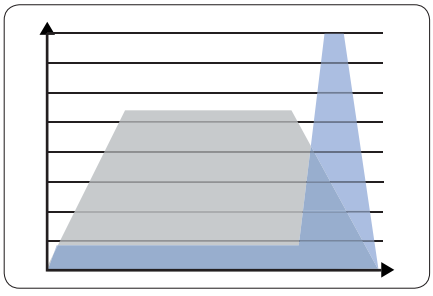
Energy saving actuation alternatives

SKF electromechanical solutions

Facing new challenges in linear drive technology

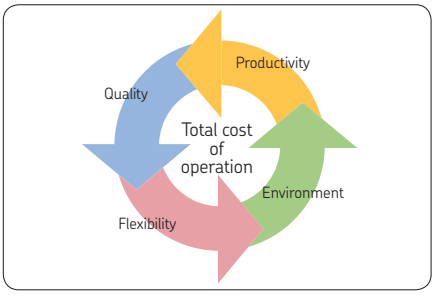
In recent years, linear drive technology has considerably advanced the trend towards automation of industrial procedures. While linear actuators were primary pneumatically or hydraulically driven, there has been an evident technological shift in the production industries in favour of electromechanical systems.

The change is the result of both technical and financial factors, including easier initial set-up, lack of ancillary equipment, lower maintenance and repair costs throughout the system lifetime, versatility and environmental considerations.



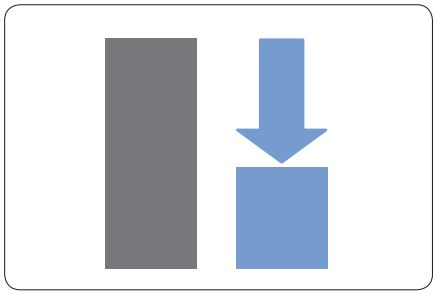
Flexibility and precision

Electromechanical systems offer accurate motion control, including immediate setting of speed, force and position; increasing the flexibility and repeatability of production processes.



Reduced total cost of ownership

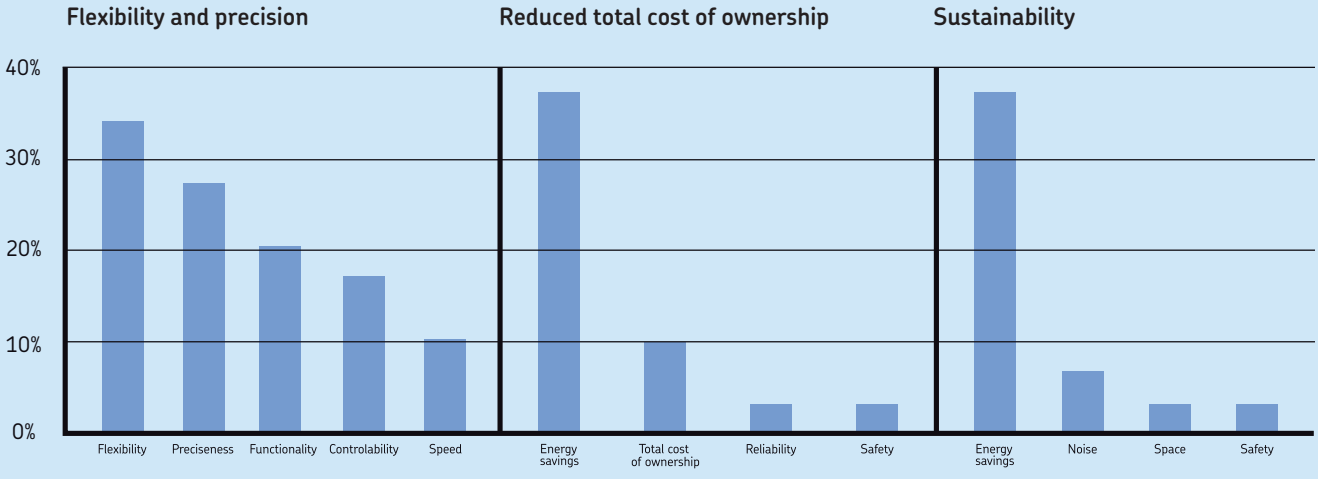
Electromechanical systems reduce the total cost of ownership, thanks to energy saving, reduced maintenance and greater reliability. Fast cycles increase productivity and reduce unit manufacturing costs.



