

*Submitted by  
Brandon Mickelson from  
DURABLE CONTROLS  
Thanks, Brandon!*



---

**Product** Ultrasonic Point Level Switches  
**Application** Pump Control of Flammable HCl-containing Solution  
**Industry** Chemical

---

**Challenge** Chemical manufacturing facilities often utilize flammable, corrosive, or dangerous compounds in the synthesis of the final product. Depending on the type of chemicals present, there may be limitations on the suitable instrumentation options that can be installed in the application.

The challenge for this particular facility involved pump control of a highly flammable solvent mixture that contains Hydrochloric Acid. This acidic solution is pumped into a vessel with point level switches used to start and stop the pump; because of the presence of a combustible compound, the plant is considered a Class 1 Division 2 classified area. The level switches selected for this application must have Agency approval for use in Class 1 Division 2 areas, while also having the ability to withstand chemical attack from the HCl in the process.

**Solution** The company had tried using an SOR® 701 Ultrasonic Level Switch as it includes the necessary Agency approval for their area classification. Unfortunately, the 316SS sensors originally used were not compatible with the process media and the sensors failed after installation. The customer then changed to the 711 Ultrasonic Level Switch, which is available with sensor materials other than 316SS. The 711 offers the same FM approvals as the 701, in addition to the chemical resistance needed for this particular chemical manufacturing process. Now that they are using a Hastelloy C sensor (which is the same material as the vessel wall), the engineers and operations group are confident they will have maintenance free operation for years to come.