

VDMA MAGAZINE

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TECHNOLOGIES FOR FEEDING THE WORLD

UNCERTAIN TERRAIN

Hungary is confronted with uncertainties.

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“WITH ALL YOUR HEART”

Foreign investments are still an option.

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MANUFACTURING-X

Members explain why they are involved in the initiative.

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AI PLOUGHS ALONG



Stefan Kiefer (left) tests the rapeseed mixture cultivation with farmer Hanno Haselroth (centre) and student Paul Maruschke.

Two things make the agricultural machinery manufacturer Amazone more successful than some of its larger competitors: The Hasbergen-based company thinks in terms of overall agricultural processes and still leaves some fields to others.

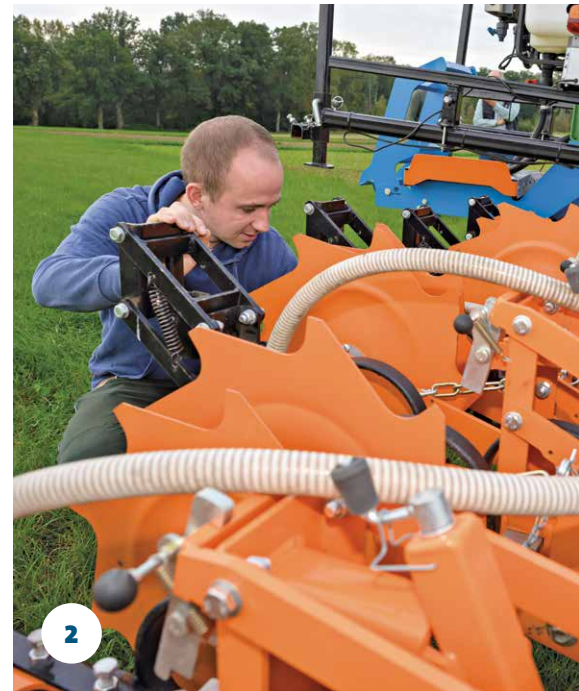
AUTHOR: ANKE HENRICH

You could describe the Amazone factory site as organically grown. The last village is far behind you and the road still winds its way through lush green hills. You wouldn't be surprised if a contented cow were to cross your path. Finally, the nucleus of Amazone appears on the right: a flat conglomerate of century-old factory halls, modern extensions, and an exhibition area where the green and orange Amazone machines sparkle in the sun. Welcome signs in all languages are right beside them.

The people from Lower Saxony are not lacking in serene self-confidence. This also applies to Stefan Kiefer, Head of Innovation in Crop Production, who reports on the company's core competence in the conference room of Amazonen-Werke H. Dreyer SE und Co. KG. "One of our competitors always says that as soon as technology goes into the ground or gets close to it, the big agricultural technology companies will be doomed. Their tractors and rotary mowers can only drive over the surface," he quotes, "but as soon as you work the soil, sow, spray, or apply fertiliser, we are better." ▶

The team

Many Amazone employees come from farming families themselves. This also applies to **Christoph Kühn**, who is Head of the Fertiliser Technology Products. The situation is different for **Stefan Kiefer**, Head of Innovation in Crop Production. Nevertheless, Amazone's technical expertise is the main reason why it attracts trainees, specialists, and managers.



► Founded in 1883, the family business develops machines for soil cultivation, sowing, fertilisation, and plant care. The technology is intended to help solve one of the most urgent problems on planet Earth: How can eight billion or more people be fed in the future — without leaving behind soil

that threatens the existence of future generations? In addition to water shortages, intensive use, sealed surfaces, salinisation and erosion of dwindling arable land, there are also geopolitical risks and economic factors. According to the Federal Institute for Geosciences and Natural Resources, the wind alone is already threatening a quarter of arable land in well-tempered Germany. A third of these areas are in serious danger of being eroded by water erosion. Depending on the location, it takes far longer than 100 years to rebuild even a one-centimetre-thick layer of fertile soil. Fertilisers are seen by some as a solution to the problem, and by others as yet another problem. This makes innovative agricultural technology all the more important. The R&D departments of multinational agricultural industries around the world are working on digital networking solutions, innovative drives, and biofuels.

“We want to do things better, more efficiently, and more precisely than our competitors.”

