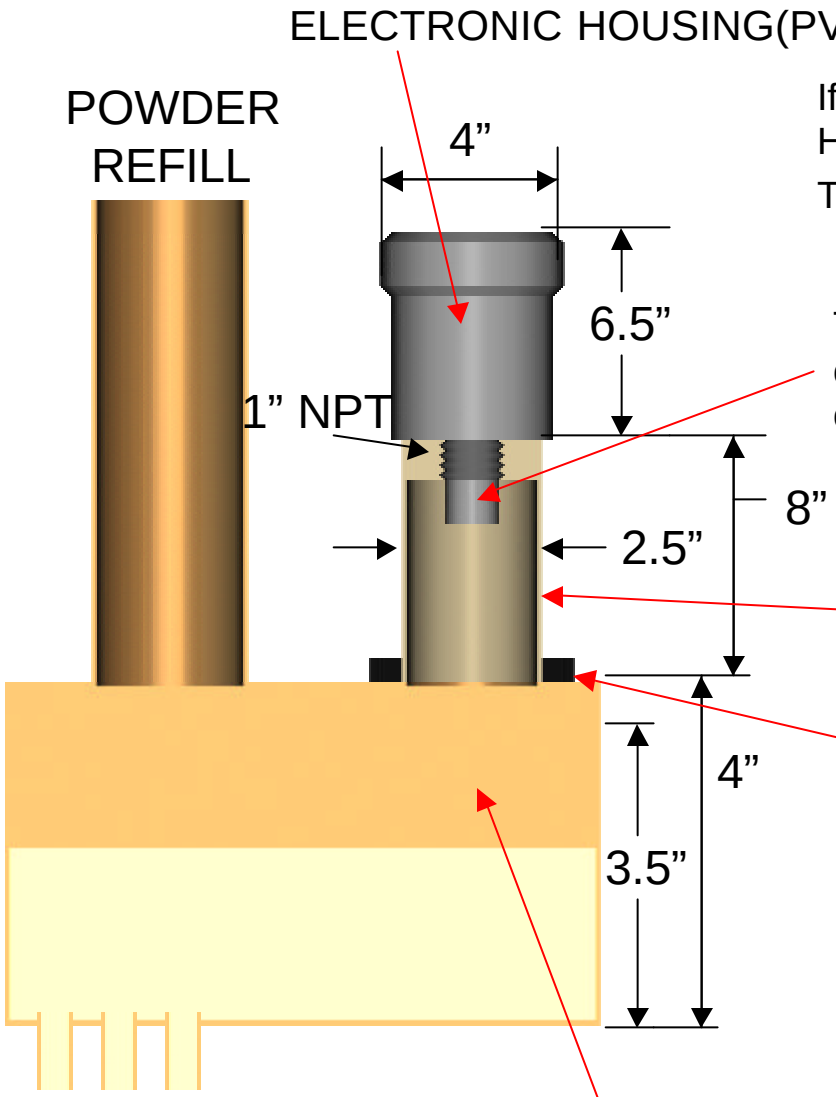
Radar in a water dam Application

Radar Being Used to Measure Level of River Water for Anti-flood System

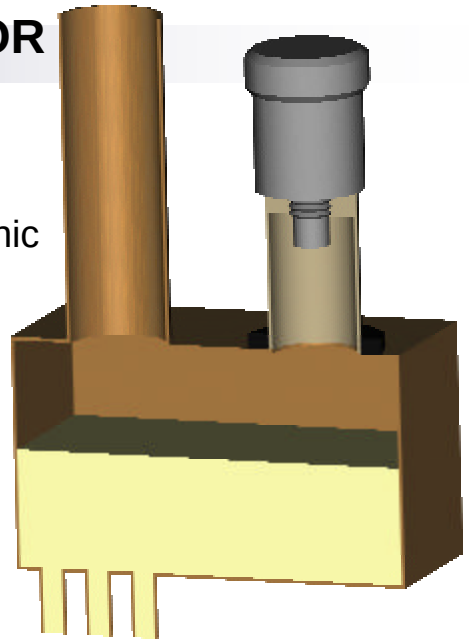


Application problems: Measuring level of plastic pellets in 60 ft tall, narrow tank.
Application history: They tried before yo-yo and differential pressure sensors without any success. These sensors required very frequent maintenance and in addition they were very inaccurate. At the end they used an operator to check the inventory which was very expensive and time consuming.
Solutions: ABM400-045ULC2-PVPVC works on 60ft tall narrow silo with plastic pellets inside.
Customer comments: We didn't believe that there is a level sensor that would work in our application. Now we have something that is very accurate and maintenance free.

