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Professor Mariusz Bednarek, vice president of the Instytut Industry 4.0: Industry 4.0 is an attempt to move away from mass production, focused on minimizing costs through economies of scale. Due to restrictions on access to cheap labor, local taxes, environmental requirements and administrative barriers, the plants were located outside Europe, primarily in Asia.

However, the explosion of digital civilization, with widespread Internet access, favored the development of another consumer behavior. Sharing economy, social networks, the Internet of Things have put pressure on the individualization of production, with the need to maintain acceptable unit costs.

Industry 4.0, based on the digitization of solutions at all levels, is an attempt to give an answer to these requirements. This is an opportunity to increase the competitiveness of companies and to increase the number of potential customers.

What about the threats - are there any?

In the era of the global economy, one cannot ignore leading trends. Either you understand the need for change and actively support it, or you will be eliminated from the global market. This is a huge challenge, above all for owners and managers. They are responsible for managing the development of the enterprise and for including not only their own crew, but also suppliers and even consumers in this process. In my opinion, the biggest threat is to delay the necessary changes, primarily in organizational culture and management models. There is an urgent need to invest in human capital, training and proper forms of production organization. Without implemented Lean Management, KAIZEN / continuous improvement, quality management, production monitoring, it is difficult to talk about entering digital solutions. Digitized chaos will continue to be a chaos, no matter how big the purchased monitors are bought and how much you pay for new, colorful software or a dusting robot in the corner.

What should you do then?

Industry 4.0, with access to automation, robotization, IoT is a departure from the role of an employee as part of the production process and the transition to supervising and creatively shaping production lines and their functioning. This requires not only verbal declarations of the Management Board, but also the creation of real opportunities for employees to develop and assume joint responsibility for the company's development. Innovation centers at the production hall level, creating the opportunity to implement their own ideas, access to knowledge, showing development paths will allow to acquire and stabilize the right staff. Without the activation of employees, the most modern technological lines, often bought occasionally for external subsidies, are only delaying the inevitable.

At the end of 2018, 13,632 industrial robots worked in Poland, of which 39% functioned in the automotive industry - according to the report of the Polish Economic Institute "Roads to Industry 4.0. Robotics around the world and lessons for Poland. " For comparison, in the smaller Czech Republic it was 17,603, and in Germany - 215,795. These figures do not fill you with optimism. How many enterprises in Poland can we call digitally advanced?

Polish enterprises are different in terms of their preparation for entering the digital age. It would be difficult to define their digital sophistication. This is due to both the history of transformation of traditional Polish enterprises and the emergence of a huge wave of foreign investment. There are also big differences in the comparison of individual sectors, from the more conservative mining and metallurgy industries to the automotive and aviation sectors. In each of them you can find leaders of change, and the example of KGHM and attempts to robotize mining work deserve recognition. Of course, it is easier to be a digital company by building a completely new plant with the support of a huge car concern, such as VW in Września, production of MB-Daimler engines in Jawor or the new PSA investment in Gliwice, but the example of the Polish manufacturer of PORTA doors or WIŚNIEWSKI gates proves that the right development strategy based on the digitization of enterprises can give international success.

Will Poland gain a powerful drive thanks to the implementation of the idea of Industry 4.0 that will bring us closer to the position of a technological leader?

Globalization, location of production plants hundreds of kilometers from markets, dependence on one supplier have caused that the economy is highly sensitive to various types of turbulence, like political and social conflicts in the Persian Gulf, isolationism or recently the coronavirus in China. This causes difficulties or breaks in the supply chain, and the consequences can be difficult to define for the global economy.

Industry 4.0 is an opportunity for smaller enterprises, flexibly adjusting to the needs of local recipients. Digitization allows the inclusion of consumers in the product design

process that exactly meets the requirements of the recipient. But it will only exist in a company prepared for this through the prior implementation of Lean / KAIZEN principles. The use of social networks or specialized digital platforms allows continuous contact with customers and such control of production to ensure sales success for each batch of goods. That is - we return to the basics of Lean Management.

Is the vision of a modern, digital country at your fingertips?

Poland, due to geopolitical conditions, i.e. short logistics paths to Western Europe and membership of the European Union, has a great chance for further development. The large internal market and access to (yet) production staff is not without significance. However, an open question is whether we will not miss this opportunity by postponing the decision to change the company's strategy.

What should we do not to miss this chance?

In my opinion, the main barrier is the declarative approach to the idea of Industry 4.0, which ends with the purchase of a robot or production line with an EU subsidy. The key role of preparing the staff for changes, investing in human capital and creating real opportunities for showing creativity is underestimated. It is not the management that is supposed to invent and introduce innovations, this are employees who know both, production and customers better.



Or maybe just implement AI?

For now, the use of artificial intelligence-based solutions is primarily advanced advisory algorithms. Like any tool that allows you to make the right decision faster, it can be a factor in business success. But for now, this decision is still made by man. The analysis of large data sets, supported by self-learning algorithms, allows you to optimize inventory, predict demand or consumer behavior. It is a great tool that allows you to maintain a competitive advantage.

In addition to advisory systems, applications of AI in medicine are rapidly developing, for example in image analysis. New algorithms are being developed in industrial automation, thanks to which it is possible to improve step by step the efficiency of the process, without a loss of quality. Such examples are systems of active assessment of raw materials entering the technological line or the quality of final products, primarily in the food industry. The use of artificial intelligence algorithms, supported by machine learning, creates completely new possibilities for the optimization of existing production

lines. But the use of these opportunities is primarily a domain of conscious, creative cardamom in a particular enterprise. And here we return to the key topic of Industry 4.0 - this is primarily a change in the attitude of people. If they are prepared for it, they treat it as an opportunity and not as a threat, then artificial intelligence will definitely help them. Industry 4.0 is the era of new technological opportunities, but above all it is the era of people who want and are able to use them.