



NEW



ALS – Adaptive Load Sensing

Adaptive Electro-hydraulic System for the Efficiency of Mobile Machines

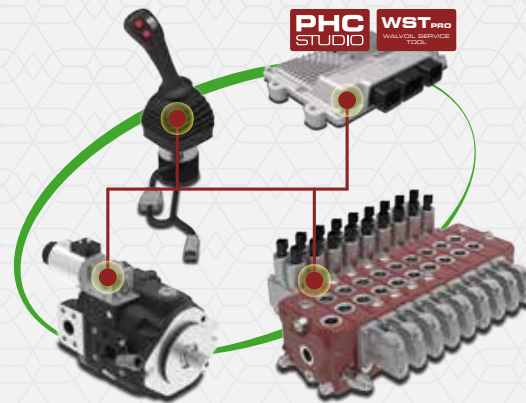
The modern mobile machinery market demands a constant increase in productivity and performance, together with lower operating costs, greater efficiency and reduced emissions in favor of sustainability and social responsibility.

Various research and studies in the field point out that up to 40% of the energy supplied to the hydraulic system of the operating machine is dissipated by the limited efficiency of the components and the pressure drops due to the metering and control of the movements.

The problem is even more evident on electrified applications, where energy efficiency is synonymous with prolonged range and reduced battery capacity.

Walvoil illustrates how to increase efficiency of the hydraulic equipment and its components with **ALS** and **EPX** systems, part of the new **Hydraulic Digital Solutions** product line, which guarantee a consumption reduction up to 25%.

ALS ADAPTIVE LOAD SENSING



SAVE		UP TO 5% +
RECOVER		
REGENERATE		UP TO 20% =
	TOTAL ENERGY SAVINGS	* UP TO 25%
	<small>* Savings may be higher for particular applications</small>	



- Synergistic set of components for the efficiency of mobile machines
- Pressure Margin reduction both during operation and machine inactivity phases
- Definition of easily customizable control and sensitivity curves using PHC STUDIO software
- Definition of different operating conditions for maximizing control or productivity
- Dynamic torque and power limitation
- Greater utilization of installed power
- Less fluid heating
- Less instability and oscillations
- Customizable actuation modes for more comfortable driving



SYSTEM APPROACH

The joint control of the hydraulic directional control valve and the pump makes it possible to cut down pressure drops due to the pressure margins of the metering system.

At the same time, a series of logics are available to improve machine control, productivity, and driving comfort.

The ALS is also provided standard with some basic functions.

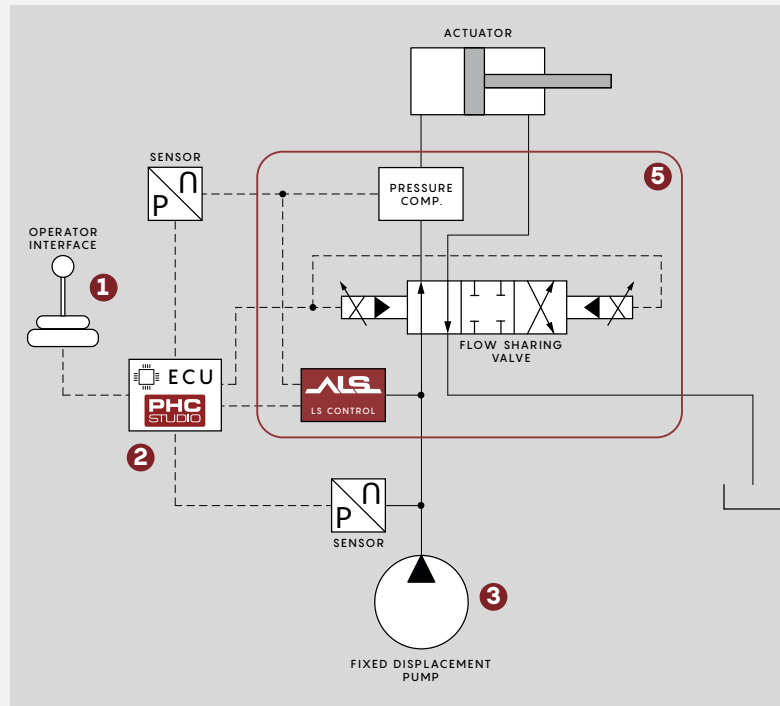
Precision function: reduces the Pressure Margin value, allowing to improve the accuracy and sensitivity of operation.

Boost function: temporarily increases the Pressure Margin value for higher speeds and productivity, without the need to install larger pumps.

Walvoil offers three different ALS solutions to provide extreme versatility and adapt to the performance and system requirements of the machine.

In fact, the ALS system can be used as an integral part of the hydraulic directional control valve or fitted to the variable displacement pump.

L.S. Electronic Control



This solution enables to use Pressure Control functions paired with Flow Sharing directional control valves of the DPX and EPX series. The system manages and conditions the Load Sensing signal of the circuit in order to reduce consumption and optimize control.

