Dear reader,

The manufacturing landscape is undergoing a profound transformation driven by the convergence of artificial intelligence (AI), the Internet of Things (IoT), and advanced production data analytics. Our fifteenth issue of InnovatieNU explores the growing field of production intelligence—where smart technologies are integrated into the production and product lifecycle to enhance efficiency, adaptability, and human decision-making.

Each article presents a different facet of this transformation, from the early stages of generative design—where AI assists engineers in creating optimized, innovative solutions—to the dynamic environments of smart factories, where real-time data powers intelligent automation and responsiveness. The role of AI in smart production planning is also highlighted, enabling manufacturers to anticipate demand, allocate resources effectively, and navigate complex supply chains with unprecedented agility.

Central to the discussion is the role of AI not as a replacement for human expertise, but as a powerful support tool. These technologies amplify human capabilities by offering insights, recommendations, and efficiencies that empower workers and engineers to make better-informed decisions. As discussed in this magazine, AI comes with its own challenges —privacy, lack of human nuance, and transparency— which are especially relevant in industrial contexts. These topics are critical to the discussion on how to develop an ethical implementation of AI in your organisation.

By weaving together IoT-enabled data streams, machine learning algorithms, and human ingenuity, this issue of InnovatieNU presents a forward-looking vision of production intelligence. It is a call to embrace AI and digital technologies not just for automation, but for augmenting the people who drive innovation in manufacturing. The goal is not just smart factories—but also responsible, ethical, and transparent ones. Production intelligence, when guided by human values, can drive sustainable innovation while safeguarding trust and integrity in an increasingly automated world.

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