



*Bedford Pumps Ltd. new pump design fitted with Thordon SXL bearings*

## BEDFORD PUMPS INCORPORATES THORDON BEARINGS' TECHNOLOGY FOR FLOOD DEFENCE PUMPS

Bedford Pumps Ltd, one of the world's leading manufacturers of high-capacity flood defence pumps, has selected Thordon Bearings water lubricated SXL bearings for a new pump design developed for the Islington Pumping Station, in King's Lynn, Norfolk, England.

This important project will see four fish-friendly land drainage and flood control pumps installed at the new 16,000 l/s (253,605 US gal./min.) capacity pumping station which, when commissioned, will protect a 6000ha (23 square miles) area of low-lying fenland.

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## BEDFORD PUMPS INCORPORATES THORDON BEARINGS' TECHNOLOGY FOR FLOOD DEFENCE PUMPS ...continued

The existing pumping station, built in 1959, had reached the end of its service life and will be demolished following the construction of the new pumping station.

Canadian based Thordon Bearings, a pioneer in elastomeric polymer materials, supplied eight 200mm (7.9in) inside diameter fully finished water lubricated SXL bearings, in a contract that marked the first application of a Thordon bearing in a Bedford pump in 2020.

Alix Macdonald, Engineering Manager, Bedford Pumps, said: "We have created a brand-new type of axial flow pump to offer better efficiency, better solids handling, and enhanced environmental protection compared to other concrete casing pumps of comparable size.

"We found the Thordon product to be the best solution for large diameter vertical shaft bearings. The water lubricated elastomeric polymer material allows the impeller to run at much tighter tolerances, improving overall efficiency, maintainability and reliability."

Macdonald said that "competitive pricing, high quality material and a long-life expectancy" were also important factors in the procurement decision.

"The material is very easy to use, and easy to machine. And then when it comes to installation, we can freeze fit, press fit or bond fit, so there are some options there too."

Axel Swanson, Business Development Manager, Thordon Bearings, said: "The SXL bearing is the market leader in product lubricated vertical pump bearings due to its durability, resistance to abrasion, shock loading and vibration. Wear life and performance are the biggest advantage to using Thordon materials."

To achieve "fish-friendly" status, a key requirement for pump station owner Kings Lynn Internal Drainage Board (IDB), Bedford Pumps designed a 4000 l/s (63,401 US gal./min.) pump capable of allowing fish, migratory eels and other marine life to pass through unencumbered.


A complementary intake was also designed which offers significant advantages over a standard ANSI type 10 intake, such as allowing the water levels to be drawn down to half the minimum submergence when compared to the type 10 design. "This intake significantly reduces the pumping station's footprint and the deep excavations typically required," said Macdonald.

Chris Simmons, Sales Manager, Duwel Group, Thordon Bearings' UK distributor which also provided front end engineering assistance, said: "As a new customer for Thordon and Duwel, it is a privilege to be involved not only in an important flood defence project but also in the development of a new range of Bedford pumps. We are proud to have supplied Thordon bearings to what is a unique, ecologically safe pump. It is an important project and important piece of kit."

Macdonald added: "We will definitely look at using Thordon's bearings in the future for similar pumps. The workshop staff gave Thordon SXL bearings a very high rating based on how easy they were to fit with dry ice."

At full capacity, the Islington Pumping Station will be capable of pumping 1.4 billion litres (369 billion US gal) of water per day.

### About Bedford Pumps

**Bedford Pumps Ltd.** are a flexible, highly experienced British manufacturer of robust pumping plant for the water, wastewater, flood control and dock industries. With pump ranges from typically 500 l/s to 20,000 l/s (7925 US gal./min to 317,007 US gal./min.) at heads between 3m and 100m (9.8 ft. and 328 ft.), the pumps are designed for the most arduous and demanding applications and the brand is synonymous for efficiency, reliability and longevity. 



# LARGEST UTILITY IN U.A.E. PLANS ON REPLACING PUMP AND VALVE BEARINGS WITH THORDON'S GREASE-FREE MATERIAL



Dubai Electricity & Water Authority (DEWA) is a step closer to replacing its industrial pump bearings with grease-free Thordon water lubricated bearing solutions, following the installation of the Canadian company's pioneering technology to desalination plants across the United Arab Emirates.

In the first six months of 2021, Ocean Power International (OPI), Thordon Bearings' Dubai-based distributor, supplied ThorPlas-Blue and SXL bearings for installation to 20 butterfly valves and 7 brine recirculation and vertical pumps, respectively.

