

The future – intelligent servo pump drives



Innovative technology

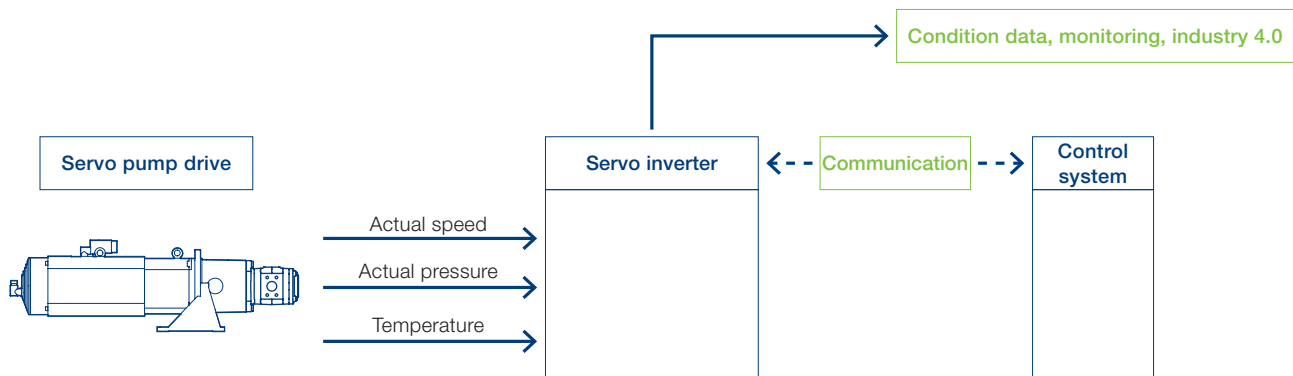
Industry 4.0 ready

Voith servo pumps combine the advantages of hydraulics and servo mechanics. By measuring current operating states and diagnosing the individual components and the entire system, they also create ideal conditions for integration within the framework of Industry 4.0.

Our components measure, control and transmit the most diverse operating parameters such as pressure, acceleration or temperature. For condition monitoring, we also have the potential of measuring data such as oil level, filter condition and efficiency. As a hub connected to a higher-level control system, the servo motor can exchange this information, paving the way for the integration of the whole unit.

Intelligent Voith servo pumps detect, while under load, the drop in efficiency caused by wear throughout the entire system and report an upcoming maintenance need to the higher-level control system as a preventive measure. Thereby you are able to detect maintenance requirements at an early stage and considerably reduce downtimes of your machines and systems. As a result, on-site servicing is reduced by up to 70%.

System integration



The future of hydraulics

Variable speed pump drives

The future of hydraulics has arrived with variable speed pump systems. With these pumps, hydraulic systems achieve a functionality never seen before. You save up to 70 % more energy over conventional hydraulic systems. Noise emissions are also lower, in many cases by up to 20 db(A).

Technical data

Maximum power per drive	250 kW
Maximum volume flow per pump	625 l/min
Maximum accuracy of pressure control	± 1 bar
Maximum operating pressure	345 bar

Servo pumps control the pressure or the volume flow. They precisely convert electrical energy into the hydraulic energy that is currently needed in the system. The classic use of valves for control can be either completely or partially omitted. This considerably simplifies every hydraulic system.

Our specialists make using variable speed pump systems extremely simple. You give us all the cycle data for your machine or system. We then use this information to determine the necessary pressures and volume flows, and design the pump systems based on that. In the end, you get a complete solution – customized, ready to run, and all from a single source.

Servopump



Properties

- Internal gear pumps with radial and axial gap compensation
- Volume flow-control for speed or position
- Pressure control for force
- Possible to superimpose volume-flow and pressure control
- Conventional field buses
- Monitoring

Applications

- Plastics processing machines
- Die casting machines
- Presses
- Machine tools
- Metallurgy
- Wood processing machines
- Paper machines

