

Press Release

*For further information please contact:
Samantha Joubert, Marketing Manager
Tel: +27 (0) 821 3602 / Fax" +27 (0) 86 681 4342
samantha.joubert@skf.com*

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SKF Explorer tapered roller thrust bearings: optimised for the most demanding oil & gas applications

Advanced bearing design offers higher load rating and up to 300 percent longer rating life

The oil and gas industry continues to push the limits of technology. Deeper wells, harsher environments and more sophisticated drilling approaches all place additional demands on equipment, calling for larger, more powerful and more robust solutions. Top drives, which power the drilling process, are right at the front line of that technological race, and when unplanned downtime can cost operators \$1 million a day, performance and reliability are critical attributes.

To meet the demands of leading top drive manufacturers, SKF has developed a new generation of tapered roller thrust bearings, the first to join its Explorer family of high-performance bearing products. With higher load ratings and bearing rating life extended by up to 300 percent, the SKF Explorer tapered roller thrust bearings are ready for the next generation of larger, more powerful top drives. They can also be used to optimise the reliability of existing designs.

The new bearing range is the result of a rigorous design, simulation, testing and manufacturing program. To maximise effective carrying capacity and improve resistance to shock loads and peak forces, SKF has optimised the length and diameter of the rollers, along with the profile of both rollers and raceways. The carefully designed relationship between rollers and raceways minimises the risk of edge stresses, while a smooth transition at the raceway edge avoids sharp edges and stress peaks.

Tight control of manufacturing tolerances minimises the diameter variations between rollers for a more even load distribution. The surface finish of the bearing components has also been improved, reducing roughness to avoid stress peaks and maintain an effective lubricant film at start up and during operation.

SKF South Africa (Pty) Limited

PO Box 13157, Witfield, 1467, Visiting address 4B Saligna Street, Hughes Business Park, Witfield 1459, South Africa

Tel 011 821 3500, www.skf.com

Directors: M. Sebli (Managing) (French), B.J. Dailly, Dr. N.B. Mabuya

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The bearing washers have been designed using the latest finite element techniques. An optimised undercut at the transition between raceway and flange reduces stress peaks, improving resistance to fatigue or breakage under high loads, while overall dimensions have been refined to reduce friction at the roller end. A carburization process further minimises crack propagation or damage from shock loads.

SKF Explorer taper roller thrust bearings can be supplied with a new, optimised brass cage, or a pin-type cage which is particularly suitable for extreme operating conditions. Both cage options are available in symmetrical or asymmetrical designs to suit a wide variety of different needs. Manufactured in Germany, the new bearings are available world-wide, and SKF can provide in-depth selection and engineering support with its proprietary SimPro Expert gearbox design and optimisation system.

SKF is a leading global supplier of bearings, seals, mechatronics, lubrication systems, and services which include technical support, maintenance and reliability services, engineering consulting and training. SKF is represented in more than 130 countries and has around 17,000 distributor locations worldwide. Annual sales in 2017 were SEK 77 938 million and the number of employees was 45 678. www.skf.com

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By Laverick Media Communications T: +27 (0) 11 0400 818 sonia@laverickmedia.co.za / www.laverickmedia.co.za