CHRISTOPH KÜHN

Amazone's contribution to solving the problem is intelligent crop cultivation with the most precise technology on the field, in rows and on individual plants. “Our driving force is to make agriculture more sustainable and environmentally friendly,” says Christoph Kühn, Head of Fertiliser Technology Products. “We want to do things better, more efficiently and more precisely than our competitors

IN FIGURES

2,500 people

are employed by Amazone worldwide.

With 9 locations

across the globe, the company produces agricultural machinery globally.

80%

of Amazone machines are exported.



1 — Markus Ströbel-Fröschle (left) and Christoph Kühn test whether the fertiliser is spread evenly.

2 — Student Paul Maruschke checks the settings on the chipper.

3 — Stephan Horstmann (seated) keeps an eye on the results of the spreading tests.

— whether for conventional or organic farming. We are the market leader in many product areas. That's why we have to be the first to make sure that we do things better than others. Otherwise, we'll be out of the game." However, this is not a licence for ambitious engineering dreams. "We can't develop expensive machines that are 30 years ahead of their time but with which no company can work economically," says the pragmatist. Politics from Brussels and Berlin also

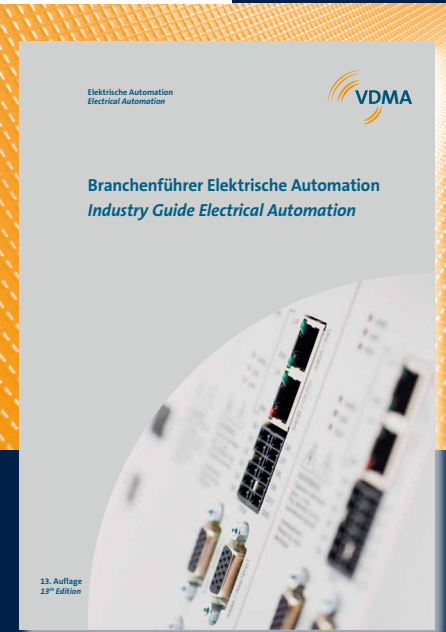
have an influence on the innovations from Hasbergen. "But in the end, it's the farmer who decides whether the purchase of a 5,000-euro additional measuring system for his fertiliser spreader is worthwhile or not."

AI and cooperation

Amazon manages the big picture as well as the detail. Kühn and Kiefer can list a whole series of such precision processes. A good example is precise border spreading, where the fertiliser does not unintentionally end up next to the field, or in a body of water. The two are proud of a new smartphone app with image recognition that determines the accuracy of lateral distribution. To do so, the farmer spreads 16 soft, purple-coloured, doormat-sized plates on his or her field. After spreading the fertiliser, not only fertiliser collects in their structure, but also stones and grass. The farmer takes a photo of the plates; the app quickly distinguishes one from the other and visualises it. "Our fertiliser grains are linked to AI," says Kühn.

"This is the area that has grown the fastest for us in the past 20 years by far," he reports. The company from the area near Osnabrück is one of the top 20 patent applicants in the industry. To achieve this, it combines teams of specialists with an agricultural background and those who are more familiar with bits and bytes than with tractors and ▶

