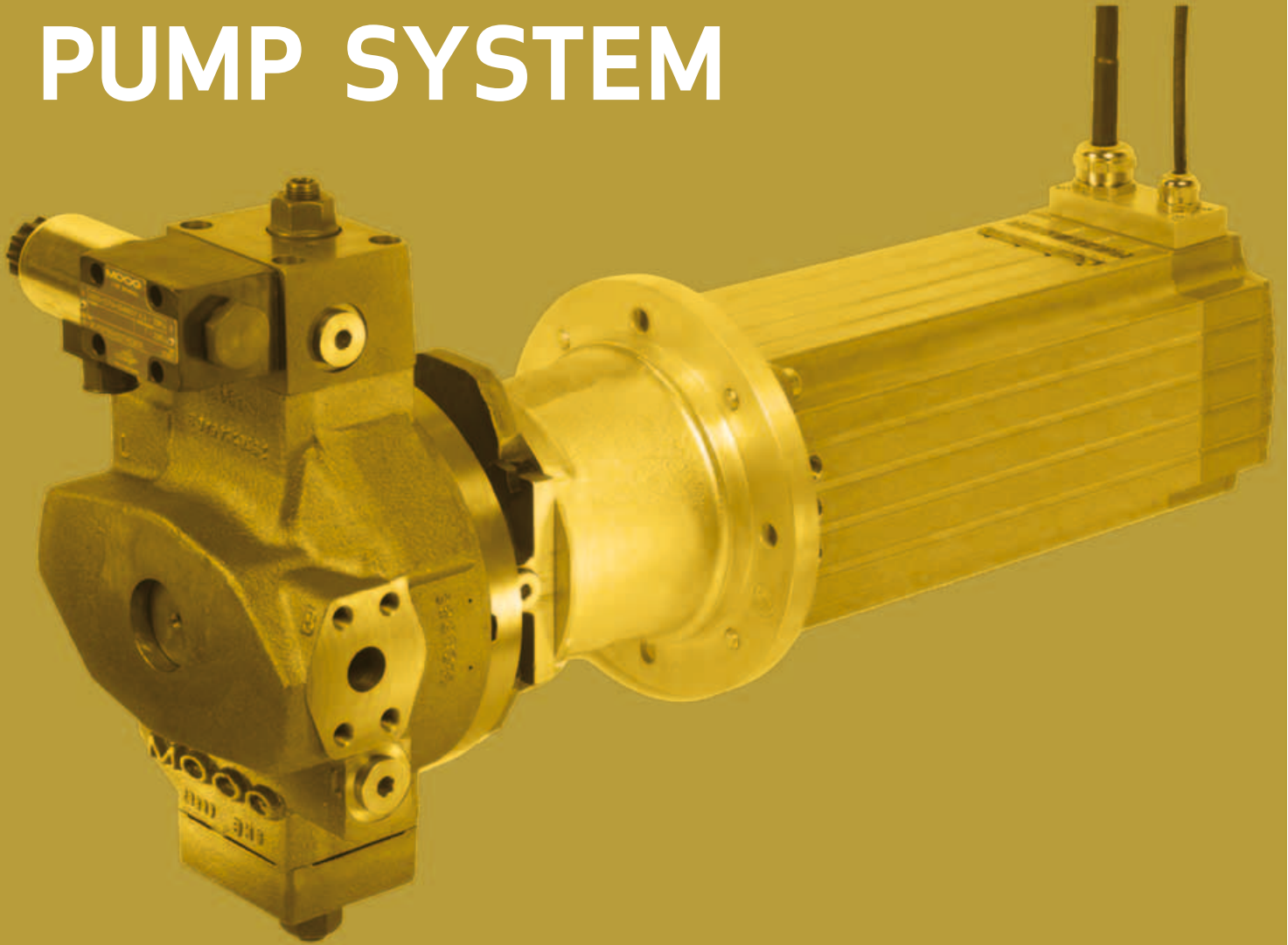


SPEED CONTROLLED PUMP SYSTEM



Rev. 1, 10/2010

ENERGY EFFICIENCY AND FLEXIBILITY
FOR HIGH PERFORMANCE APPLICATIONS

MEETING YOUR TOUGHEST MACHINE CHALLENGES

The pressure has never been greater for manufacturers of industrial machinery to achieve higher productivity, premium-quality products and maximum energy efficiency, all at less cost. Machine builders are also seeking new technologies and alternative ways to differentiate themselves in the marketplace.