Advantages and benefits at a glance

Features	Advantages	Benefits
Reduced pump speed in the part load range and outside the machine cycle	Up to 70 % potential energy savings in hydraulic systems	+ With considerably lower energy costs, you reduce the total cost of ownership (TCO) for your machine or system
	Noise emissions are reduced by up to 20 dB(A)	+ Reduced cost and effort for noise abatement. Workplace guidelines can often be met without the need for additional measures
Integrated process monitoring	The drive system has its own diagnostics and is Industry 4.0 ready	+ Maintenance needs can be detected early and extremely quickly + Downtime of the machine or plant is considerably less + On-site service calls can be reduced by up to 70 %
Volume-flow or pressure control directly via the pump system – not using valves	Hydraulic power loss in the system is lower	+ Your cooling system is simpler, saving you investment costs
	The level of heat introduced into the hydraulic system is lower	+ Lower cooling power results in lower operating costs + Components have a longer service life + Reduced oil management costs thanks to lower load on the pressure fluid
Controlling the system requires fewer classic valves or none at all	The system is less complex	+ Your hydraulic system has a characteristically high reliability and availability + The productivity of your machine or system is high
<ul style="list-style-type: none"> • Highly dynamic control using servo pumps • Low mass moment of inertia of the internal gear pump 	<ul style="list-style-type: none"> • Actuator cycle times can be shortened by up to 50 % 	+ The productivity of your machine or system improves considerably
Control parameters of the servo pump integrated into the servo inverter	<ul style="list-style-type: none"> • Voith servo pumps are delivered ready to go 	+ This reduces the development times and costs associated with your machine or system + Integration into existing control concepts is easy + Our servo pump systems are ideal for retrofit solutions

Wide range for optimal solutions

Designs

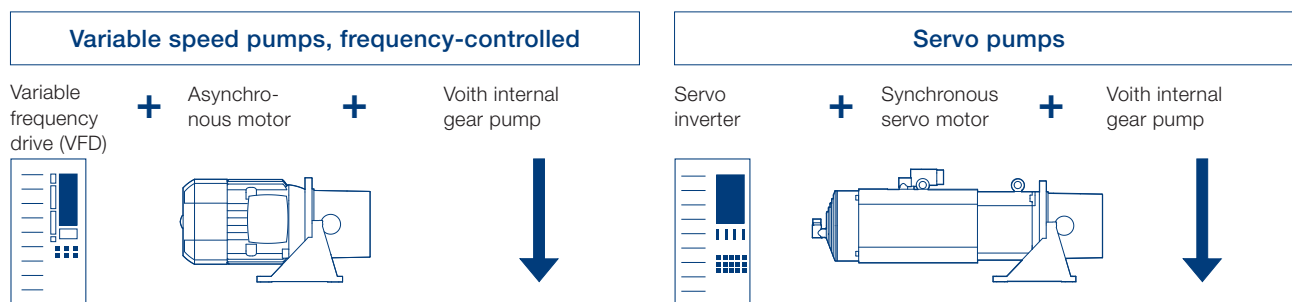
Variable speed pumps in their simplest version are frequency-controlled. They consist of three main components:

1. Variable frequency drive (VFD)
2. Asynchronous motor
3. Voith internal gear pump

For hydraulic systems that place high demands on control engineering, servo pumps are the perfect solution. The basic version of these pump systems also consists of three main components:

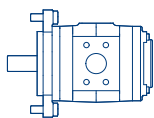
1. Servo inverter
2. Synchronous servo motor
3. Voith internal gear pump

Possible combinations

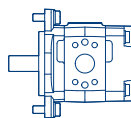


Voith internal gear pumps (single pumps or pump combinations)

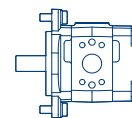
IPVP
(High pressure up to 345 bar)



IPVAP
(High pressure up to 320 bar)



IPCAP
(Medium pressure up to 250 bar)