For quite some time now, DEWA has been systematically replacing its traditional bearings with Thordon products at facilities across Dubai. The state-owned utility company first retrofitted ThorPlas-Blue bearings to disc shaft bushings and non-return valves at the OPI facility.

OPI Managing Director, Rafid Qureshi said: "After hearing about the issues that DEWA was having with the original bearings, we proposed a solution that included ThorPlas-Blue. After checking load calculations and ensuring operating pressures did not exceed the bearing material's 45 MPa (6,527 psi) tolerance, we machined and fitted the Thordon bushings.

"Since that first installation, we have replaced pump and valve bearings at several power generation and desalination plants across Dubai."

In 2019 for example, OPI and Thordon completed bearing retrofits at the OPI workshop for a demineralization pit pump after fabric lined metal bearings had worn out. And in May of 2020, 20 vertical pumps and 6 brine recirculation pump isolation valves at the OPI workshop were retrofitted with the Thordon polymer material.

"The bronze bushings originally installed in the vertical pumps were wearing out and causing frequent breakdowns every 6-8 months," said Qureshi. "Unfortunately, there were multiple components that failed as a result of the bushing failure, forcing DEWA to find a longer lasting, more reliable solution.

"As the medium in these pumps is seawater, the new bearings had to be corrosion resistant, and capable of withstanding high operating speeds and temperatures up to 80°C (176°F). ThorPlas-Blue was deemed the ideal bearing grade for this kind of application."

Since DEWA began operating their vertical pumps with the ThorPlas-Blue bearings, there has been zero downtime or increased vibration, Qureshi said.

“BY INSTALLING THORPLAS-BLUE, DEWA HAS SAVED ABOUT US\$50,000 IN DOWNTIME, ELIMINATING UNPLANNED MAINTENANCE AND THE COSTS ASSOCIATED WITH GREASE AND SPARE PARTS PROCUREMENT.”

"By installing ThorPlas-Blue, DEWA has saved about US\$50,000 in downtime, eliminating unplanned maintenance and the costs associated with grease and spare parts procurement. Similar reductions in operational expenditures have been experienced across all of the company's facilities following the Thordon installations," he said.

Thordon Bearings' Strategic Account Manager – Vertical Pumps, Keith Brand agreed: "The team at OPI have done a phenomenal job in saving this end user hundreds of thousands of dollars."

The ThorPlas-Blue bearing can be used in all types of industrial pump applications and is an ideal replacement for bronze and other non-metallic bearings. It is available in a wide range of sizes and is easily machined to the dimensions required.

Developed as a maintenance-free alternative to greased bronze bearings, ThorPlas-Blue is a proprietary engineered thermoplastic bearing capable of dynamic operating pressures up to 45 MPa (6527 psi) and can easily be back fit into virtually all applications where greased bronze is currently installed. Higher pressures may be possible following a Thordon engineering review.

"The elimination of grease not only offers obvious cost benefits, but the bearing material is much safer and cleaner to operate than other conventional pump bearings," added Brand.

The most recent projects involve the retrofitting of ThorPlas-Blue bearings to potable, seawater and fire-fighting pump non-return valves at Dubai desalination plants D, G, L and M.

OPI hopes to have converted more than 60% of all DEWA pump bearings to ThorPlas-Blue or SXL by the end of 2022.

"Thordon's bearing material certainly fits well with DEWA's commitment to adopting more sustainable, reliable and economically efficient technologies. It can help DEWA maintain a competitive edge while contributing to its Environmental, Social, and Governance (ESG) objectives," said Qureshi.

DEWA currently has an installed capacity of 12,300 megawatts (MW) of electricity and 1.78 million Kiloliters (470 million gallons) of desalinated water per day, providing its services to over one million customers in Dubai. ☺



Brine recirculation pumps fitted with ThorPlas-Blue Bearings



ThorPlas-Blue being measured for fit in a butterfly valve.

# THORDON PUMPED TO DELIVER BEARINGS IN RECORD TIME



When a well-known industrial pump manufacturer needed four fully finished vertical pump bearings within three days to meet an urgent delivery deadline, Thordon Bearings' Customer Service team orchestrated a solution to deliver the 152.3mm (6in) diameter water lubricated SXL bearings on time.

The Texas-headquartered company, a major customer for the Canadian non-metallic bearing specialist, had a last call requirement to replace the bearings in a cooling water pump for a thermal power plant in Mexico. However, the lead time from another supplier to replace the original rubber bearings in the size required exceeded the company's contractual delivery schedule.

