Project name:	Modelling of Processes for Smart Production
Description:	Smart production as a concept is related to Industry 4.0 or the fourth industrial revolution and uses its framework conditions. The term revolution refers to the dramatic changes that are manifesting themselves in the overall concept of digital factories and beyond. Integration of cyber-physical systems such as machine and robotic systems with cognitive capabilities that exchange large amounts of data required for process management and monitoring using industrial and internet protocols. Smart production refers to a complete chain from product design, process planning, the manufacture and assembly of products through to sales and distribution. The realisation of efficient and profitable production is reflected, among other things, in high availability and reliability, i.e. the Overall Equipment Effectiveness (OEE), which is made possible by smart maintenance. As part of the project "Innovative Smart Enterprise – INSENT" (Prof. dr. I. Veža - FESB Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, Split) and the first work package "Analysis of the current state of Croatian industrial companies", a survey in various companies (159 in total) was conducted using the questionnaire method. The survey covered nine areas (product development, technology, management and scheduling of production and others) related to the industrial maturity level (Industry 1.0 to Industry 4.0) of the segment of production companies in the Republic of Croatia. According to the conducted and completed survey on the processed sample and the analysed results, the average score for the entire industry of the Republic of Croatia was 2.15. This survey (among others) encouraged the research team to investigate this area and enable the transfer of knowledge to companies in order to raise the level towards Industry 3.0 and 4.0. The knowledge and skills of engineers in companies need to be refreshed in various areas, such as: design and analysis of experiments and statistical modelling and optimization, rationalisation of production using various methods and continuous improvements that include tools for planning and process management, application of artificial intelligence tools, etc. Throughout the project, the focus will be on theoretical research and concrete modelling of selected problems. The theoretical research will focus on process modelling, monitoring, analysis and control of smart production to gain insight into important topics of current and future research. For concrete modelling, problems will be selected that can improve existing processes in production preparation and maintenance.
Webpage:	----
Source of finances:	University of Slavonski Brod – Mechanical Engineering Faculty in Slavonski Brod - Department for Industrial Engineering
Beneficiary:	University of Slavonski Brod
Partners:	-----
Project budget:	2650 €
Duration:	1 October 2023 - 30 September 2024
Location:	Slavonski Brod
Target groups:	Research and development departments in companies Departments responsible for the digitalisation of production in companies Doctoral students

Objectives:	The aim of the project is to determine the theoretical and research-related role of modelling selected processes in the context of smart production using Industry 3.0 and 4.0 tools. The knowledge and experience acquired will be incorporated into the teaching process and the transfer of knowledge to companies, with University of Slavonski Brod playing a prominent role as the research leader. The objectives of the project are: - To identify and define existing strategic topics and future research trends in the area of modelling selected processes for smart production. - In collaboration with companies, apply the knowledge from the above-mentioned area to the research of new and the improvement of existing technological processes (e.g. thermal spraying, machining processes) and maintenance.