Outstanding in comparison

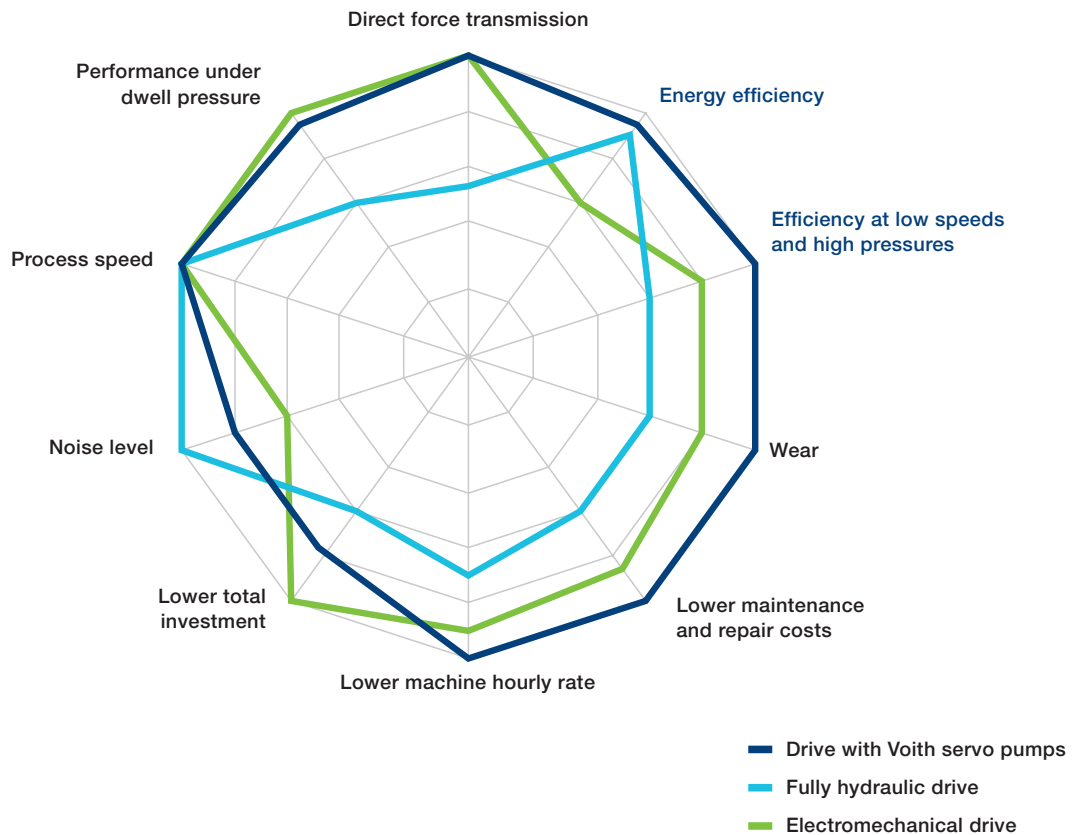
Conventional hydraulic systems usually have constant volume flows. As a result, these systems have virtually constant energy consumption.

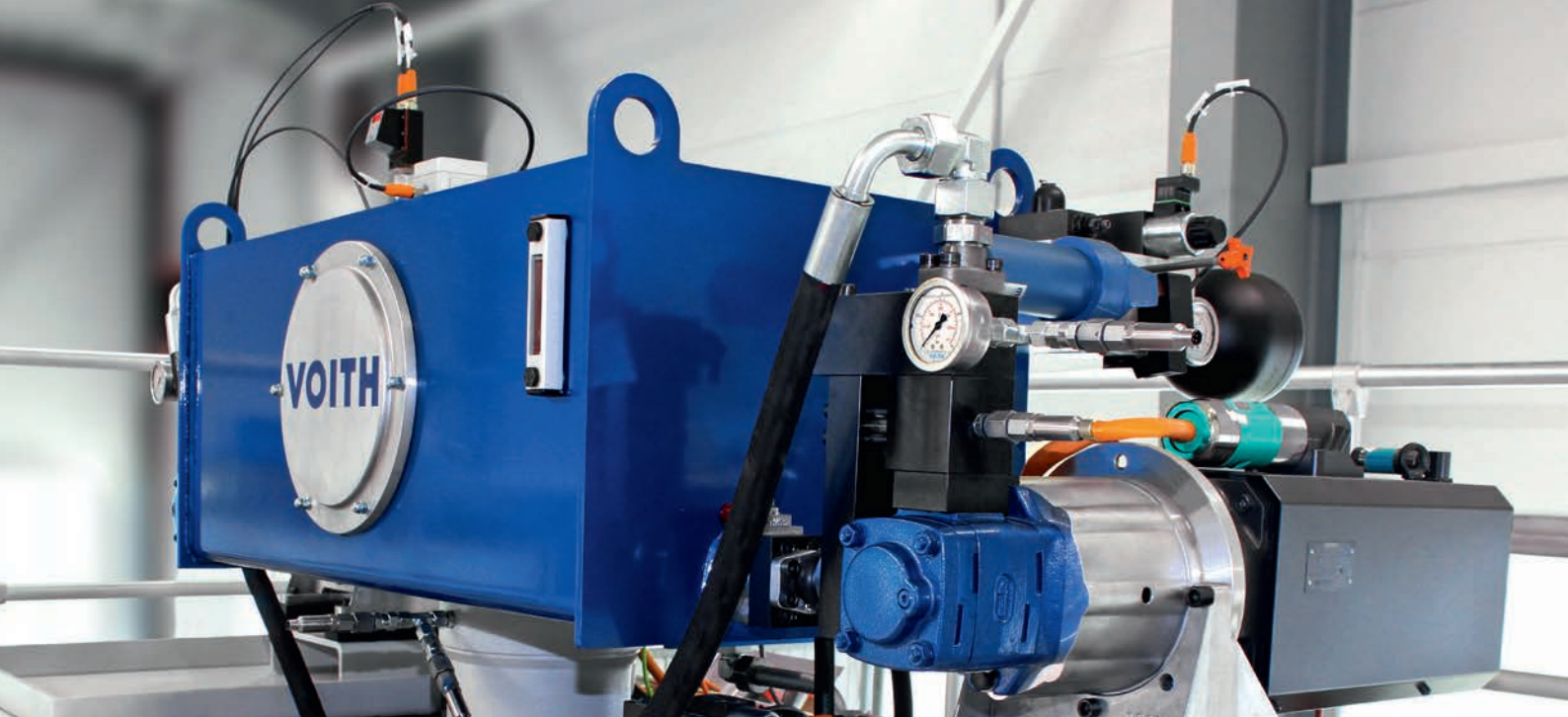
Using servo pumps makes it possible to vary the volume flows in hydraulic systems. In the part load range and outside the machine cycle, the servo pumps operate at lower speeds or stop altogether. Servo pumps reduce the energy consumption by up to 70 %.