Moog developed a complete integrated system using our world-class building block products that offers machine builders a new option for hydraulic motion control. The unique functionality of this system is the ability to allow users to change the speed of the motor and pump thereby controlling the fluid flow. The resulting machine has 30 % lower energy consumption or more when compared to traditional approaches and also provides optimized system performance and easier setup for operators.

Applications

By combining the best in both hydraulic and electric technologies, this system is ideal for high performance applications that need greater energy efficiency including:

- Injection molding machines
- Die casting machines
- Wrapping and bending machines

Reduced Energy Consumption

The primary advantage of the Speed Controlled Pump System is the impressive energy savings that is not typically available with the traditional hydraulic technology. The overall energy efficiency of Moog Speed Controlled Pump (SCP System) is significantly higher than traditional hydraulic systems for a few key reasons. In a normal hydraulic application, the machine experiences, medium and full loads as part of the cycles. In tests conducted by Moog with customers, the efficiency of the SCP with a medium load has reached 20 to 30% higher when compared

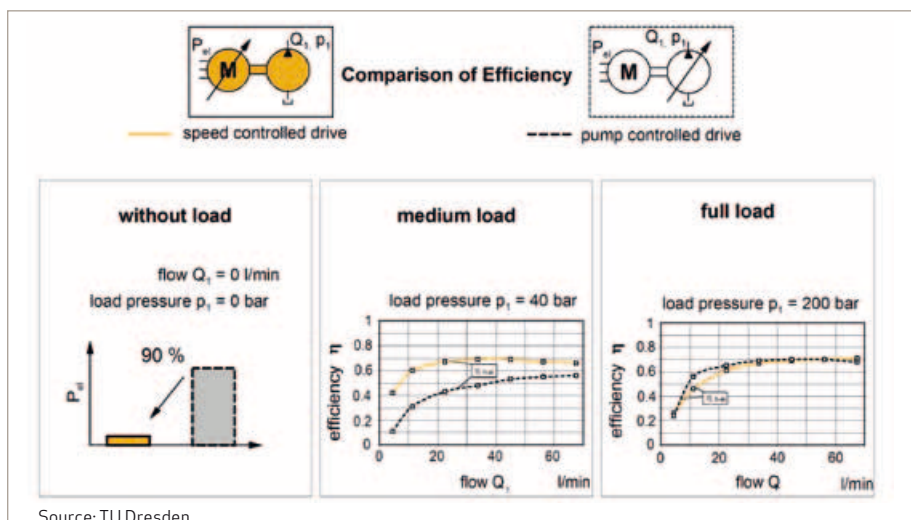
to the conventional system. If a machine is running without load, or in a standby mode, energy consumption can be 90% less. Under full load conditions, the performance compared to the traditional system is nearly identical. This offers the user the opportunity to optimize the energy efficiency based on the needs of the application, but without losing performance.

Modular System for Optimized Performance and Easier Setup

The design of the Speed Controlled Pump System is flexible to meet unique customer requirements. As Moog has the control over the design and manufacture of the key products in the system, the technology is based on modular concept that is highly flexible to integrate into a machine builder's design. The new Moog system is compact, enabling the overall footprint of the machine to be reduced.

If required, the pump can also feature a dual displacement, capable of intelligently switching from one to the other displacement. This functionality enables the motor to run more efficiently and save energy. For example, during the pressure holding phase in an injection molding machine, low flow but high pressure is required, making real energy savings of up to 90 % possible.

The Speed Controlled Pump System not only has advantages over traditional hydraulic systems but it also delivers lower maintenance and investment costs when compared to an all electric motion system. Electromechanical devices on an all electric machine are generally built into the framework of the machinery. When a machine needs to be rebuilt as part of routine maintenance, the electro-mechanical infrastructure needs to be totally disassembled and re-assembled. The cost of rebuilding a hydraulic machine with Moog's Speed Control Pump System is much lower because it is an integrated modular unit with all of the parts easily accessible for maintenance and upgrades.