Sustainability

Electromechanical systems reduce the environmental impact and increase the safety of production processes by less energy consumption, cleaner operating procedures and reduced noise levels.

Arguments for electromechanical solutions



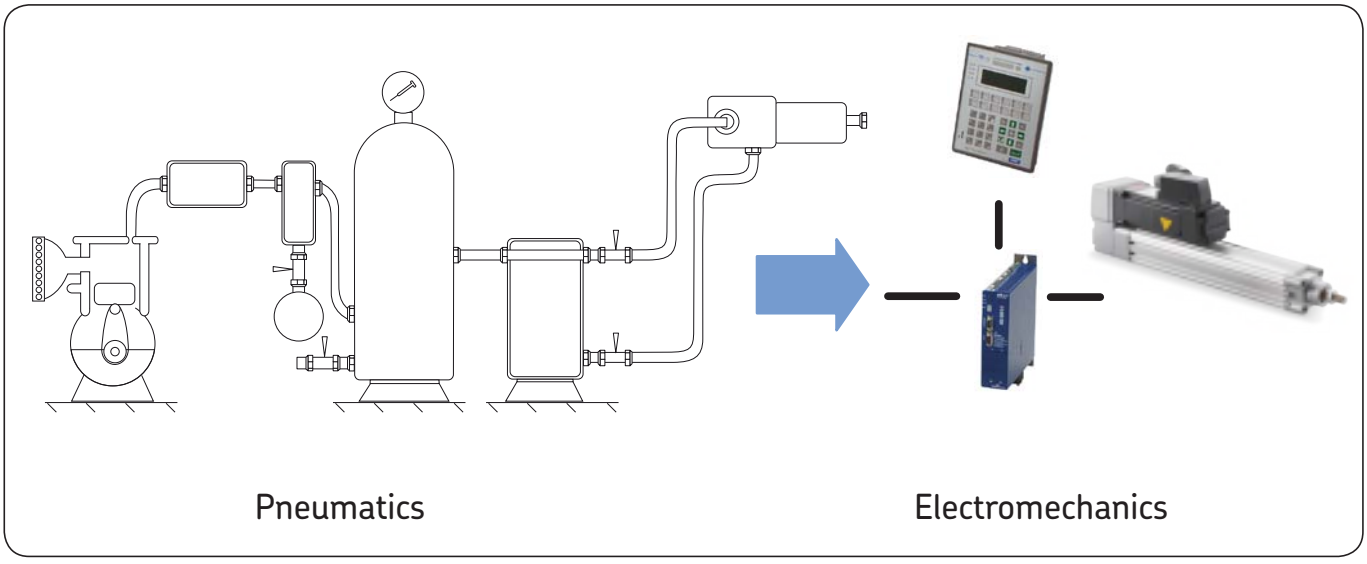
All figures and graphs are rounded off and based on SKF statistical studies.

