

Vickers® by Danfoss Variable Speed Drive Solutions

Save energy. Cut costs.

Reduce heat and noise.

With the costs of energy steadily rising, energy consumption is playing a more significant role than ever in the total cost of machine operation. Backed by experienced application engineering, service, training, and sales support, Vickers by Danfoss' pump and variable speed drive products are a powerful combination to resolve challenges in today's market.



Reduced energy cost and consumption

Vickers by Danfoss Variable Speed Drives (VSDs) can help cut energy usage up to 60% depending on the machine duty cycle. This helps significantly reduce operating costs.

The proven performance and power density of the Vickers piston pump family—combined with the smart control of Danfoss VLT Performance Drives enable these systems to achieve power-on-demand more efficiently than conventional constant-speed drive pump systems. Instead of operating at fixed speed, Vickers by Danfoss VSDs can be controlled to match the load requirements of the duty cycle, thus eliminating energy waste.



Reduced noise pollution

Noise reduction is another significant benefit of running pumps at variable speeds. In Vickers by Danfoss VSDs, the electric motor and pump speed vary to match the duty cycle requirement. This results in lower overall noise exposure for the machine operator.



Reduced heat generation

With improved energy efficiency comes less heat production, so these systems can often allow downsizing or even elimination of oil coolers. They can help reduce the amount of hydraulic oil used and the size of the tanks, and extend the life of seals and oil.

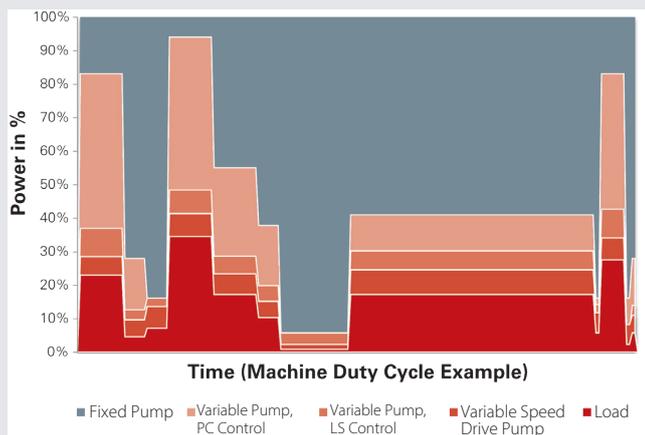


Reduced pump and motor size

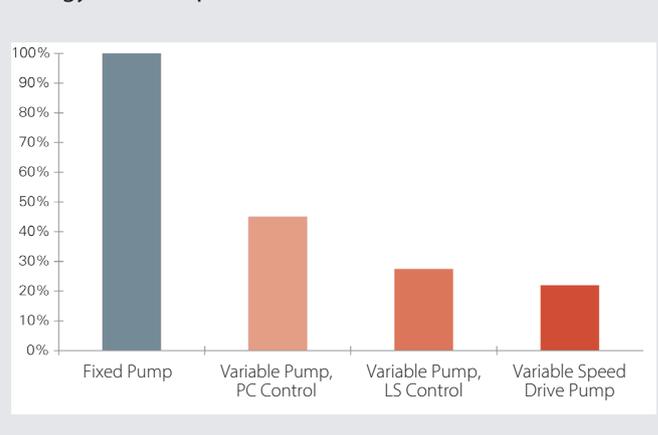
Vickers by Danfoss VSDs can utilize full motor speed range (up to 3000rpm for induction motors and up to 4000rpm for servo motors) rather than running at a fixed 1500 rpm or 1800 rpm. This allows pump displacement to be significantly smaller without changing the maximum available oil flow.

A pump with smaller displacement also requires less torque to deliver the same pressure. Variable speed capability enables utilization of the high overload capability of electric motors to deal with short, high torque parts of the machine duty cycle. Both of these allow for the selection of a smaller motor size – further shrinking the machine's footprint, thus improving the total cost of ownership.

Energy consumption comparison



Energy cost comparison



Servo and induction motor technology, superior design flexibility

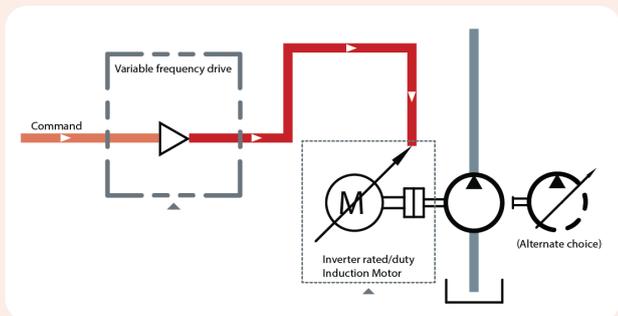


Induction Variable Speed Drive

Variable speed drives with induction motors are usually used with open loop control to provide flow on demand, tailored for the respective part of the duty cycle. The machines PLC sends the drive a flow command and the drive controls the motor speed to deliver the requested flow based on pump displacement and efficiency data in the drive.

