



Solving the leakage problems

Mr. Yao Ke, Technical Manager of Jinling Aliancys Resins Co., Ltd.

By RICKI LI

“Green” production is a critical buzzword in the Made in China 2025 manufacturing program, which was unveiled by the State Council in 2015. The concept of “green,” or environmentally sensitive, production penetrates the whole plan and is the Chinese government’s authoritative definition of what it terms an “intelligent manufacturing” strategy.

Companies all over the world have reached a consensus on green production. For the chemical industry, the benefits created by green production not only reduce environmental pollution, but also effectively guarantee specific output quotas and control operating costs.

Jinling Aliancys Resins Co., Ltd., manufactures and processes unsaturated polyester resins. Yao Ke is the Technical Manager for the company’s plant and he has a deep understanding of this issue as he is responsible for ensuring that all operations at the company’s Nanjing facility meet strict regulations regarding green operation.

Jinling Aliancys’ products are used in many diverse fields, such as real estate, tube construction, water craft, high-speed rail, and other sectors. As a high-

quality resins provider, the company began encountering an intractable problem during its process of resin production. Basically, the problem centered on the performance of the gear pumps that were being used to transfer the resins. During the various resin-transfer operations, the gear pumps would inevitably leak, which would lead to lost product, the need for costly cleanup time and creation of potential safety issues. For a resin manufacturer, leakage at any point in the production chain is a major technical problem and the company had to search for and identify an external solution to the problems it was facing.

The bane of resin manufacturing

Roy Yang is the Regional Sales Manager of Winston Engineering Corp., Ltd., based in Shanghai. The company is a longtime channel partner of Aliancys. Winston Engineering is a leading distributor of Blackmer® Sliding Vane Pumps in China. Founded in 1903, Blackmer, Grand Rapids, MI, USA, is a product brand of PSG®, a Dover company, Oakbrook Terrace, IL, USA, and a manufacturer of positive-displacement pump and compressor technologies for gas-liquid product

transport. Pumps manufactured by Blackmer are frequently used in the fields of LPG, chemical, refined fuels, petroleum, military, marine exploration and transportation.

In 2012, when Aliancys set up its factory in the Nanjing Chemical Industry Park in Jiangsu Province, China, as a specialized manufacturer of polyunsaturated polyester resin, it chose to use gear pumps for product transfer. However, as mentioned, serious leakage problems began to occur shortly after the new facility began operations.

“In the process of unsaturated polyester resin manufacturing, we can hardly do without the pumps for transfer, transportation, supercharging and metering,” said Yao Ke. “In the beginning, we used the gear pumps to complete the tasks, but three or four months later problems were revealed.”

Specifically, the problems caused by leakage in the gear pumps included a high level of wear and tear that necessitated replacement of the pumps in just in a few months, no guarantee of hygienic operation and high maintenance costs.

To counter these issues, a recommendation was made for Aliancys to replace the problematic gear pumps with Blackmer NP Series Sliding Vane Pumps. The NP Series pumps hit the sweet spot

in Aliancys' resin-handling operations because they feature a metallized carbon sleeve bearing that delivers continuous-duty operation and zero maintenance because it features no greased or lubricated bearings, which can be difficult to maintain. Also, the NP's non-metallic vanes offer dry-run, self-priming and line-stripping capabilities, while the gear pumps featured metal-to-metal contact that prevents dry-run operation.

Blackmer sliding vane pumps have a number of vanes that are free to slide into or out of slots in the pump rotor. When the pump driver turns the rotor, centrifugal force, rods, and/or pressurized fluid causes the vanes to move outward in their slots and bear against the inner bore of the pump casing forming pumping chambers. As the rotor revolves, fluid flows into the area between the vanes (pumping chambers) when they pass the suction port. This fluid is transported around the pump casing until the discharge port is reached. At this point the fluid is squeezed out into the discharge piping. Each revolution displaces a constant volume of fluid. Variances in pressure have minimal effect. Energy-wasting turbulence and slippage are minimized and high volumetric efficiency and low energy consumption are maintained.

