# "Searching" For A Solution

HI-TECH COATINGS FINDS A RELIABLE SOLUTION FOR THE MANUFACTURE OF HIGH-PERFORMANCE COATINGS IN THE FORM OF WILDEN® AIR-OPERATED DOUBLE-DIAPHRAGM (AODD) PUMPS

When moving into a new, state-of-the-art production facility, Hi-Tech Coatings Director Martin Skillen, left, made sure to bring along the same, proven production technology that helped transform the company into a world leader in the manufacture of high-performance coatings. This included the company's pumping equipment - Wilden® Air-Operated Double-Diaphragm (AODD) Pumps - supplied by Gordon Dewar, External Sales Engineer at AxFlow Limited.

When hearing the term "searching," one doesn't often think of liquids. But when it comes to chemical process applications, you don't want to underestimate the importance of this attribute. When fluids are searching, they are looking for a place to go. Any place. Normally, this should be through the discharge ports. But if there are any weaknesses in the seals, diaphragms or other components on your pumping equipment, searching liquid can leak and foul an operation.

## Containment of Coatings

To use a simple definition, coatings are a covering that is applied to the surface of an object to improve its surface properties, such as appearance, adhesion, wettability, and corrosion- and scratch-resistance. While easily defined, the manufacturing process used to create coatings is very much a complicated operation. It involves the blending of a variety of liquids – including polymer emulsions and resin solutions – to create water-based and UV-cured products. These liquids can be extremely viscous and hard to seal.

According to Martin Skillen, the best way to describe the liquids used in the manufacture of coatings is "very searching," especially when it comes to the impact they have on production equipment. You see, as the General Manager and Director of Hi-Tech Coatings International Limited, Skillen knows a thing or two about what it takes to produce high-performance coatings. For 20 years, Aylesbury, United Kingdom-based Hi-Tech Coatings has been a forerunner in the development and manufacture of water-based and UV-curable coatings used by the printing and converting industries. In those two decades,

The manufacturing process of high-performance coatings includes the blending of polymer emulsions and resin solutions, two ingredients that can be "very searching" when it comes to their impact on production equipment.

the company has transformed itself into one of the world leading providers of clear coatings for a broad range of graphic applications.

"At Hi-Tech Coatings, our guiding principles include quality, customer service, short delivery times and innovation," said Skillen. "By relying on our experience and knowledge of polymer formulation and coating machinery, we have been able to provide a rapid response to market needs and develop novel coatings both for sale and for contract to other trade suppliers."

By following these guiding principles and manufacturing high-quality products by following an exacting production process, Hi-Tech Coatings has been able to flourish within the graphic arts industry. In fact, business has been going so well that in early 2013 the company moved into a new, state-of-the art production facility in Aylesbury.

## Finding the Correct Pump

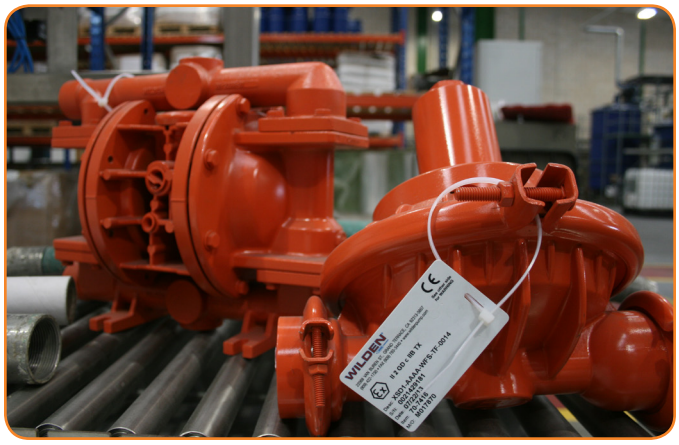
When transitioning to the new location, it was essential that Hi-Tech Coatings installed the same, proven production technology that was used at its previous facility and which helped contribute to its quality manufacturing processes. This included the pumping equipment that the company relied on for transferring raw ingredients from intake, through processing and on to finished product filling and packaging.

As mentioned, the liquids used to produce coatings can be "very searching" when it comes to their impact on production equipment. This is especially true when it comes to the pumping equipment tasked with handling these difficult liquids. For this reason, it is extremely important to identify the proper pumping technology for the various components used in the manufacturing of coatings.

Not only do the ingredients of high-performance coatings have their own unique handling characteristics, but they also require the need to be transferred at various points within the production cycle, including out of storage tanks or into mixers. This requires pumping technology that is versatile enough to handle the transfer of these liquids, oftentimes in high-pressure pumping applications. Additionally, given the wide range of dynamic head pressures that are created due to the variety of viscosities handled and the number of discharge points within the production process, positive displacement air-operated double-diaphragm (AODD) pumps can often represent the best technology to meet these requirements.

While utilizing AODD pumps for a variety of applications, the brand of AODD pumps that Hi-Tech Coatings employed for several years at its previous facility suffered


Because of their innovative design features, positive displacement AODD pumps often represent the best technology for handling "very searching" and aggressive liquids used during the manufacturing of high-performance coatings.