Arturo Selvas, Sales Director with Rotary Parts, Thordon Bearings' Mexico-based distributor, established to exclusively serve Original Equipment Manufacturers' (OEM) requirements, said: "We have created an excellent rapport with this company over the past several years, providing frequent service support. Thordon's technology was highly recommended for this cooling water pump."



Thordon Water Lubricated SXL Bearings

To support quick delivery, Thordon and its distributors carry inventory of many different sizes.

Thordon Bearings' Strategic Account Manager – Vertical Pumps, Keith Brand, takes up the story: "An order was placed on July 3rd, 2020. Two days later Rotary Parts received the bearings and set about the machining and finishing process. The customer received all four SXL bearings within the very tight deadline and was able to have the critically important cooling water pumps back in operation on time."

“THE NOTABLE ASPECT ABOUT THIS PROJECT IS THORDON'S COMMITMENT TO CUSTOMER SERVICE. FEW COMPANIES HAVE THE CAPABILITY, FLEXIBILITY AND ADAPTABILITY TO TURN AN URGENT ORDER AROUND SO QUICKLY.”

Selvas said: "The notable aspect about this project is Thordon's commitment to customer service. Few companies have the capability, flexibility and adaptability to turn an urgent order around so quickly. And once we received them, Rotary Parts had them machined, measurements checked and successfully delivered them to the thermal power plant."

"If a customer requires a quick turn-around for bearings, our Customer Service team is dedicated to finding a quick solution for these rush orders," said Axel Swanson, Business Development Manager, Thordon Bearings.

"The success of this project is testament to the professionalism and commitment of Thordon's Customer Service, manufacturing and engineering teams globally in meeting customers' needs."

The SXL grade, the market leader in grease-free vertical pump bearings, is manufactured from Thordon's proprietary elastomeric polymer and is the industry's preferred choice for pump applications requiring a dry start. With a lower dry coefficient of friction typically 0.10 - 0.20, the SXL bearing has a working pressure to 10 MPa (1450 psi) and is highly resistant to abrasion, shock loading and vibration.

"Wear life is the biggest advantage to using Thordon non-metallic materials, but also offers ease of use. We have the Thordon Bearing Sizing Calculation Program that makes it easy to determine correct finished dimensions, and they are easy to machine. There is no harmful dust when machining Thordon polymers which is a big advantage over phenolic bearings. And then when it comes to installation, we can freeze fit, press fit or bond fit, so there are other options there too," said Swanson. ☺



Thordon SXL tube stock being machined

# THORDON EXTENDING SEAL LIFE IN TOUGH MINING ENVIRON- MENTS



Thordon Bearings, a Canadian manufacturer known for its award-winning water-lubricated non-polluting marine shaft bearings and seals, is gaining considerable traction in the global mining sector with its Thor-Flex seal in pneumatic cylinder applications.

One recent success story is the replacement of conventional rubber seals on 28 pneumatic cylinders which had been sent for refurbishment to RMH Industries, Thordon's authorized distributor in Quebec, Canada.

The cylinders are used for unloading mining dump wagons. Typically, each wagon is equipped with two pneumatic air cylinders on each side. In this application, the cylinders operate at a pressure of 861 kPa (125 psi), under highly abrasive conditions. Each cylinder relies on two seals for operation, one 711mm (28in) in diameter, and the other 635mm (25in) diameter.

The seals were previously made from a rubber material, but having used Thordon's Thor-Flex seal in similar pneumatic cylinder applications, the distributor suggested that the life of the seals could be significantly extended if Thor-Flex was specified for these mining wagons.

Nicolas Rioux, Quality Control Manager at RMH Industries said: "Replacing the previous rubber seals with Thor-Flex seals ensures that the cylinders will offer a considerably longer service life before the customer needs to refurbish them again, while at the same time offering better sealing than conventional materials."

Thor-Flex is an elastomeric polymer material with high mechanical strength, along with self-lubricating properties making it highly suitable for cylinder seals in challenging environments. Thor-Flex offers superior yield strength to other seals on the market, and have a high resistance to permanent deformation. They can safely operate in temperatures from -50°C to +90°C (-60°F to 195°F), and at pressures up to 103,421 kPa (15,000 psi). They are able to work in abrasive, corrosive environments at high levels of humidity and can resist high impact loads.



*Thor-Flex seals installed in refurbished pneumatic cylinder*

"We have been designing and producing custom Thor-Flex solutions and products for over 30 years," said Scott Groves, Thordon's VP Sales. "Years of custom formulation and elastomer design experience allows our technical experts to provide our customers with solutions that meet or exceed the technical requirements of the application. These include high performance elastomers for non-bearing applications,

offering extremely high resistance to abrasion and vibration, high cut and tear resistance, increased shock absorption and reduced noise when replacing other materials. We can offer lightweight replacements for metals, which, in many applications, can be easily bonded to metal or other polymers, or can be custom formulated to suit specific applications."



