

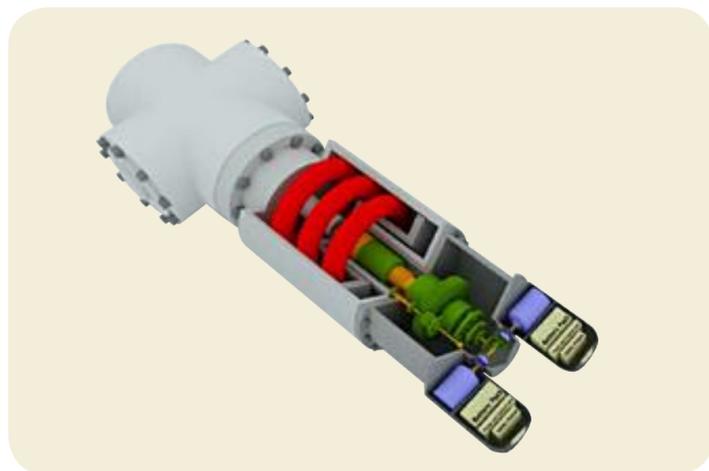


Working towards tomorrow – development project for oil & gas

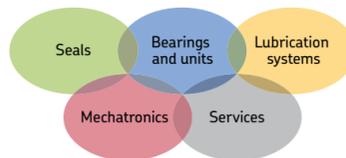
With an increasing need for safety, reliability and efficiency in the oil and gas industry, the case for using electro-mechanical actuators rather than hydraulic actuators becomes more compelling. Furthermore, electro-mechanical solutions allow for faster opening and closing of the valves, thereby increasing the operations' revenue stream. SKF Actuation System is working on developing a dedicated range of actuators for subsea applications. After combining the best knowledge from SKF's 5 platforms, (bearings, seals, lubrication, services and mechatronics), SKF was able to come up with a complete concept solution offering:

- Enhanced feedback and control
- Virtually unlimited step-outs and water depths
- Increased up time and improved production

Working with SKF Actuation System, you can develop together a tailored solution and control your product while benefiting from SKF's extensive technical knowledge.



