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Artificial intelligence: Packaging wants to upskill

The fourth Industrial Revolution is giving businesses the opportunity to benefit from Artificial Intelligence (AI) and dramatically improve their efficiency, transparency and productivity.

The importance of digitalization for the economy as a whole has been highlighted once again as a result of the Covid-19 pandemic. In recent months, there has been huge growth in this area, from online customer service, home offices and digital trade fair concepts to machine learning and artificial intelligence. In a global survey of managers performed by McKinsey, the participants most commonly identified investments in data security and artificial intelligence as the changes they could apply to position their businesses better for the post-Covid period. The technologies to achieve this are already lined up to go, and the crisis has motivated businesses to be more confident. And as was evident at the FACHPACK industry fair, makers of packaging machinery have also been increasingly turning to digital tools such as artificial intelligence and machine learning in recent years in order to optimize efficiency and productivity for their customers.

Machines are becoming intelligent

Digitalization of packaging processes and putting efficiency programmes into effect are among the themes that are currently occupying businesses the most, not least as a means to offset the downturns caused by the Covid-19 crisis in the coming months. Artificial intelligence, as a key tool in the digital transformation, is also making its presence increasingly felt on the shop floor. AI has a major influence on the packaging industry as a means of making production more efficient, more flexible and more sustainable. In this connection it covers a vast range of methods and technologies that perform tasks normally requiring human intelligence, such as learning, judging, and problem-solving. Mastery of artificial intelligence in an industrial setting is therefore becoming a critical factor in maintaining a competitive advantage. Artificial intelligence in packaging processes is used either for predictive

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maintenance or to make the packaging processes themselves more efficient and reliable. For predictive maintenance, the focus is on general machine efficiency, forming an AI sub-group along with machine learning. For customers, predictive maintenance can help reduce unplanned downtimes as well as taking less flexible maintenance and cost models and restructuring them. Comparing performance across the industry also offers them the opportunity of improving and better organizing their production processes.

Comprehensive quality control instead of random samples
One special area of application for packaging tasks seems tailor-made for artificial intelligence: quality control. Recalls are some of the most costly situations facing manufacturing companies, whether they're foodstuff producers, pharmaceutical companies or electronics manufacturers. Not only are the costs of replacement or damages horrendous, but the damage to the company's reputation can have long-term negative consequences. The most effective way of avoiding this situation is to ensure the best possible quality control. Unlike traditional random testing, AI can expand quality control to cover 100 percent of manufactured goods. In these cases, for example, AI is used to provide visual recognition and inspection systems with intelligent information in order to weed out defective products. Algorithms then make it possible to accept and consign only products that meet particular quality criteria.

Developing the underlying algorithms demands extensive expertise in the area of programming and intelligent technology. After all, an algorithm is only as good as the dataset that is used during the training stage. To close these knowledge gaps, many machine builders work with businesses with established expertise in IT, adapt existing solutions to their needs, or incorporate IT knowledge into their development units. For the customers of the packaging machine builders, this development represents a major step toward greater flexibility: in the future, packaging machines could be able to respond to new products and packaging formats independently thanks to self-learning algorithms, which will dramatically shorten conversion times and thus also the time-to-market.

As the exhibitors at FACHPACK will demonstrate once again this autumn, there are countless more advantages in addition to these: it is now possible to automate everyday, repetitive and more difficult tasks. Automation using

artificial intelligence also offers an opportunity to improve working conditions in the production process and thus reduce health and safety risks. Something that should also be considered is that the wider range of tasks associated with artificial intelligence will make working in this field more appealing to younger skilled workers.

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