

VE2E: RESEARCH PROJECT FOR THE DEVELOPMENT OF THE FACTORY OF THE FUTURE A COMPLETE SUCCESS

Published on 11 March 2024

Original Article: [VE2E](#)

It began as a promising vision in July 2021 and has now come to a successful conclusion: the research project “Vertically integrated, sustainable end-to-end factory (VE2E)” for the development of a digital Factory of the Future. At the beginning of March, the forward-looking results of the research project were presented to a wide audience at Premium AEROTEC’s Varel site.

PROJECT CONSORTIUM

A consortium of four industrial and four institutional partners under the leadership of Premium AEROTEC has been working on the design of sustainable, digitalized and automated processes for the factory of the future. In addition to Broetje Automation (BA) and Marposs Monitoring Solutions (MMS), the research alliance included Concept Laser GmbH, the Laser Zentrum Hannover (LZH), the Institute for Production Management and Technology (IPMT) at the Technical University of Hamburg-Harburg, the Fraunhofer Institute for Manufacturing Engineering and Applied Materials Research (IFAM) and the Institute for Production Engineering and Machine Tools (IFW) at the Leibniz University of Hannover. Other companies with special expertise were soon involved in the innovative development work, including soul-it, Desoutter, nex)))nar, Roemheld and the Fraunhofer Institute for Digital Media Technology (IDMT).

The goal of the research project was to develop innovative approaches to optimize digital assembly processes from raw material to finished product. The focus was on sustainability, digitalization and automation.

CLOSE INDUSTRIAL COLLABORATION

The collaboration between the partners was characterized by a high level of team spirit and professionalism, and VE2E’s final results were consistently successful. Over the course of the project, impressive results were achieved. For example, sustainability impacts were achieved by reducing the use of titanium raw materials, which is expected to save more than 500 tons of CO₂ per year – an important contribution to climate protection. In the area of additive manufacturing, productivity has increased by more than 300 percent, while resource consumption has been reduced by 70 percent. A beacon of digitalization is the use of geolocated hand tools (smart tools) based on vertically integrated data flows, which makes it possible to digitize manual assembly activities.

DIGITALIZATION AND AUTOMATION

The use of so-called “cobots” – i.e. collaborative robot systems – as well as the progressive digitalization of process steps can increase the added value and at the same time make the workplaces of the employees safer and more ergonomic. Broetje-Automation’s proven “SOUL” software suite, which is otherwise used in large NC-controlled machines, has also been successfully adapted to manual or semi-automated activities. In the factory of the future, it is the digital backbone of production – from the 3D drawing to the finished component.

“The future success of our high-tech industry is inextricably linked to digitalization and automation. At Premium AEROTEC, we are also working intensively on our digital future,” said Dr. Joachim Schmidt, Site Manager of Premium AEROTEC in Varel. “The results of Vertical E2E will provide us with further important impetus.

HUMAN-CENTRIC AUTOMATION

“The factory of the future will be very digitally integrated. For us as a mechanical engineering company, this topic is therefore becoming increasingly important.” adds Lutz Neugebauer, CEO of Broetje-Automation. “In recent years, we have become more and more software and digitalization companies. VE2E was an important milestone in this strategy.”

After the successful completion, the forward-looking topics of the VE2E project will be further advanced in order to make the factory of the future in Varel a reality as soon as possible. Through the immediately subsequent industrialization of the innovative technologies, a prompt recycling with annual savings of several million euros and a correspondingly improved ecological footprint will be achieved.

ABOUT

Premium AEROTEC is one of the world’s leading suppliers of civil and military aircraft structures as well as an important partner in the major European and international aviation programs. Its core competencies include the development and production of large and complexly shaped aircraft components made of aluminum, titanium and CFRP. The company employs a total of around 5,000 people at its sites in Augsburg, Varel and Braşov, Romania. Premium AEROTEC, headquartered in Augsburg, Germany, is a 100 percent subsidiary of Airbus.

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