After searching for a better pumping solution, Hi-Tech Coatings chose to install Wilden® Advanced Series™ Metail AODD Pumps on its packaging and filling lines, along with its chemical-dsitribution system.

from a variety of problems, including leakage through the seals and clamp bands. In addition, the pumps were also experiencing problems with diaphragm lifetimes.

"The pumps we were using for many years at our old facility were just like consumables," said Skillen. "Since the materials we use are 'very searching' we would often find them leaking from the pump bodies. The diaphragm lifetimes of these pumps were also very limited. We were constantly replacing broken pumps or paying a considerable amount of money on repairs. This was bad for our bottom line and something we had to move away from. We started to question the overall value we were getting for our purchase. That's when I tasked one of our employees to begin searching for a better pumping solution."

So, in 2010, Hi-Tech Coatings instigated an engineering research project to examine alternative models of AODD pumps. It was this research that brought Hi-Tech Coatings to AxFlow Limited, Ealing, London, UK, which is a longtime supplier of pumping technology from Wilden® Pump & Engineering Company, LLC, in Grand Terrace, CA, USA. Wilden is a founding member of the Dover Corporation's Pump Solutions Group (PSG®), Oakbrook Terrace, IL, USA. AxFlow is one of Europe's largest suppliers of pumps and pumping equipment with offices and service locations in 26 European countries.

"When Hi-Tech Coatings first approached me voicing their concerns with the pumping equipment they were currently using, I knew right away that I had the solution," said Gordon Dewar, External Sales Engineer at AxFlow. "Since Hi-Tech Coatings does not have a maintenance team on-site, I knew the pumps had to be simple and reliable while offering a long meantime between failures. Another consideration was that the pump diaphragms had to be compatible with a number of different chemicals and applications. With all this in mind, I recommended installing Wilden pumps."

## The Wilden Advantage

Rather than remove all of the existing troublesome pumps in one go, Hi-Tech Coatings started with a 1.5-inch Wilden Advanced™ Series Metal AODD Pump with a bolted design for its distribution lines. Quickly proving that it was the correct pump for the job, other Wilden Advanced Series pumps were installed on the packing and filling lines, along with the chemical-distribution system.

"For what we do, we need pumps that are reliable, require little maintenance and really have no negative impact on our production whatsoever; pumps that just go and run all the time," explained Skillen. "When we switched to Wilden, it alleviated the problems of leakage and diaphragm failures. Wilden pumps also feature very simple maintenance."

Wilden Advanced Series pumps are ideal for a variety of applications in the paint and coatings industry because they feature a sealless, bolted configuration that ensures total product containment, while the design of the wetted path reduces internal friction, enabling the pump to deliver a shear-sensitive operation that is mandatory when working with paint and coatings. The AODD pump's positive-displacement operating principle also guarantees that the product flow will remain volumetrically consistent.

Other benefits of Wilden Advanced Series pumps include their ability to be used in a wide range of pressure and flow specifications, self-priming and low-wear operation, ability to handle difficult solutions, improved energy efficiency, and overall low maintenance costs. In addition, these pumps can accommodate deadheading during


Wilden® AODD pumps offer the leak-free and shear-sensitive operation that is mandatory when working with paint and coatings. Wilden pumps also feature Wil-Flex™ EZ-Install Diaphragms, which are ideal for polymer and resin transfer.


Martin Skillen and Gordon Dewar celebrate the commissioning of the Wilden pumps at the Hi-Tech Coatings new manufacturing facility located in Aylesbury, United Kingdom.

filling applications, a task that motor-driven pumps are not able to handle effectively.

Wilden Advanced Series pumps are available with Wil-Flex™ EZ-Install Diaphragms, which are ideal for polymer and resin transfer. Wil-Flex EZ-Install Diaphragms feature a flat-profile design that eliminates the need to invert the diaphragm when rebuilding a pump, which allows for easy, cost-effective installation and maintenance, along with increased flex life.

## Conclusion

Having reaped the benefits of utilizing Wilden pumps for two years at the former plant, the new facility was also equipped with brand new Wilden pumps.

"Before switching to Wilden pumps, the previous pumps were not giving Hi-Tech Coatings the lifespan the company was expecting," said Dewar. "After two years of working in the old facility, the Wilden pumps were still trouble-free and required nothing more than routine maintenance. So when Hi-Tech Coatings was moving into its new facility, not installing Wilden pumps wasn't even an option for them."

Since moving into its new production facility, Hi-Tech Coatings has increased the production capacity of its water-based products upwards of 75%, and with surplus space for more chemical-distribution lines, the speed of transferring chemicals into mixing tanks increased and greatly improved the production process. This was due in large part because the Wilden pumps installed at the new facility are able to operate trouble-free while providing high levels of accuracy and controllability of the volume of ingredients going into the mixing operation.

"We found that the Wilden pump is very reliable and economic to run, which is why we specified them for the new facility," said Skillen. "The new plant gives us a more automated approach and additional capacity for the future and we see the Wilden pumps as being a reliable part of our manufacturing capability moving forward. We were recently involved in a project in Detroit, MI, USA, and we standardized on the Wilden pumps for this production plant as well. Wilden pumps have been such a reliable pump for our business; I consider them the Rolls-Royce of the pump world."

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