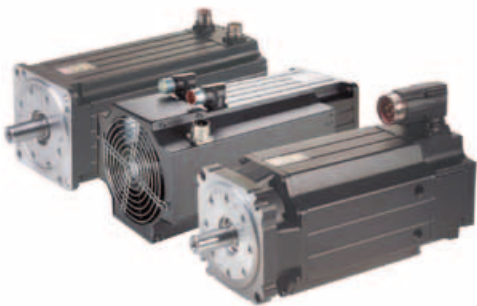
Systems based on World-Class Moog Products

The Moog Speed Controlled Pump System includes several high performance building block products in the integrated design: Fixed displacement Radial Piston Pump (RKP), the Maximum Dynamic Brushless Servo Motor (MD Series) and the Modular Multi-Axis Programmable Motion Control Servo Drives (MSD).



RKP with Dual Displacement

Moog's Radial Piston Pumps, also known as RKP, are high-performance variable, dual or constant displacement pumps designed for demanding applications. The RKP is the ideal solution for applications requiring robust performance, low noise and unsurpassed reliability. Available in various sizes, single and multiple configurations, and a wide array of control options and mounting flanges, this product offers rapid response times and high volumetric efficiencies.



MD Series

Moog's Maximum Dynamic Brushless Servo Motor, also known as MD Series, is ideal for highly demanding applications. These motors are built to provide the exact torque, speed and power requirements for your application. Currently available in different sizes and with cooling options, they provide rapid acceleration and deceleration. The wide range of configurations allows our customers to define and realize the best design of their machines.



MSD Servo Drives

Moog's Modular Multi-Axis Programmable Motion Control Servo Drive, also known as MSD, provides the highest levels of dynamic response, smooth performance and application versatility. MSD Series includes modular Servo Drives powered by a shared power supply and a motion controller to coordinate motion across multiple axes to reduce cycle times and provide precise motion control for higher accuracy. It provides intelligent pressure and flow functionality for the system due to unique control algorithms. Depending on pressure and flow demand values, the MSD controls the speed setting requirements for torque and speed. Pump and servo motor characteristics are stored in the servo drive, creating an intelligent system that can communicate with external systems over a fieldbus.

MOOG GLOBAL SUPPORT™

With the Moog Global Support™ network, both OEM's and end-users have access to service experts anywhere in the world to ensure maximum uptime for machines installed with this system.



TAKE A CLOSER LOOK.

Moog designs a range of motion control products that complement the performance of those featured in this product overview. Visit our website for more information and contact the Moog facility nearest you.

Argentina
+54 11 4326 5916
info.argentina@moog.com

India
+91 80 4057 6605
info.india@moog.com

Singapore
+65 677 36238
info.singapore@moog.com

Australia
+61 3 9561 6044
info.australia@moog.com

Ireland
+353 21 451 9000
info.ireland@moog.com

South Africa
+27 12 653 6768
info.southafrica@moog.com

Brazil
+55 11 3572 0400
info.brazil@moog.com

Italy
+39 0332 421 111
info.italy@moog.com

Spain
+34 902 133 240
info.spain@moog.com

Canada
+1 716 652 2000
info.canada@moog.com

Japan
+81 46 355 3767
info.japan@moog.com

Sweden
+46 31 680 060
info.sweden@moog.com

China
+86 21 2893 1600
info.china@moog.com

Korea
+82 31 764 6711
info.korea@moog.com

Switzerland
+41 71 394 5010
info.switzerland@moog.com

Finland
+358 10 422 1840
info.finland@moog.com

Luxembourg
+352 40 46 401
info.luxembourg@moog.com

United Kingdom
+44 168 429 6600
info.uk@moog.com

France
+33 1 4560 7000
info.france@moog.com

The Netherlands
+31 252 462 000
info.thenetherlands@moog.com

USA
+1 716 652 2000
info.usa@moog.com

Germany
+49 7031 622 0
info.germany@moog.com

Norway
+47 6494 1948
info.norway@moog.com

Hong Kong
+852 2 635 3200
info.hongkong@moog.com

Russia
+7 8 31 713 1811
info.russia@moog.com

www.moog.com/industrial

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