REPLACING THE PREVIOUS RUBBER SEALS WITH **THOR-FLEX SEALS** ENSURES THAT THE CYLINDERS WILL OFFER A CONSIDERABLY LONGER SERVICE LIFE BEFORE THE CUSTOMER NEEDS TO REFURBISH THEM AGAIN, WHILE AT THE SAME TIME OFFERING BETTER SEALING THAN CONVENTIONAL MATERIALS.



*Cylinders ready for shipment at RMH Industries*

# THORDON SXL BEARINGS KEEP FANS COOL IN THE SUPERDOME



Thordon's Jim Bright (left) and Scott Groves (right) onsite at the Superdome after installation

The Superdome in New Orleans, Louisiana improved their pump efficiency by using SXL bearings after they installed variable frequency drives (VFD) on their cooling water pumps. The abrupt start and stop was tough on the pumps which led to the Superdome's decision to opt for the variable frequency drives. The slow start and lack of consistent shaft speed with the VFDs led to increased periods of dry running causing the strain and eventual failure of the existing pump bearings.

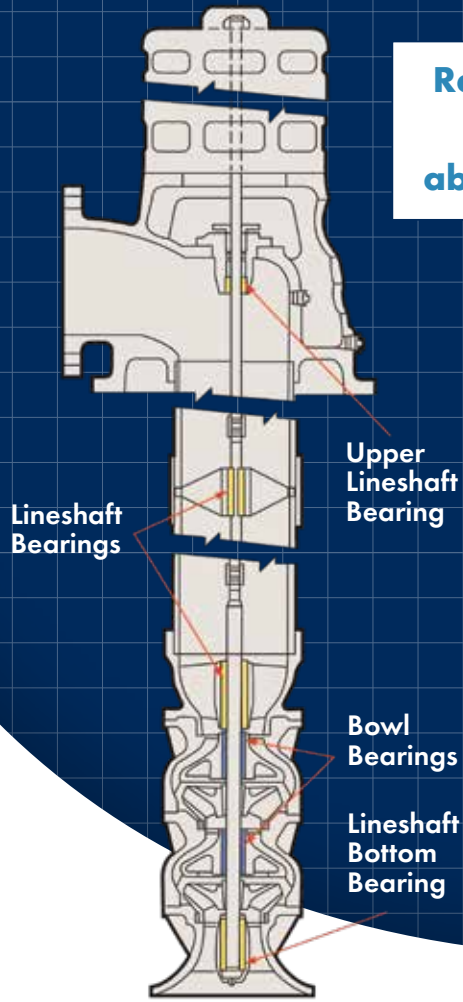
The Superdome needed a robust replacement bearing material that was easily customisable into the pump design. Based on the recommendation of local company Pump Dynamics, Thordon's SXL pump bearings were selected as the ideal solution due to the superior dry start up capabilities and abrasion resistance.

"Keeping the pumps running consistently and the stadium cool was our number one goal," said Jim Bright, Sales Manager at Thordon Bearings. "Thordon SXL pump bearings are the proven choice for new vertical turbine pumps or can be easily designed into existing pump configurations to provide end users with exceptional bearing wear life. Since it is easily machined and installed, we were able to provide the customer with our product quickly."

Business Development Manager, Axel Swanson added "SXL is used extensively in over 80 countries and in a variety of industries wherever vertical turbine pumps are used. In this application, SXL's dry start-up capability was vital. The Superdome was able to increase the efficiency of the pump with the variable frequency drives and also lower their lifecycle costs with the SXL bearings."

SXL was installed in one of the Superdome's water-cooling pumps at the beginning of the 2018 season, and will be installed into the remaining three pumps when they come up for scheduled maintenance. [🔗](#)

Replace your bearings less often  
with Thordon's long wear life,  
abrasive resistant pump bearings.



○ SXL

● Composite

● ThorPlas-Blue

○ ThorPlas-White

## IMPROVED RELIABILITY. LOWER OPERATIONAL COSTS. PROVEN PERFORMANCE.

With over 40 years of experience manufacturing and supplying bearings, Thordon bearings are the proven choice to provide longer wear life. Thordon's vertical pump bearings have allowed hundreds of various industrial facilities improve reliability by reducing downtime.

✓ **Abrasion resistance**

✓ **Extended wear life**

✓ **Dry start up**

✓ **Easy to design, machine & install**



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# THORDON

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