Electromechanic versus pneumatic systems

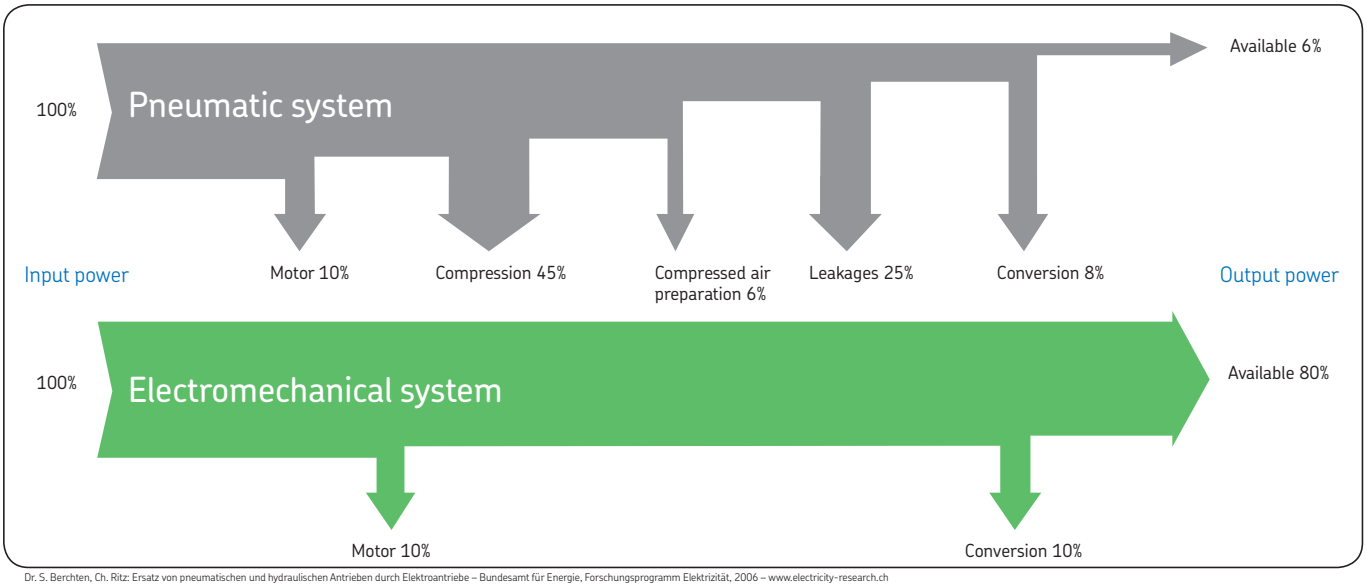
Pneumatic cylinders are widely used in low-precision and high-speed applications. Electic drive systems are increasingly being considered as a replacement alternative to air systems. They require less ancillary equipment, reduce energy costs thanks to greater efficiency, need less maintenance and reduce the risk of contamination. Electric cylinders also offer greater control of the motion and speed profile, giving better repeatability, more precise positioning and increased up-time.

SKF electric cylinders are designed to fit the industrial footprint of existing parts, so conversion is easy and cost-effective. Also the actuators can be monitored and controlled by custom software. Applications include factory automation, metalworking and machinery options, and other utilization in which reliable and precise repetitive motion is required.

Complexity and flexibility in system comparision



System efficiency comparision



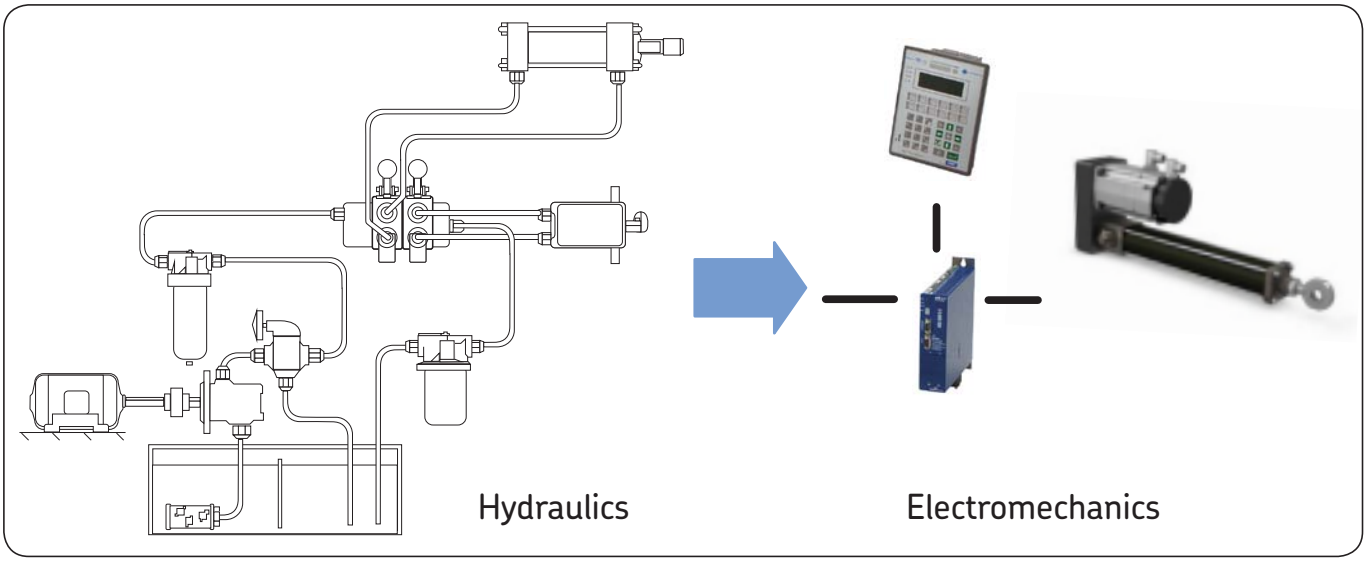
Dr. S. Berchten, Ch. Ritz: Ersatz von pneumatischen und hydraulischen Antrieben durch Elektroantriebe – Bundesamt für Energie, Forschungsprogramm Elektrizität, 2006 – www.electricity-research.ch