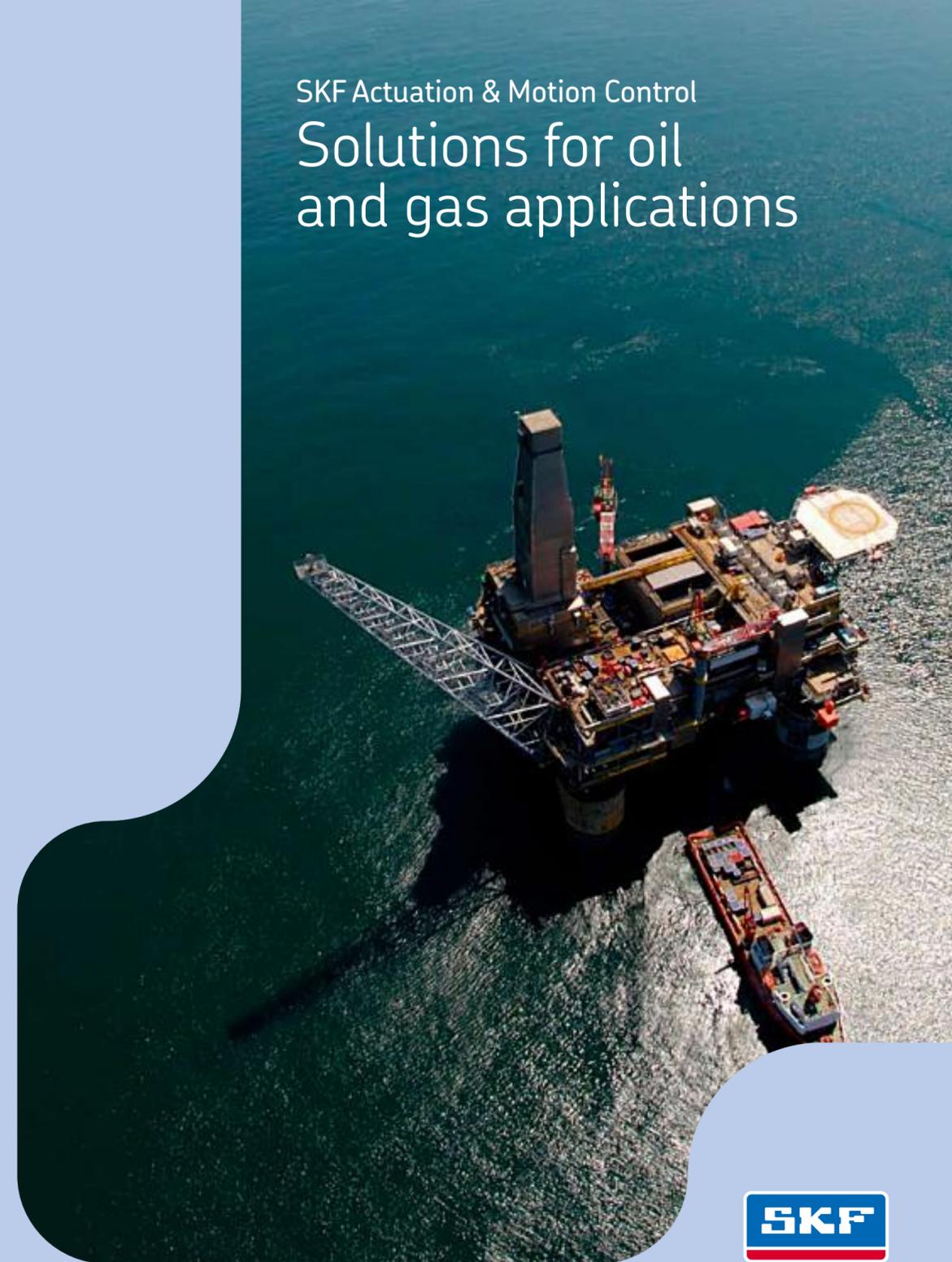
Subsea electrical valve actuator



The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

SKF Actuation & Motion Control Solutions for oil and gas applications



For more information on SKF's linear motion and actuation systems, please visit our website

www.linearmotion.skf.com

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Go beyond the limits with SKF by reaching the unreachable

Oil and gas is probably one of the most demanding and challenging industries of today. While global demand is constantly increasing, production from some current oilfields is declining. Companies need to find new sources which means heading into ultra-deep waters and drilling in previously unimaginable depths.

This trend of drilling in remote and deeper areas subjects oil and gas equipment to harsh conditions such as severe temperatures, extreme pressures or abrasive environments.

Meeting the challenges of the oil and gas industry while reducing the need for maintenance and operating costs is not the easiest thing to do. With more than 25 years of industry experience, SKF can help companies improve every stage thanks to advanced technological solutions. Whether to replace hydraulics by electric actuation systems to allow remote and more accurate response or to provide safe condition monitoring for a more controlled diagnosis, SKF has the solution to fit even the most stringent demands.

By offering a single-source for a range of integrated solutions, SKF can help:

- increase performance and reliability
- reduce operating costs
- maximize efficiency
- avoid production stops
- cut maintenance costs
- satisfy environmental regulations
- manage remote operation and provide accurate feedback
- explore subsea deep water
- handle high pressure high temperature (HPHT)
- drill in more complex geological structures

SKF – your preferred partner in oil and gas

SKF solutions to cope with the most hostile environments

Heavy-loaded valves, offshore lifting, and pipe tensioning

SKF offers tested and proven solutions for many oil and gas applications where axial thrust loads exceed 50 metric tons.

The large SKF planetary roller screws are extremely robust high efficiency screws which allow a static load capacity up to 1 500 metric tons. They are available with a shaft diameter up to 240 mm and a length up to 8 meters. This solution for electric heavy actuation requires no hydraulic accumulators, improves the control accuracy, and requires low energy consumption.



Wireline and downhole tools

The challenge of such an application lies in the diameter of the tool as it must fit in a very restricted tube. Due to the depth and temperature of the environment, the application also needs to withstand high pressure and temperature (> 200 °C).

SKF provides different high efficiency roller screws (planetary, recirculating or compact inverted) allowing high power density.

Our design, based on high grade bearing steels, is HPHT compatible and the high efficiency of SKF products combined with small lead require limited power input. The high reliability inherent to planetary roller screws also improves tool robustness.

API 6A low torque gate valve

The closing and opening of gate valves should be fast and hand operated, even for high thrust loads (15 kpsi fluid).

SKF offers a high efficiency solution consisting of a housing, ball screw and bearings.

This SKF plug-in solution promotes input torque reduction (3 times more efficient than traditional acme screws) without any need for a gearbox. Speed is also enhanced as fewer handwheel turns are required.



Subsea actuation

The fully-electric subsea oil field is now becoming a reality. To achieve such a goal, the equipment involved needs to be virtually maintenance free for years of service and requires electric consumption that is as low as possible.

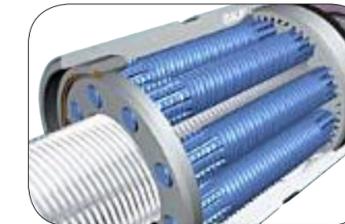
The SKF planetary roller screw achieves these goals thanks to its exceptional reliability, high efficiency, and high load carrying capacity.

A dedicated product offering, from components to complete systems



Ball screw operators

A tested and approved range for low torque gate valves, from 3" to 7" 15 kpsi, including 9" 10 kpsi.



Planetary roller screws

Robust and very reliable, with a shaft diameter from 8 to 240 mm, planetary roller screws are the components necessary to work properly in harsh actuation conditions, from wireline tools to heaving lifting (more than 300 metric tons dynamic capacity).



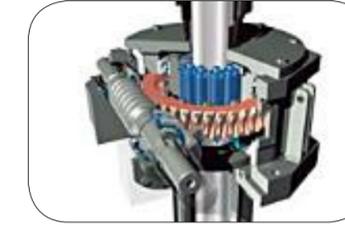
Compact inverted roller screws

Thanks to its small torque & compact design, the inverted roller screw is the best solution for small stroke actuation.



Recirculating roller screws

From pitch diameter from 8 to 125 mm, they only require a small torque to actuate high thrust load; the ideal screw for wireline tools.



Roller screw jack

A highly efficient mechanical system based on the robust planetary roller screw which can fit heavy lift and pipe tensioners.