

The next generation of tractor hydraulics: e-Load-Sensing from Bosch Rexroth

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Rexroth e-Load-Sensing simplifies operation for highest productivity

Electronic signal processing optimizes interaction between the tractor and attachments

With e-Load-Sensing (e-LS), Bosch Rexroth proudly presents the next generation of hydraulic systems. The electronically controlled system makes the comprehensive management of the tractor and various attachments possible. It also supports new functions for automated, monitored workflows and simplified operation. Tractor manufacturers can therefore reduce their development and installation work by transferring previously hydromechanical functions to the software. Electronification opens up additional opportunities for increasing the availability of tractors through innovative services.

Rexroth's scalable e-Load-Sensing system solution consists of the new SBx4 family of valves, pressure sensors, an electronic RC control unit and an electrically controlled variable pump. Rexroth e-LS replaces the hydraulic load-sensing signaling circuit with an electronic closed loop control. All the components simultaneously signal their demand to the control unit. Tractor manufacturers can adapt the system parameters individually using software and dynamically vary them depending on the operating situation.

They can also align the tractor and attachments so that they recognize one another automatically and the system retrieves predefined parameters, which substantially simplifies operation. This helps farmers to obtain maximum results. In addition, when attachments are connected Rexroth e-LS compensates for line losses in the system. The reduced power dissipation in standby mode and the variable excess pressure increase energy efficiency further.

What's more, Rexroth e-LS makes it possible for the first time to flexibly adjust the maximum pressure during operation to suit individual attachments and functions. For example, in order to avoid damaging silage bales through over-compression in the bale gripper, manufacturers can limit the pressure of the bale gripper. When it is actuated, the system only permits the preset maximum pressure and the compressive force of the gripper is hydraulically limited. For short power boosts, for example breakaway force for a front loader, the pressure can be overridden to suit the situation.

In preparation for future, cloud-based services offered by tractor manufacturers, Rexroth e-LS makes operating data available over the entire life cycle, which can also be wirelessly transmitted to specifically designated points. The comprehensive electronic pressure, flow and temperature data enable fast, accurate and cost-effective diagnosis of the hydraulic system without the need for calling in a mechanic to work on the tractor. The data can be read out both at the machine itself or online. Thanks to new services, manufacturers can recognize wear on components before they cause a failure. They initiate preventive maintenance measures and thus prevent expensive downtime in the field. On top of this, manufacturers can install software updates on the system "over the air" and thus keep the vehicles fully up to date.

Source: Bosch Rexroth AG