

Malaysian-Swiss Smart Factory (M-SSF) Operational Technologies Fundamental

Hands On
Industry
4.0

Overview

MSF 4.0 is a collaborative partnership between Selangor Human Resource Development Center (SHRDC) and the Swiss Smart Factory (SSF) to offer smart factory competencies in Malaysia through technical training. The hands-on training and remote access learning will support talent development required by the Malaysian organizations for Industry 4.0 adoption.

Target audience: Engineers, Technicians, Academia with relevant background

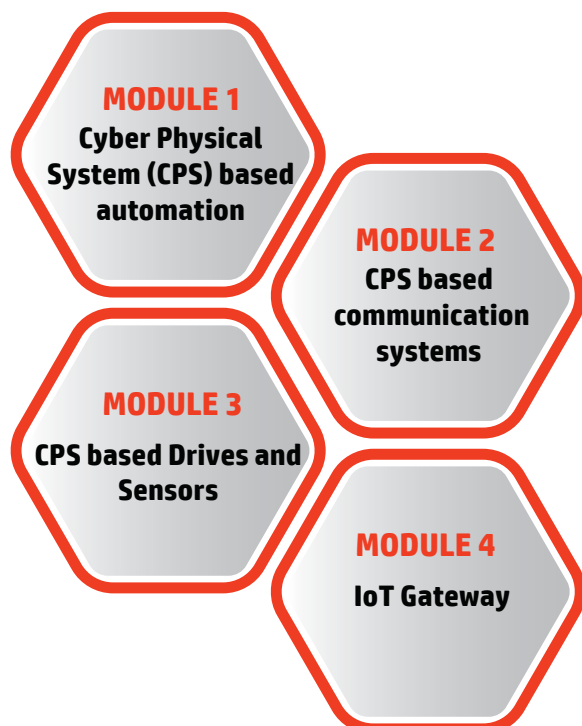
Skills area: Industry 4.0, Industrial IoT, Mechatronics, Electrical & Electronics

Target industry: Manufacturing organizations

Upon successful completion of training, participants will be able to:

- Use latest programming standards with distributed automation applications following the CPS paradigm
- Analyze an overall function dividing it into encapsulated - modularized- sub-functions of CPS. Identify the importance on a logical interface concept
- Understand the integration of new, distributed and networked control and communication systems
- Aware of the risks that could result due to the integration of modern control and communication technologies
- Identify the use of various drive types according to technical requirements
- Implement suitable IoT gateway for bridging between the OT and IT systems

Training Modules:



Total Duration:

26 Days (2 days/13 weeks)

Venue:

SHRDC Training Centre Shah Alam

Cost per program:

RM17,000 (HRDF SBL Claimable)

Cost per module:

RM4,250 (HRDF SBL Claimable)

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Module 1 Cyber Physical System (CPS) based Automation

5 Days
9 am – 5 pm

- ▶ Introduction to the topic CPS and distributed automation (including RAMI 4.0)
- ▶ Work with local variables, definition of interfaces, assignment of interfaces, IEC functional components as local variables, multi-instances
- ▶ Analysis of the overall function and structure of CPS-based automation systems
- ▶ Modularization of an overall function and description of sub-functions of CPS-based automation systems
- ▶ Description of interfaces of CPS-based automation systems
- ▶ Programming and interconnecting sub-functions in conventional programming language
- ▶ Testing sub-functions with conventional programming languages
- ▶ Programming and interconnecting sub-functions with object-based programming languages
- ▶ Testing sub-functions with object-based programming languages

Upon completing this module, participants will be able to:

- ✓ Use latest programming standards with distributed automation applications following the CPS paradigm. Both with local as well as distributed intelligence
- ✓ Analyze an overall function dividing it into encapsulated - modularized- sub-functions of CPS
- ✓ Identify the importance on a logical interface concept.
- ✓ Implement the subtasks (sub-functions) using appropriate means, including both hardware and software. He/she uses the right software tools and programming language. A test concept provides support for checking the functionality of the sub-functions

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Module 2 CPS-based Communication Systems

5 Days
9 am – 5 pm

- ▶ Industrial field buses Ethernet IP
- ▶ Industrial field buses PROFINET
- ▶ Industrial Ethernet and PROFINET: Technical data, PROFINET I/O, the PROFINET - data communication between two controls systems data communication in major networks

Upon completing this module, participants will be able to:

- ✓ Understand of the risks that could result due to the integration of modern control and communication technologies
- ✓ Understand the integration of new, distributed and networked control and communication systems according to economic and ecological aspects in new plants

Project and Assessment for module 1 & 2

3 Days
9 am – 5 pm

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Module 3 CPS-based Drives and Sensors

- ▶ Irregular drive
- ▶ Regulated drive (servo axis)
- ▶ Drive monitoring
- ▶ IO-Link Technology
- ▶ IO-Link Technology with legacy sensors
- ▶ Measurement systems

Upon completing this module, participants will be able to:

- ✓ Identify the use of various drive types according to technical requirements. He/she selects the adapted drive and integrates it into the plant

6 Days
9 am – 5 pm

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Module 4 IoT-Gateway

- ▶ Node-RED editor
- ▶ Java Script
- ▶ MQTT

Upon completing this module, participants will be able to:

- ✓ Implement suitable IoT gateway for bridging between the OT and IT systems

4 Days
9 am – 5 pm

Project and Assessment for module 3 & 4

3 Days
9 am – 5 pm

**MSF 4.0 is a SHRDC partnership with the Swiss Smart Factory
delivering hands-on experience and talents for the future of manufacturing**



For more information please contact: +603 5513 3560 info@shrdc.org.my

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