

ENGEL places digitalisation in an ecological context

Sustainability only works with digitalisation

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At the live e-symposium 2021, ENGEL is bridging the gap between two major trends of our time, digitalisation and sustainability. "What we need is a change in the mindset," as Dr. Stefan Engleder, CEO of the ENGEL Group, emphasises in his keynote speech at the opening of the three-day in-house exhibition and accompanying conference. "We have a broad spectrum of mature digital solutions at our disposal. Now it's a matter of leveraging this to operate injection moulding production with a view to sustainability." ENGEL takes a holistic view of the entire product life cycle, from the design and production through to recycling – this is another aspect that the live e-symposium 2021 makes clear.

ENGEL is convinced that sustainability is more than just hype. The requirements for sustainable injection moulding production are high, but can be mastered with the right solutions. Digitalisation opens up many opportunities here.

Reducing CO₂ emissions through digitalisation

"Digitalisation helps us to leverage the full potential of the injection moulding machine, and to make production more efficient by doing so," says Stefan Engleder. A recent study conducted by Accenture on behalf of bitkom predicts that digitalisation could reduce the current CO₂ emissions of German companies by up to 58 percent. At 23 percent, the manufacturing sector is responsible for a particularly large share of this. "If we genuinely make use of digitalisation, the CO₂ reduction targets set by politicians will suddenly no longer seem impossible," says Engleder.

The production of door components for vehicle interiors makes tangible what this can look like in practice. sim link helps to lay down the course for resource-saving production and subsequent recycling as early as in the component design stage. sim link is ENGEL's solution for linking simulation and physical production. The process settings determined in the

simulation are transferred to the injection moulding machine control unit, significantly accelerating mould sampling and further optimising the processing parameters. Conversely, process parameters and measurement results from the machine can also be very easily transferred to the simulation. "The mould filling study already gives us the correct setting parameters for the machine without having to intervene manually," as Dr. Gerhard Dimmler, Vice President Research & Development at ENGEL, explains in his keynote. "The match between the mould filling simulation and the physical filling study is impressive."

In ongoing production, it is smart assistance systems, such as iQ weight control and iQ flow control, that prevent rejects and significantly reduce energy consumption.

Horizontal platforms to establish recycling and upcycling

At ENGEL, the product life cycle from design to recycling now comprises four phases which form the focus of interest for plastics processors: design, sampling, production, and maintenance and service.

Particularly in the field of maintenance and service, digitalisation and networking have shifted even more into the focus of manufacturing companies, not least due to Covid-19. Many processing firms are now concerned with the question of how they can ensure their productivity and delivery capacity, also in the event of future crises. Digital service solutions such as remote maintenance and online support are important keys to this. "Numerous newly installed injection moulding machines are already online, and more are coming online all the time," Dimmler reports. "The increasing number of digital applications will automatically cause machine connectivity to increase."

Examples of these applications, such as ENGEL e-connect.24 for remote maintenance and online support, are now primarily implemented as vertical solutions such as ENGEL's e-connect customer portal. What vertical means here is digital mapping of a system or production cell within a single stage of the value chain. This "digital twin" describes the system and its behaviour based on data and lays the foundation for optimisation.

The transition to horizontal platforms, which is being actively promoted by ENGEL and other companies in the plastics industry, sees the focus shift to the entire value chain. Connectivity between applications, and also companies, along the value chain is promoting an exchange of information and data. And the circular economy is benefitting from this. "Our goal is to re-

place the downcycling of materials that has been prevalent thus far with recycling or even upcycling," says Engleder, adding that this only works if data is shared across the entire product lifecycle, that is, along the value chain. For example, a digital watermark applied invisibly to packaging enables more targeted sorting of plastic waste, resulting in single grade, high-quality recycling. The watermark identifies the material, the packaging manufacturer and the processing method. This data is available to all participants and users of the horizontal platform. In this way, the recycling process, and processing of the recycled materials downstream, can be controlled and tuned for maximum resource efficiency.

Well prepared for new challenges

At LIT Factory, the teaching, learning and research factory for smart polymer processing and digitalisation at the Johannes Kepler University in Linz, Austria, ENGEL is working with other companies from a wide range of sectors in the plastics industry to explore the new opportunities of horizontal networking. In each case, new processes, products and business models are developed and evaluated with a view to the circular economy. "We are looking to be well prepared for the challenges of sustainability, because we are convinced that digitalisation and platform solutions are important keys to greater sustainability and to building up a circular economy," emphasises Engleder.

At the ENGEL live e-symposium 2021, Stefan Engleder and Gerhard Dimmler are encouraging plastics processors to open up to digital solutions and participate in horizontal platforms. "Together, we are shaping a sustainable plastics industry," says Stefan Engleder.



"What we need is a change in the mindset. Sustainability only works with digitalisation," says Dr. Stefan Engleder, CEO of the ENGEL Group.



"The number of injection moulding machines with online connectivity will increase continuously as the number of digital applications grows," reports Dr. Gerhard Dimmler, Vice President Research & Development at ENGEL.

Pictures: ENGEL

ENGEL AUSTRIA GmbH

ENGEL is one of the global leaders in the manufacture of plastics processing machines. Today, the ENGEL Group offers a full range of technology modules for plastics processing as a single source supplier: injection moulding machines for thermoplastics and elastomers together with automation, with individual components also being competitive and successful in the market. With nine production plants in Europe, North America and Asia (China and Korea), and subsidiaries and representatives in more than 85 countries, ENGEL offers its customers the excellent global support they need to compete and succeed with new technologies and leading-edge production systems.

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