Electromechanic versus hydraulic systems

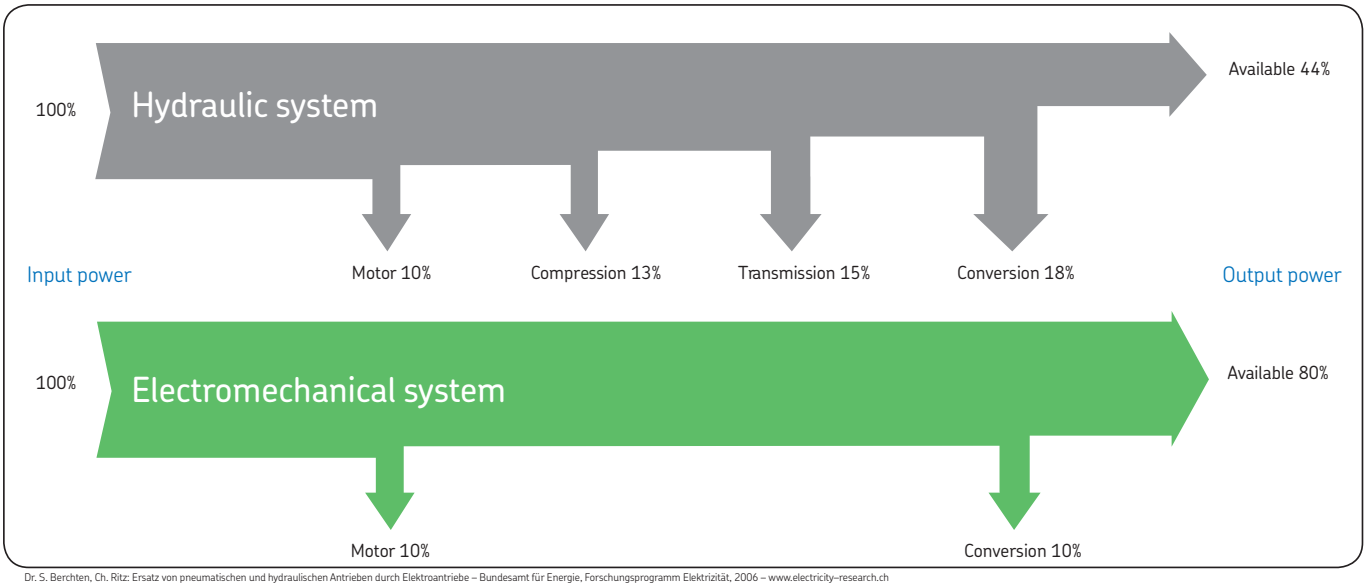
Hydraulic cylinders are traditionally used in high load applications. In the recent past, the power range of servo motors has been extended and makes it possible to develop electromechanical solutions for high load applications. Indeed, SKF electromechanical cylinders can provide a force up to 450 kN, opening up more applications to switch from hydraulic to electromechanical solutions.

Electromechanical cylinders are more reliable, easier to control and cleaner to operate than hydraulic cylinders. They eliminate typical production problems such as contamination, oil leaks, fluid maintenance checks and disposal procedures, and require no ancillary equipment. They are suitable for a complete range of electronic control systems.

