

Forestry technology at LIGNA 2015: harvesting timber with low environmental impact and maximum efficiency

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For the timber industry as a sector of key importance, the upcoming LIGNA will be more attractive than ever. One reason for this is the new Wood Industry Summit, which creates a first-class environment for international networking. A second reason is that the open-air site has been extended this year, giving manufacturers of large-scale forestry machinery more scope for demonstrating their products in action. Leading specialists will unveil the new generation of harvesters, which feature a series of additional technical refinements designed to meet the growing demands of users in the forestry and timber industry. Government regulations and the various certification systems that most forestry operators have adopted are driving the development of more eco-friendly practices and systems. More efficiency, lower costs, labor-saving technologies and a lighter footprint on the land: such are the main challenges facing manufacturers and their design teams today. Assistance systems of various kinds also have an important part to play here.

LIGNA 2015 will confirm that the trend towards eight-wheel harvesters is continuing. The main reason for the shift in market share is that eight-wheel harvesters are better for the forest floor because the weight of the machine is distributed over a greater surface area, meaning less wear and tear on the forest tracks used by the machines, and minimized erosion and soil compaction.

Various assistance systems are now available to make harvesters easier to operate and more productive. Automation software is used to optimize production, lumber measurement and basic machine control functions. Routine work processes are simplified and easier to monitor. Remote monitoring systems provide real-time information about machine capacity, machine status and site conditions.

Software programs also ensure that high performance does not come at the cost of fuel economy. Among the technologies now available is a three-stage PC system designed to control lumber processing performance as a simple way of optimizing performance and fuel consumption. The feed rollers fitted to harvesters can also help to improve efficiency and fuel economy. Innovative tooth depth limiters mean that the feed rollers can operate effectively while applying less pressure and therefore using less fuel. Modern harvester units are also equipped with saw motors that operate at lower RPM and rely instead on rapid saw feed. This extends the life of the saw motor and increases the cutting power considerably.

In terms of ergonomic improvements the main focus of attention is, of course, the driver's cab. One new departure in harvester design merits special attention. While the crane in conventional harvester designs is positioned either in front of the cab or alongside it, here the crane is located behind the cab and anchored on both sides. The main jib of the crane extends above the cab, where it divides. This design means that the driver's all-round vision is completely unrestricted.

Driver comfort is improved by an innovative chassis concept that is also being unveiled at LIGNA. The chassis of the harvester consists of three segments, joined together by swivel joints. The driver's cab sits on the center segment, which is automatically maintained in a horizontal position by hydraulic cylinders. The driver is located at the exact pivot point of his cab. This means that the acceleration forces on the driver's body are noticeably reduced. The three-segment chassis configuration has another advantage as well: The front and rear segments with their bogie axles are able to flex and tilt so that they follow the contours of the terrain, however uneven. This makes the harvester extremely stable and safe in operation. Extra-strong so-called Duraxle™ bogie axles also improve the harvester's traction and self-leveling capability. Another very useful refinement is a sensor system that constantly monitors the crane's orientation and position in order to counterbalance the resulting forces by corrective steering of the rear segment of the machine. So even when the crane is at maximum extension, the harvester is in no danger of tipping over. Other technical features developed for more compact six-wheel machines put the emphasis on flexibility. The aim is to combine extreme maneuverability in the forest with good on-road performance. For on-road travel these harvesters are normally driven by the front axle only, which makes them fairly speedy on the road. For off-road operation they switch to four-wheel drive and four-wheel steering, which makes them highly maneuverable. And in steep and extremely difficult terrain these machines achieve an astonishing degree of terrain flexibility thanks to a system of synchronized step and drive movement.

Advances have also been made in engine and power train design. The latest generation of harvesters is equipped with ultra-efficient engines. The new engines have more power and torque, which come into their own particularly when working on slopes and inclines. A power management system based on innovative hydraulics optimizes engine output and helps to reduce day-to-day running costs. Modern engines respond instantly to changing power demands with strong torque delivery. This means that the machine can operate effectively at lower engine speeds, which results in less vibration, reduced noise levels and lower fuel consumption.

For all visiting professionals who not only want to know the facts and figures, but also want to see how well these large forestry machines perform in skilled hands, LIGNA 2015 boasts a special highlight: every two years experienced drivers of forwarders and harvesters come together on the southern end of the open-air

site at LIGNA to take part in the Lower Saxony Driving Championship. This year for the first time the Forwarder Women's Cup is also taking place, with the best women drivers going head to head, just like their male colleagues, on Thursday, 14 May.

Source: Deutsche Messe AG, Hannover Fairs International GmbH.