



Training Factory 24V w. Siemens S7-1500 PLC for vocational skills training in Engineering, Electronics, Automation and Robotics

Technical University of Moldova in Chisinau / The only higher education institution for engineering in Republic of Moldova

Research / Application: Training Factory as part of the Laboratory „Industry 4.0 - Integrated Control Systems“ at the faculty of mechanical engineering and transport | Deployment Period: 2024



THE CHALLENGE

With the concept of Industry 4.0, IoT and Edge Computing the digital transformation has reached the manufacturing industries and represents the successor of Computer Integrated Manufacturing. The connection/networking of supply-chain to inbound-, intra- and outbound logistics, production, assembly and utilization of product are creating new challenges in the manufacturing industry as well as for higher education institutes which have to educate the engineer of the future.



This interactive learning environment from fischertechnik not only improves technical skills, but also promotes a deeper understanding of complex production processes.

**Prof. Fiodorov Ion, PhD, associate professor,
Head of the Department of Software
Engineering and Automatic Control**



THE SOLUTION

The fischertechnik learning environment is used for learning and understanding Industry 4.0 applications and networks in higher education institutes. The Training Factory is a representation of „real-world“ production configurations and processes. The Training Factory offers advanced research & development as well as teaching capabilities for universities, companies and IT-Departments. The Training factory mirrors all relevant production and logistic steps in a compact and complex factory modell incl. storage and retrieval station, high-bay warehouse, multi-processing station, sorting line with colour detection, environmental sensors and more. The control of the factory is done by Siemens PLC S7-1500 and Siemens' Tia Portal at represent an real-industrial level in education. The embeddes fischertechnik TXT 4.0 Controller communicates in MQTT to the IOT-Gateway (Rasperry PI), which in turns translates in OPC-UA to the PLC controller. By this all actual relevan communication protocols are covered in one model.



THE RESULT

The fischertechnik Training Factory serves as R&D and Teaching simulation environment to enhance the understanding of the Industry 4.0 Concept including the various communication protocols to understand the Industry 4.0 and its communication protocols. Combined with fischertechnik's learning environment and cloud and the installed 12 workstations within the laboratory a comprehensive teaching and learning environment is set-up to build the „Engineer of the Future“ by using „Innovation in Education“.

FIT FOR FUTURE WITH FISCHERTECHNIK!

The production of tomorrow is the focus of research, industry, and academia. It describes the transformation towards agility, customer orientation, artificial intelligence, and Industry 4.0. This gives rise to a multitude of challenges influenced by technological advancements, societal changes, and global trends. Addressing these challenges requires a holistic and proactive approach from companies that invest in innovation and employee training to successfully shape tomorrow's production and remain globally competitive.

Therefore, our approach is to understand the small before implementing on a large scale. With fischertechnik simulation models, you prepare yourself for the future, create sustainable learning experiences in vocational education and academia, overcome hurdles presented by seemingly complex transformations, and conduct reser

“With the Learning Factory 4.0, fischertechnik offers a comprehensive and affordable model for training in industry and academia. This and the comprehensive and practical approach have convinced the Technical University in Moldova to integrate the simulation model into the curriculum and thus significantly improve the training programme.”

Frank Nagorschel, General Manager, AFN Business Consulting & Counseling SRL, Bucharest / Romania

