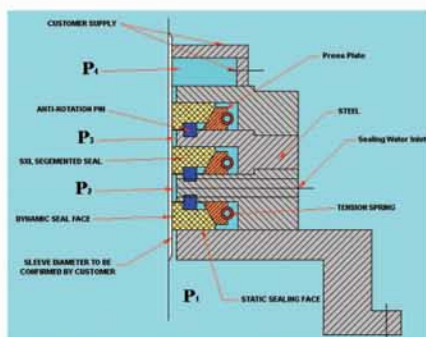


MORE POLYMER SHAFT SEALS ORDERED BY CHINESE TURBINE INDUSTRY

Dongfang Electrical Machinery Co., Ltd. (part of Dongfang Electric Corp.) and Harbin Electric Machinery Co., Ltd. have recently placed additional orders for Thordon SXL elastomeric polymer segmented turbine shaft seals bringing the total on order or already installed in 2005, to six sets. The shaft seals sold by Proco International Co. Ltd., Thordon's exclusive Distributor in China, are/will be installed at the Kangyang, Sanbanxi, Xiafu, Baishan and Nalan power plants in China and the Tekeze Hydropower Plant in Ethiopia.



SXL Segmented Shaft Seal

Sealing large hydro turbine shafts from 400mm up to 2000+mm (16 up to 80 in.) diameter can be a maintenance challenge for power plant operators. Typically, turbine seals consist of two or three sets of stacked segmented carbon rings that can be difficult to install without breakage and can be subject to relatively short life if misaligned or subjected to abrasives.

Since its first shaft seal installation in

1982 at the Manapouri Power Station in New Zealand, Thordon Bearings has compiled a history of segmented shaft seal installations. In 2003, Thordon embarked on a program to further optimize its segmented shaft seal design utilizing its proprietary SXL material. SXL is formulated using a tough elastomeric synthetic polymer alloy offering ease of installation, high natural abrasion resistance and good sealing performance. **NW**

SXL Segmented Shaft Seal References

Customer	Power Plant/Dam	Country	Seal Type	Turbine/Pump	RPM	Shaft Diameter (mm)	Shaft Diameter (inches)	Install Date
Itaipu Binacional	Itaipu	Brazil	Axial			3770 mm	148.43	Oct. 2005
Dongfang Electric Machinery Co., Ltd.	Nalan	China	Axial	Francis		892mm	35.12	Oct. 2005
Harbin Electric Machinery Co., Ltd.	Baishan	China	Radial	Pump Turbine	200	1015 mm	39.96	Aug. 2005
Harbin Electric Machinery Co., Ltd.	Xiafu	China	Radial	Francis	107	1170 mm	46.06	Apr. 2005
Harbin Electric Machinery Co., Ltd.	Sanbanxi	China	Axial	Francis	166	1532 mm	60.31	Mar. 2005
Dongfang Electric Machinery Co. Ltd.	Tekeze Hydropower Plant	Ethiopia	Radial			1160 mm	45.67	Mar. 2005
Dongfang Electric Machinery Co. Ltd.	Tekeze Hydropower Plant	Ethiopia	Radial	Francis	300	1160 mm	45.67	Mar. 2005
Harbin Electric Machinery Co., Ltd.	Kangyang	China	Axial	Horizontal	125	970 mm	38.19	Mar. 2005
Meridian Energy	Manapouri Power Station	New Zealand	Radial			910 mm	35.83	Jan. 2005
Infraserv Hochst		Germany				2060 mm	81.10	Oct. 2004
Harbin Electric Machinery Co., Ltd.	Nirji	China	Radial	Francis	107	1170mm	46.06	Jun. 2004
Harbin Electric Machinery Co., Ltd.	Blan	China	Radial	Kaplan	22.5	2380 mm	93.70	Nov. 2003
Dongfang Electric Machinery Co. Ltd.	Fenshuijiang	China	Axial	Horizontal	166	720 mm	28.35	Jul. 2003
Harbin Electric Machinery Co., Ltd.	Gongboxia Power Station	China	Radial	Francis		1820 mm	71.65	Mar. 2003
California Department of Water Resources	San Luis Dam	U.S.A.	Radial			940 mm	37.01	Mar. 2003
China Power Complete Equipment Co., Ltd.	Gongboxia Power Station	China	Axial	Francis		1820 mm	71.65	Feb. 2003
Harbin Electric Machinery Co., Ltd.	Huilong Power Plant	China	Radial	Pump Turbine	750	620 mm	24.41	Feb. 2003
US Bureau of Reclamation		U.S.A.	Radial	Toshiba Turbine		792 mm	31.18	Jan. 2003
Harbin Electric Machinery Co., Ltd.	Banglang	China	Axial	Francis		892mm	35.12	May. 2002
Harbin Electric Machinery Co., Ltd.	Kalun II	China	Axial	Francis		1526mm	60.08	Jan. 2001
Mighty River Power	Marasetai Power Station	New Zealand	Radial			635 mm	25.00	Jul. 1999
Snohomish Co. P.U.D., Washington	Henry M. Jackson Project	U.S.A.	Axial	Francis Turbine				Nov. 1998
Northern Wasco Co. P.U.D., Oregon	McNary Dam	U.S.A.	Radial			650 mm	25.59	Aug. 1998
LA Dept. of Water Power (LADWP)		U.S.A.	Radial			499 mm	19.65	Sep. 1997
Genesis Power	Rangipo Power Station	New Zealand	Radial			644 mm	25.35	Dec. 1996
Seattle City Light, Washington	Centralia City Light Power Plant	U.S.A.	Radial		400	337 mm	13.27	May. 1996
Central Arizona Water Conservation District	Havasu, Colorado River	U.S.A.	Radial	Hitachi pump	514	1067 mm	42.01	Jul. 1995
Mighty River Power	Araratia Power Station	New Zealand	Radial			755 mm	29.72	Jan. 1992
Hydro Quebec	Beauharnois Generating Station	Canada	Radial			1022 mm	40.24	Aug. 1988
US Bureau of Reclamation	Grand Coulee Dam	U.S.A.	Radial	Toshiba Turbine		792 mm	31.18	Mar. 1988
Meridian Energy	Manapouri Power Station	New Zealand	Radial			910 mm	35.83	Jan. 1982