NON-CONTACT ULTRASONIC LEVEL SENSOR FOR ENCAPSULATING MACHINE



If you don’t have room for the Electronic Housing, we can separate it from the Transducer.



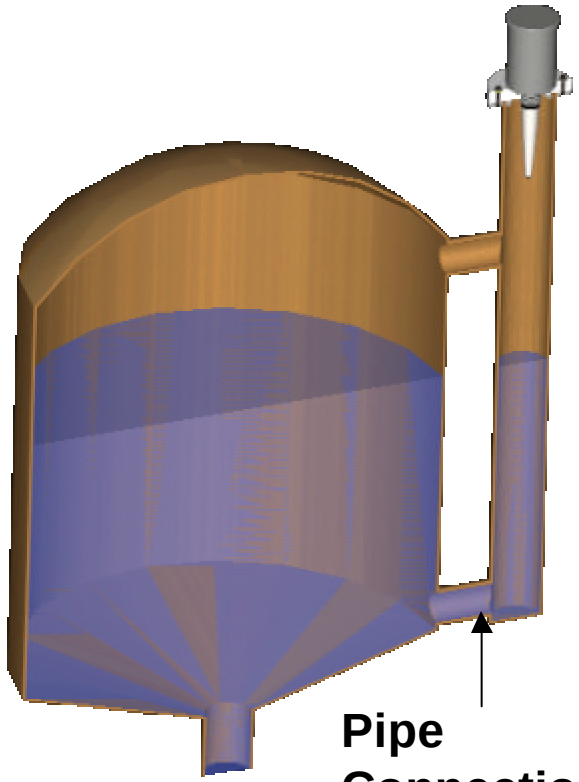
Transducer is mounted on the top of a Stand Pipe using 1” NPT or Tri-Clamp Sanitary Mounting.

STAND PIPE (PVC or other)

We will provide a Flange that connects Stand Pipe to Tank.

Stand pipe allows measurement of tank’s full capacity.

Application Problems: To measure level of liquids in pipe attached to a tank.
Application History: Fixed power radar and ultrasonic level devices were used and they detected false echoes from pipe connections.
Solution: ABM radar and ultrasonic level devices provide automatic power and sensitivity control, so they eliminate false echo's from pipe connections to tank.
Customer Comments: We had a lot of problems with false echoes using non-contact level devices made by well known manufactures. ABM radar and ultrasonic non-contact level devices solved our problems.



Application problems: Very narrow tank with syrup, some steam is present.

Application History: Other technologies were used; condensation and build-up disturbed the measurement.

Solutions: ABM300-070ULC2-PVPVC with 2” SS316 tri-clamp sanitary mounting and the sanitary transducer with self-cleaning solved the above problems.

Customer comments: Now we don’t have to clean the sensors, we get very stable measurement.

Application Problem:
Installation is too close to the edge of the tank.
Fluid: waste acid which is very corrosive substance.
Application History:
Customer finds it is too costly for the maintenance of the contact devices.
Solutions: ABM400-050R6C2-ALAPP-EXP radar gives the reliable measurement with maintenance free.
Customers Comments: ABM radar is an economical & stable device that they never seen.
ABM products become the first choice for them.

Application Problems:

Narrow Tanks, very close mounting of radar to the wall (it is about 2 inch)
Fluid: Waste water

Application History:

Customer tried various brands of contact device on this application. However, there was a false reading on measurement level due to interruption by the moisture & vapor from the waste water.

Solutions: ABM400- 050R6C2-ALAPP non-contact radar eliminates influence of the moisture and vapor .

Customers Comments: It is their first time they use the ABM non-contact radar. They find out that it is an accurate & stable device and they will use more ABM radar devices in their plant and also recommend them to the other plants.