

LITERATURE REVIEW OF LEAN AND AUTOMATION SYNERGY AS A CORE OF DIGITAL TRANSFORMATION IN MANUFACTURING

Aleksandar Argilovski¹, Radmila Koleva^{1*}, Trajce Velkovski¹, Bojan Jovanoski¹,
Darko Babunski¹

¹Ss. Cyril and Methodius University in Skopje, Faculty of Mechanical Engineering - Skopje,
Karpos II bb, Skopje, North Macedonia; radmila.koleva@mf.edu.mk*

Abstract

Introducing automation in manufacturing can lead to increasing efficiency in the assembly process, reducing Lean production waste, and enhancing operator ergonomics. The purpose of combining automation and Lean is to bridge the gap between digital transformation and human-centric automation, ensuring technological evolution together with the operator's well-being while driving industrial optimization, innovation, and efficiency. According to the review, synergy is required; however, challenges remain in effectively aligning automation with Lean principles. This paper aims to analyze the possibilities for integrating automation and Lean management, exploring similarities and the implementation practices to achieve sustainable and competitive manufacturing.

Keywords: lean, automation, manufacturing, Industry 5.0.