Induction motors are robust, reliable but have only average dynamic properties so the pressure and flow control valves are still needed in the system for the precise motion control, as in the traditional fixed speed system architecture.

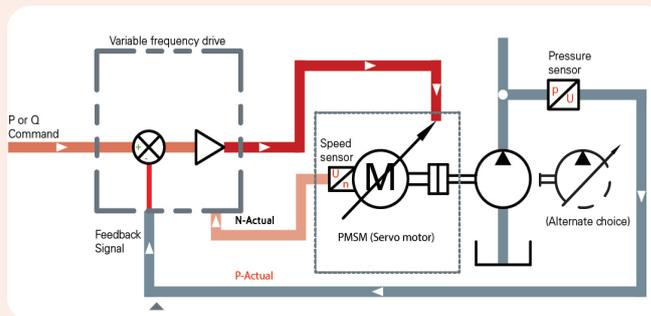
This makes it easy to switch from fixed speed to variable speed system without the major changes of the machine architecture (besides the motor-pump itself).



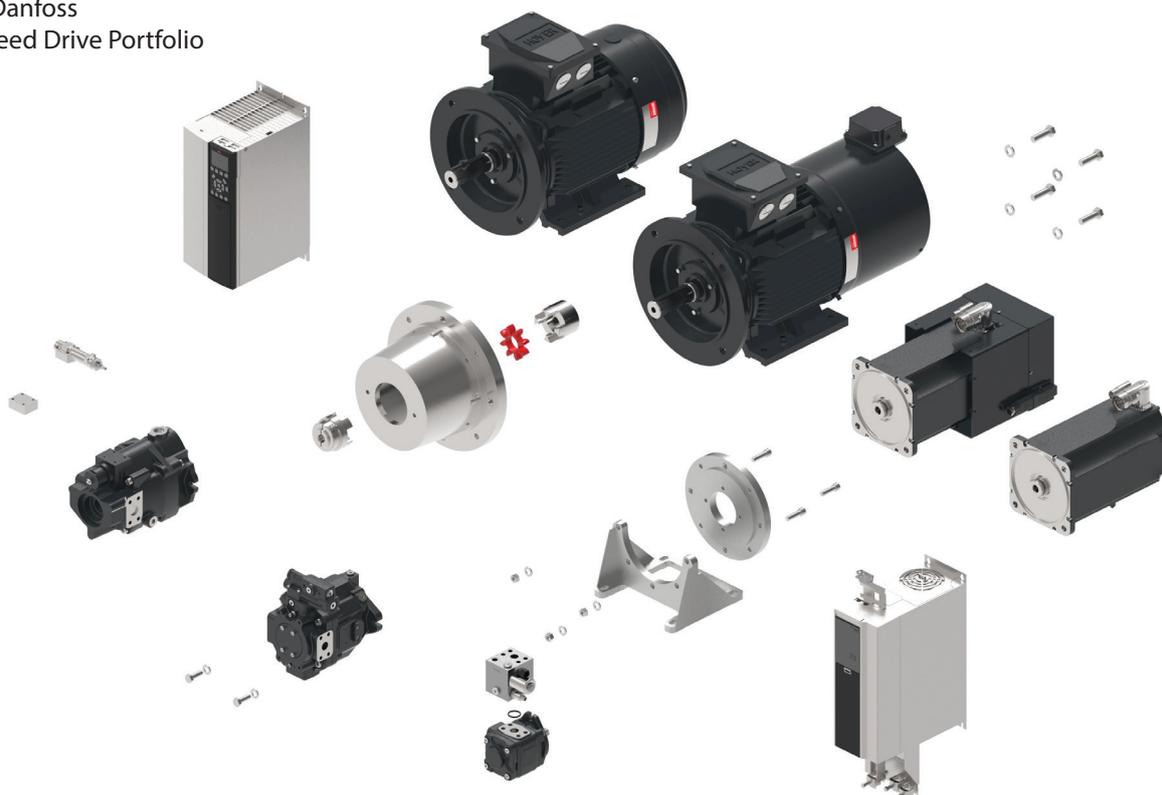
Servo Variable Speed Drive

Variable speed drives with servo motors are usually used with closed loop control to provide a precise pressure and flow on demand, tailored for the respective part of the duty cycle. The machines PLC sends the drive a pressure or flow command and the drive controls the motor speed to deliver the requested pressure or flow based on pump displacement and efficiency data in the drive and closed loop feedback from motor speed and pressure sensor.

Servo motors have excellent dynamic properties, which allows the precise control of pressure and flow without any additional pressure and flow control valves even in demanding duty cycles. This allows for a simpler machine architecture where pressure and flow is directly controlled only by pump's output.



Vickers by Danfoss Variable Speed Drive Portfolio



Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequent changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.