Since the ALS system can be fitted directly to the directional control valve, its benefits can be enjoyed combined with fixed displacement pumps.

PRODUCTS FOR THE SYSTEM

1 Operator interface



2 ECU and software



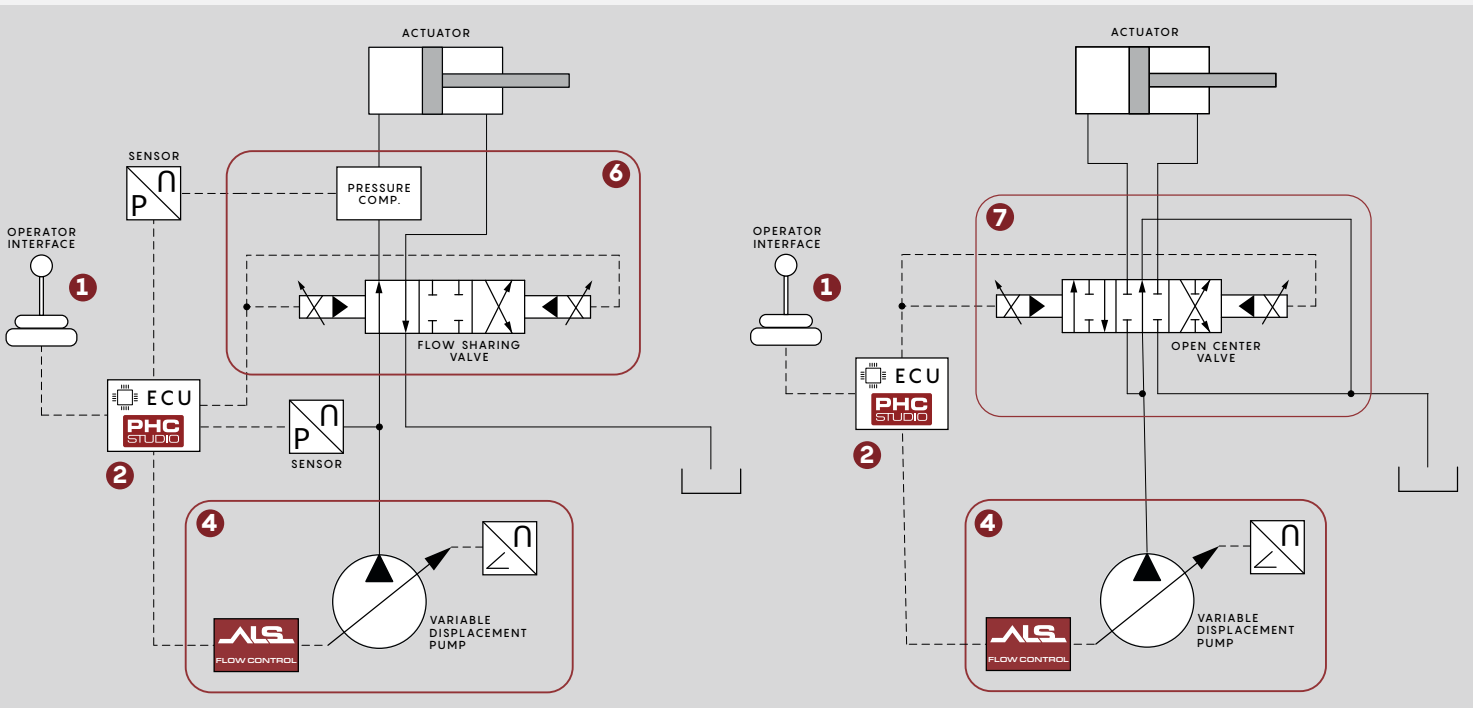
3 Fixed Displ. pump



4 Variable Displ. pump



Flow Control



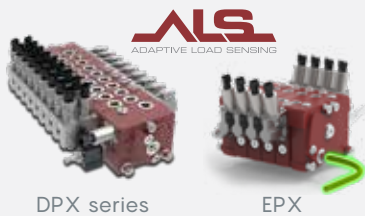
In case the DPX or EPX valve is combined with a Variable Displacement pump, the ALS regulator with Flow Control is integrated into the pump which, with this solution, provides the defined flow rate, both according to the logic set by the operator and through the target values defined through the signals coming from the various sensors.

The special feature of this configuration is the combination of a normal electro-proportional Open Center directional control valve with the electronically controlled variable displacement pump equipped with ALS logic.

The Variable Displacement pump supplies the flow demand settled by the operator logic (dedicated software), accordingly with single or multiple operations. In this configuration the Flow on Demand Logic ensures better load metering and greater vehicle stability combined with a tangible reduction in fuel consumption.

The system is managed by an electronic control unit and specially developed software in the PHC STUDIO environment.

5 Flow Sharing valve



6 Flow Sharing valve



7 Open Center valve



A D A P T I V E L O A D S E N S I N G



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