Advice

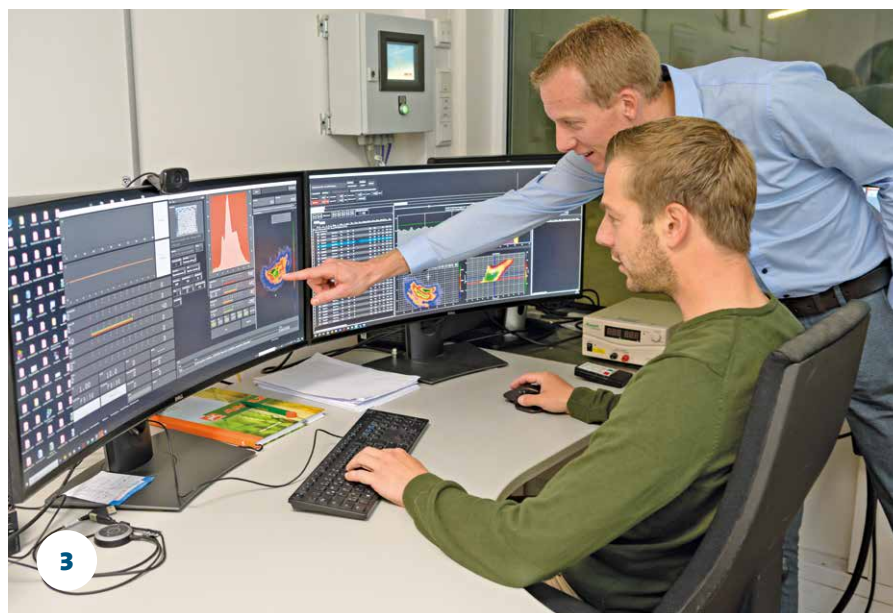


13th Edition
VDMA Industry Guide
Electrical Automation

This industry guide integrates cutting-edge technologies – including those from automation technology. The associated change in markets, material availability, technological change and the transformation towards a society characterised by sustainability and digitalization offer a multitude of opportunities. Mechanical and plant engineering with its key technologies a driver of innovation and an important factor for economic development in Germany, Europe and the World.



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► implements. Machinery and equipment manufacturing remain the foundation, but integrated electronics and software are increasingly becoming a unique selling point. This makes national cooperation with universities and international collaboration, such as the new one with the Dutch startup Agxeed together with the agricultural technology manufacturer Claas, all the more important. The focus is on the further development of Amazone implements for autonomous working, open interfaces, compatibility and connectivity between implement and towing vehicle.

Data, data, data. Agricultural technology has long provided the necessary standards and interfaces between tractors and implements for automation and autonomous driving. Kühn can't resist a little jibe at the automotive industry: "If you look at the topic of autonomous driving, it would be wonderful if everyone was that collaborative and the individual vehicles on the road communicated more with each other."



"Germany drives our innovation."

STEFAN KIEFER

Amazone generates 80 percent of its turnover abroad. So, what role does the domestic market play in the company's innovative strength? "You could be forgiven for thinking that we only focus on abroad and Germany just tags along," says Kiefer and immediately corrects himself. "It's the other way



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round: Germany drives our innovation. Many German farmers are constantly trying to anticipate changes in agricultural structures. How can I organise my farm so that it will still be economically viable in ten years' time and meet socio-political requirements? We talk to them and that also helps us with

Photos: Hermann Penttermann/vor-ort-foto



4 — AI specialist Isabel Günther is increasingly in demand.

5 — Student Sarah Pelke listens to Ralf Loermann, who works in the development department which has grown considerably in recent years.

6 — The centre-piece of Amazone's machines enables digital networking.

7 — Test mats and a mobile phone app analyse the distribution of the fertiliser.



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exports." For example, in the development of new fertiliser spreaders: The cost of the mineral fertiliser used over the lifetime of the machine is in excess of ten

9.6 bil

people will live on earth in 2050 according to UN estimates.

times more expensive than the machine itself. The more that can be saved through more precise spreading, the quicker the purchase of the machine pays for itself.

Amazone is a fourth-generation family business — a competitive advantage for the innovative company from Lower Saxony. "We have to follow the right trends. If we believe in the success of an innovation, the development costs are not the critical point," reports Kühn in a relaxed manner, which makes others green with envy.

International feedback

However, the managing owner-family, Dreyer, has learnt the limits of growth. "We never started with crop sensors for digital farming. So far, the

benefits for farmers have not been great and our sales department can concentrate on the added value of our digital products," says Kiefer, explaining the company's philosophy. You simply have to have the right suppliers, participate in collaborative projects, and invest in your own core competences. "We don't just sit at a desk," says Kiefer. "We want our developers to sweat in their own rubber boots and get customer feedback on our machines from all over the world." A so-called focus group has just met. At Amazone's invitation, 20 Hungarian, Romanian, Baltic, and German farmers discussed their requests with regard to the efficiency, comfort and precision of expensive machinery.

This is a win-win situation: Amazone saves on expensive international opinion research institutes; farmers benefit from the exchange. "Understanding internationally different agricultural regions is essential for us," says Kiefer, adding that Europe's arable land is quite small compared to North and South America. Amazone can cover both. ▴



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