



SIEMENS

PROCESS INSTRUMENTATION

System integrator designs a unique solution **to meet safety standards**

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PPG Industries knows better than most the challenges of storing solvents. Founded in 1883 in Pittsburgh, USA, the company operates globally in nearly 70 countries, and is a world leader in industrial coatings and specialty products. The company has a plant in Stowmarket, Suffolk that specialises in paints used for automobile refinishing.

Amazingly, even though there is a modern factory in the middle of this rural English town, and even though there is a public footpath running alongside the Rivers Gipping and Rat which meet in the middle of the property, the factory's solvent storage tanks don't look at all out of place so close to a green space.

The fact that the two differing environments can coexist so successfully is proof that PPG is a company dedicated to protecting the ecosystem from the potentially explosive solvents that it works with. Their recent efforts to further improve the safety and efficiency of their storage systems led them to

Siemens process instruments through system integrator Lark Technology and distributor Process Instrument Sales.

The challenge

Over the years, the paint manufacturer has used a number of techniques to gauge the level of material within its varied storage vessels at the Stowmarket plant. Most recently, for example, the level in each of the 33 tanks containing various solvents was being measured using a bubbler system. Unfortunately, not only was this system error prone, it was also labour intensive to use, maintain, and test.

Still, it was a system that had been working adequately for the company through the years. This all changed, however, when the UK's Health and Safety Executive (The HSE), enacted strict legislation in response to the Buncefield disaster, an oil storage facility in Hertfordshire, England that was destroyed in a series of explosions in December, 2005. The accident was caused by an overflow during the remote-filling



Installing the SITRANS LR250 was easy and PPG now has reliable, high-performance continuous level measurements on their process vessel.



A SITRANS LVL200, mounted with the new LARK-designed in situ point level probe tester.

of a storage tank when multiple systems failed, including the main level gauge and the final point-level device.

How strict are the new HSE safety measures? Well, the HSE has legislated that such storage vessels containing potentially flammable materials should each have a continuous level measurement device, a high level switch, and an operator visually monitoring the contents of the tank as it is being filled.

To meet these ambitious safety standards, Lark Technology, a system integrator, provided a Totally Integrated Automation control system with Siemens technology and Process Instrument Sales.

The solution

Lark Technology, accompanied by Process Instrument Sales, designed a new system for PPG Industries from the bottom up. Both a SITRANS LR250 radar transmitter and a SITRANS LVL200 point level device was installed on each of the paint manufacturer's 33 storage tanks, and then tied into a custom-built Lark control system using Profibus and intrinsically Safe Profibus. In this configuration, each radar transmitter provides continuous level readings, while the point level switch provides ultimate high-level system protection from overflow.

"We provided a turnkey project which was delivered on time and on budget. What started out with the criteria of an overflow protection scheme is now supporting the site's procurement department to manage stock levels and to maximise efficiency with available solvent storage space," said James Rawlings from Lark Technology. "It was a text-book installation, using the latest Siemens technology, which we are proud to use as a case study."

The first piece of this technology is the SITRANS LR250, a non-contacting radar transmitter that is easy to install and

quick to configure. With its small antenna, the device can be installed practically anywhere on a vessel, and its high frequency makes for an impressive signal-to-noise ratio, a feature that is even further improved by Siemens' patented "Process Intelligence" echo processing software.

Next is the SITRANS LVL200, a vibrating level switch for use in all liquid and slurry applications such as overflow, high, low, and SIL-2 applications. The device is cost effective, easy to install, and acts as an important security device in the unlikely event that the primary level detector fails.

The radar transmitters are connected to the plant's control system through Profibus, an industrial communication protocol that provides fully integrated, two-way networking between a control system and each of its field devices.

During installation of the new system, extensive validation was carried in to satisfy the HSE, another of the elements Lark Technology offered as part of the turnkey package.

As an added bonus, the radar transmitter is also able to provide:

1. Volume calculations

Specific to each tank, it is a value derived from the capacity of that tank and the current level of liquid within it.

2. Trending

This is a system where all the tanks are monitored when one is being filled so that the operators know immediately if there's a routing error or leak somewhere.

One of the life cycle requirements of the system, as defined by the HSE, was that all point level devices had to be tested on a regular basis, a proposition that was time consuming as well as problematic. The 500 millimeter probes are located inside the vessel, and the chances of damaging them increase each time they are removed. A way of testing



Part of the new HSE legislation requires operators to supervise all pumping activities in real time.



The new system is designed so that when one tank is being pumped, all tanks are monitored simultaneously to make sure that there are no leaks.

them in situ was needed, so Lark Technology engineered a unique custom solution.

Lark's testing device is a long, hollow rod with a small pot at its end that is supported directly beneath the tip of the probe. For testing, the cup is filled remotely through the hollow rod using an industrial syringe with the same solvent that is in the vessel. The rod and pot arrangement is lifted so that it covers the sensing end of the probe. In this way, the system can confirm that the probe operates with the actual product in the tank. Afterwards, the pot is lowered back down, the same syringe is used to remove the test liquid, and the handle is locked in place until the next test.

The benefits

With the new Siemens equipment in place and connected to the control system, PPG is reaping the benefits of a totally integrated and automated system with excellent data control. The new level monitoring equipment is reliable and efficient, giving the company the confidence that, because they know what's going on in all of the tanks even when they're just working with one, they're meeting all of the necessary HSE standards. The company is also the proud owner of a new custom solution for testing point level probes in situ, in a manner that doesn't risk damaging them.

What's more, there are the business opportunities to consider. "There have been some good relationships built as a result of this," says Jon Tayler of Process Instrument Sales. In fact, PPG is so satisfied with the results and the dedication of all the companies involved that it is now committed to installing more Siemens devices on the next phase of the project on site at Stowmarket.

So, the next time you're in Stowmarket, make sure to enjoy a walk through the idyllic English countryside on one of their many footpaths. And, if you choose the Gipping Valley

River Path—the one that passes under the shadow of PPG's solvent storage tanks, there's a Siemens product not too far away maintaining confidence and reliability in safety.

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