

Industrial Internet of Things - Strategic Way to Optimize the Production Environment in Small Enterprises

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Abstract

Customization and digitization of production processes represent the current trend in the development of industrial production, to which larger and smaller companies have to adapt. Especially in small company environments it is a challenging process of modifications. Companies do not have their own capacities for the preparation and implementation of these changes. This opens up the space for company collaboration with research centers and universities. An example of such cooperation based on the current needs and possibilities of a small evolving engineering company is described in the article.

Keywords: Digital Manufacturing, Optimisation, Digitisation, Automation, Simulation.

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1. Introduction

Customization and digitization of manufacturing processes are current trends in the development of industrial production. Customization, id est design and production according to the customer's individual requirements at the cost of a standard product, requires shorter development, production and delivery times. Digitization is focused on production management, process planning, optimal technology selection and digital data analysis.

Through the Industry 4.0 concept, companies create their own strategies to stay on the market and increase their competitiveness. There is no universal guidance on when, where and how to realize the changes. In general, it is recommended, especially in small business environments, to start with smaller projects. The preparation and realization of changes requires a team with creativity, good theoretical knowledge, practical experience, sufficient time and financial resources. This opens up the space for company collaboration with research centers and universities.

Collaboration on common projects is based on the current needs of manufacturing companies. While companies are bringing practical experience and investment into the common project, universities are the carriers of new trends and information. An example of such cooperation is a common search for a productive solution for optimizing the production of DECARAN_SK, Ltd. Within this project company DECARAN_SK, Ltd. is cooperating with the Faculty of Manufacturing Technologies of the Technical University in Košice, with a seat in Prešov.

2. Possibilities of realisation of Digital Manufacturing in a Small Company Environment

Company DECARAN_SK, Ltd. is a small developing organisation. The company's production program includes safety industrial steel doors and windows. 90% of the total production volume represents of customized production. Production in the required quality and the operational