Achieving zero leakage

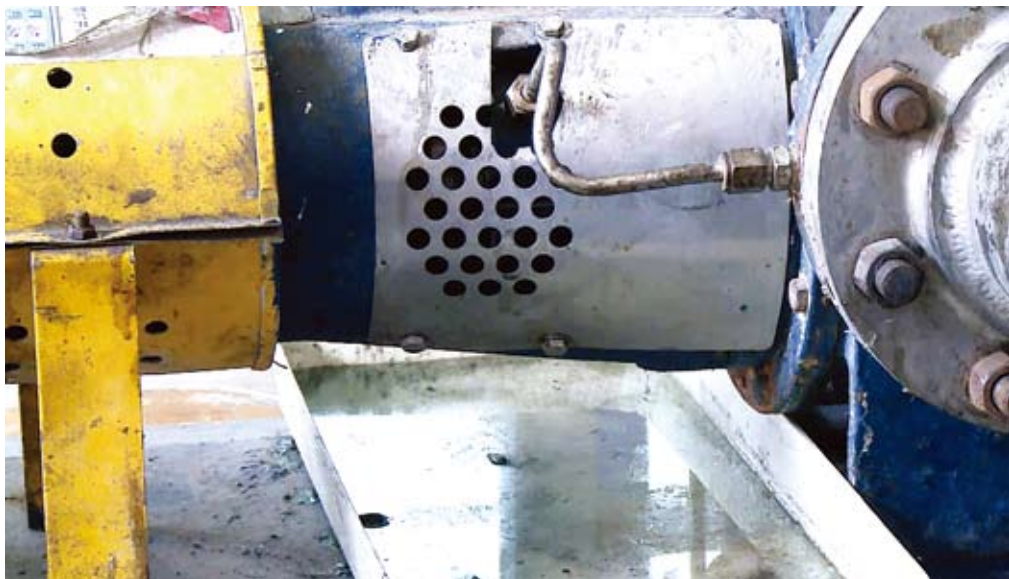
According to Yang, what made the Blackmer sliding vane pumps an ideal

replacement for the gear pumps was their use of Fluidol® triple lip seals, which help eliminate all leakage problems. Fluidol is a Columbus, OH, USA-based company that specializes in the manufacture of rotary seals for use in industrial, military and aerospace fluid-sealing applications.

The triple-seal design of Fluidol's lip seals make them ideal for resin-handling applications because resins are generally too thick for single-type end-face mechanical seals, while double seals that require pressurized seal pots are too expensive and

too complicated to operate. The Fluidol seals are also dry-run capable, while a solid, highly polished silicon carbide sleeve creates a reliable and consistent sealing surface, even when used with crystalizing liquids. The seal's carbon-modified TFM lip material is rated for use in temperatures in excess of 200°C (392°F) and with liquid viscosities from 0.5 to 25,000 cSt.

After some installation tests, the Blackmer NP Series vane pumps reached Aliancys' required level of seal performance. After their installation, Yao Ke has kept



The shortcomings of gear pumps were very serious during production, as leakage would occur every 1-2 months.

Aliancys specializes in resins for composite applications.



detailed records of the performance of the Blackmer vane pumps and listed these advantages that have been created by their performance. Compared with the leakage that would occur every two months with the gear pumps, there has been no leakage at all after one year of using one of the Blackmer pumps and three months with the second pump. The outstanding bearing-support system in the Blackmer pumps ensures even load balance and low abrasion. The gear pumps were prone to abrasion wear that would create the need for maintenance, which added to the factory's maintenance bill. The adjustable safety valve on the

Blackmer pumps also makes them easy to maintain.

The excellent performance of Blackmer NP Series pumps has enabled the factory to reach all of its production goals for a full year. As a result, Aliancys has decided to replace the remaining gear pumps with Blackmer NP pumps. **IRNA**

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