

3D printing - the technology of the future

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Agritechnica 2015: Systems & Components demonstrates 3D printer application for preventive machine repair

No other technology seems to be experiencing such a boom and worldwide investment as 3D printing currently does. 3D printing, also known as additive manufacturing, is a process that synthesizes a three-dimensional object by applying successive layers of material, a technology that is already extensively used in aerospace, machinery, and automobile manufacturing as well as in other industries. For this reason, the Systems & Components suppliers platform within Agritechnica takes a close-up view on this technology of the future and offers answers to the all-important question of what 3D printing can achieve in mobile application.

A Technical Programme geared to practical solutions

Systems & Components will be held from 10 to 14 November 2015 (Preview Days: 8 and 9 November) under the aegis of Agritechnica, the world's leading trade fair for agricultural machinery in Hanover. This supplier platform focuses on engines, hydraulic systems, axles, powertrains, cabs, electronic and software systems for agricultural machinery, addressing visitors from senior management, procurement, research and development as well as the engineering community.

Taking 'Future Farming' as its keynote theme, the Systems & Components platform will address topical issues and present them in three different formats - Forums, Pathways, and a Special Show. The four pathways start in Hall 16, Stand C43 at the Systems & Components Lounge and guide visitors through Halls 15, 16, and 17 where manufacturers participating in the Systems & Components programme exhibit their products. These dress the following four topical trends from a cross-industry angle: efficiency, reliability, ergonomics/safety and resources/environmental protection. All pathways end up in the Lounge where a Special Show is waiting for the visitors.

The show simulates a scenario in which farmers, suppliers and manufacturers connect and interact, thereby exploring the issues of industrial engineering, supply chain management, flexible manufacturing, individual production, intelligent maintenance management, networked production, self-organized adaptive logistics,

and customer integrated engineering. This industry solution caters for business farmers and is a joint development by DLG (Deutsche Landwirtschafts-Gesellschaft, or German Agricultural Society) and TriAhead Consulting, a specialist for the agricultural machinery industry. 3D printing plays a pivotal role in all these approaches. The technology is explained and demonstrated by EOS, the global technology and market leader for high-end Additive Manufacturing (AM) solutions.

High technology in the field

The 3D printing scenario demonstrates how the printer is used in preventive maintenance: A farmer is operating his harvester in the field. The machine is equipped with intelligent and automated sensor technology that collects all machine data, identifies them with a time stamp and aligns them with target values that were previously entered to the system. These data comprise temperature, specific resistance, vibrations, output, and consumption and are compiled in a status report which is sent to the manufacturer at regular intervals. The manufacturer aligns this information with quality assurance data that was entered to a test machine. Any deviation between target and actual data may reflect a potential problem and machine failure. Within the above scenario, this means that the harvester is at risk of breaking down in the middle of harvest which could involve a downtime of one or two days at least. For this reason, it is necessary to replace the component quickly.

To do that, the manufacturer can save 3D printable data of fast-turnaround parts to an external database (cloud), which can be accessed by all dealers and authorized workshops. For example, the dealer nearest to the farmer will be authorized to produce the relevant component within a few hours by using a certified 3D printer. This printer can either work right in the field or at the dealer's premises who will then take it to the machine for replacement. This can happen during a planned break, avoiding any downtime and replacing the part before the machine actually fails.

Source: DLG