Using servo pumps can reduce the total cost of ownership (TCO) for the hydraulic system by up to 35 %.

Systems with variable speed servo pumps are amortized in a short time – in most cases, within 1 to 2 years.

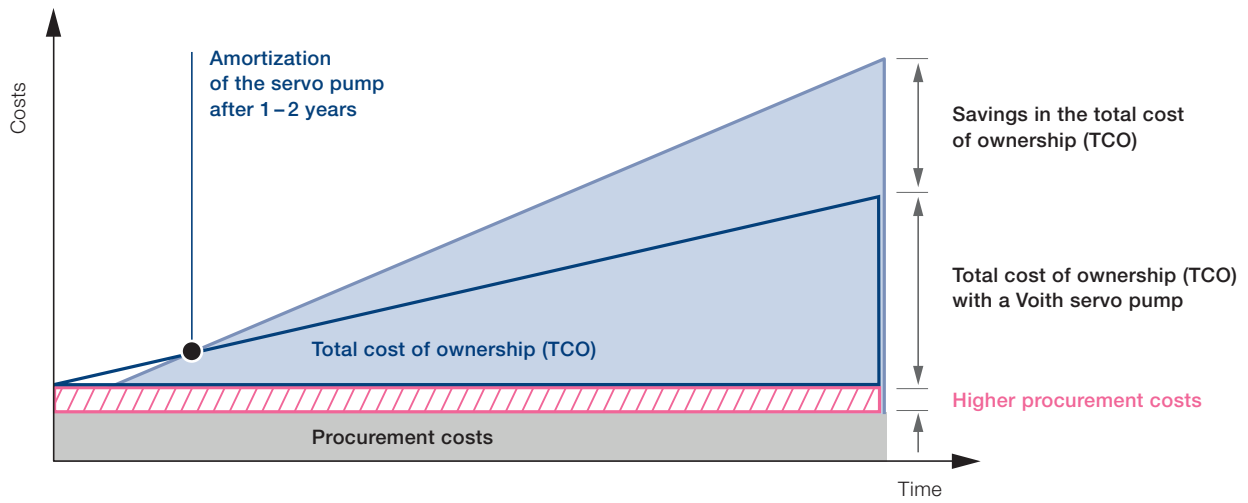
Comparison of different drive systems. Example: plastic injection molding machine





Servo pump drive in a 500 kN press

Illustration of procurement cost and total cost of ownership (TCO)



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