Complexity and flexibility in system comparision



System efficiency comparision



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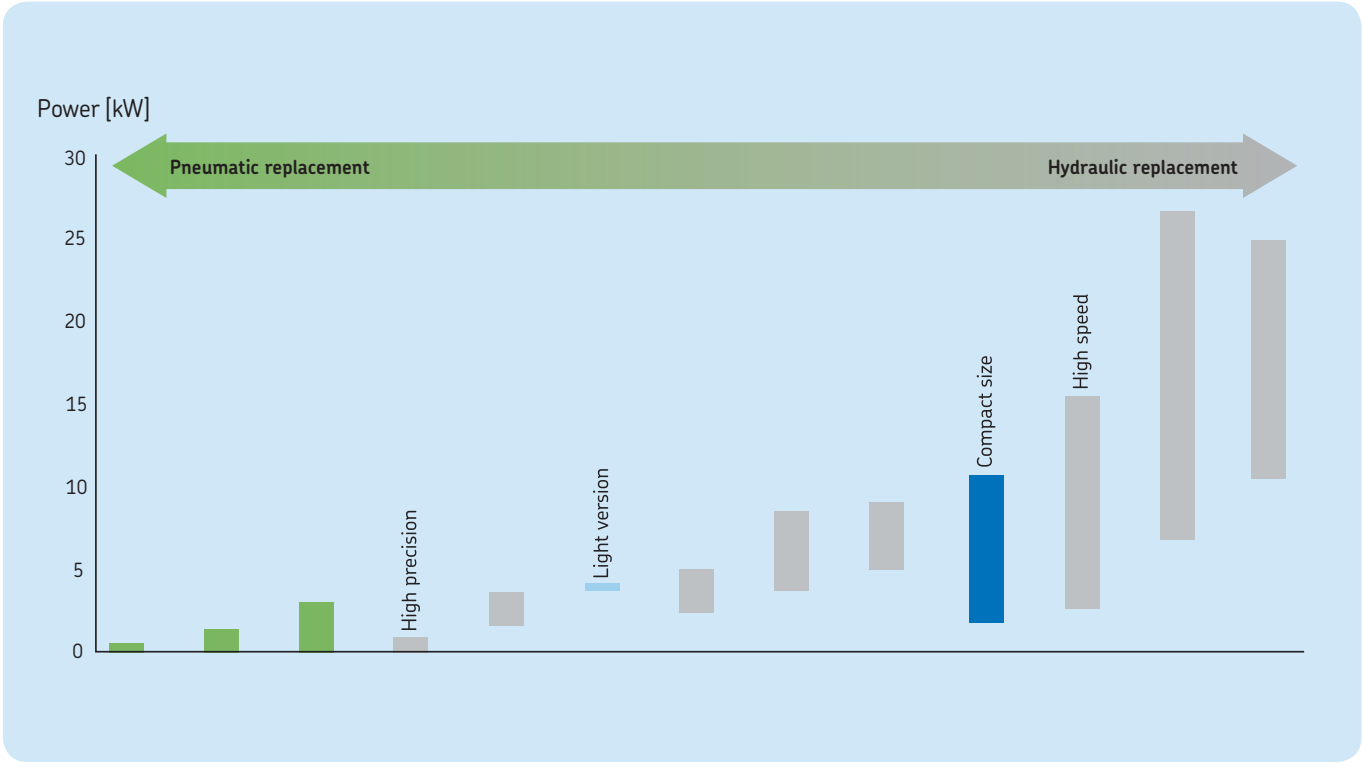
Partnering clients in technological change

When it comes to new technology, SKF provides innovative, reliable solutions.

The diagram below shows a range of products suitable for replacing a pneumatic or a hydraulic system. Whatever the changeover you are considering, our expert technical staff is always on hand, worldwide, to answer your queries and provide specific advice.

SKF electromechanical cylinders

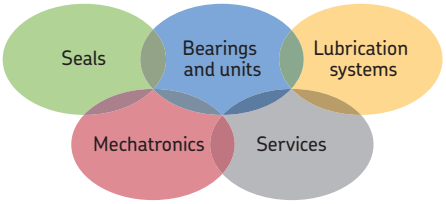


- Electric cylinders (CASM)
- Light electromechanical cylinders (LEMC)
- Compact electromechanical cylinders (CEMC)
- Modular electromechanical cylinders (EMC)

SKF can help

SKF offers a range of services for OEM and aftermarket customers around the world, in every major industry and can help to:

- improve productivity
- reduce maintenance costs
- improve energy efficiency
- optimise designs
- reduce time to market
- reduce total cost of ownership.



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.

PUB 55/S9 13650 EN · April 2013

Printed in Italy on environmentally friendly paper.

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