

**DEVELOPMENT OF PC - PLC INTEGRATED SYSTEM TO REDUCE
DOWNTIME IN MANUFACTURING PROCESS**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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This thesis presents the development of a PC-PLC integrated system aimed at reducing downtime and improving flexibility in industrial automation. The integration leverages modern communication protocols, particularly OPC UA, to establish reliable connectivity between a PC and a Siemens S7-1214C PLC. The system was implemented using python as instruction and application development language. Performance was evaluated based on reconfigurability, system response, and uptime. Results show that the integration allows for remote updates and reprogramming without interrupting ongoing operations, significantly reducing downtime. The system also proved suitable for high-mix, low-volume production environments. In conclusion, PC-PLC integration enhances system adaptability and supports smart manufacturing practices.

Keywords: PC-PLC integration, industrial automation, OPC UA, python programming, downtime reduction



DEDICATION

I dedicate this thesis work to whom it may benefit from it in the future.



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