Certified PROFINET Network Engineer course (CPNE) in combination with Certified PROFINET Network Engineer Process Automation Module (CPNE-PA) and Certified PROFINET Installers (CPNI)

Learn the skills to design, install, commission, and troubleshoot PROFINET networks. This course illustrates practical installation issues, goes right down to the protocol/packet level, and includes detailed information on the bus parameters. You will also learn how to minimize the impact of EMC on the network and get hands-on experience with the latest PROFINET troubleshooting tools including; Wireshark, and the permanent network monitor Atlas.

This course meets all the requirements of the Certified PROFINET Network Engineer course including the Certified PROFINET Engineer Network Process Automation module, and the Certified PROFINET Installers course. The course ends with a written and practical test. Successful students will be certified by PROFIBUS and PROFINET International as a Certified PROFINET Network Engineer, Certified PROFINET Network Engineer Process Automation, and a Certified PROFINET Installer.

Upon completion of this course, the student shall be able to:

- Design a PROFINET network
- Install and setup a PROFINET network
- Understand concepts for hazardous area including 2WISE-approach
- Decode a PROFINET packet and understand how the protocol works
- Understand the basic bus parameters
- Troubleshoot common and uncommon problems

Course outline

- Introduction to industrial Ethernet
- OSI 7-layer model
- Ethernet protocols
- Hubs, switches, routers, and firewalls
- Redundancy
- Network design
- Security
- Physical layer and installation
- Device model and profiles
- Setting up a PROFINET project
- APL
- Device integration via FDI
- Hazardous areas
- OPC UA
- IO-Link
- PROFINET theory
- Acyclic communications
- Diagnostic model
- Fault-finding strategies
- Measurement tools (Wireshark)

Hands-on Exercises:

- Wiring lab
- Design lab
- Setting up a switch
- Configuring a PROFINET network
- Setting up APL devices
- Device integration using both PACTware and SIMATIC PDM
- Diagnostics lab
- Using Wireshark and other troubleshooting tools

Training Equipment:

- IO-Controller (Codesys software running on a Raspberry Pi)
- IO-Devices include; Helmholz TB-20 IO rack, Wago IO rack, Turck TBEN IO rack, Helmholz 8 port managed switch, Pepperl+Fuschs APL switch with PA Proxy, E&H Temperature transmitters (APL, PA, HART), Thorsis isNet PROFINET to HART Proxy
- Anybus Diagnostic's Atlas permanent monitoring system
- Anybus Diagnostic's EtherTap
- Wireshark Protocol Analyzer
- Ethernet cable tester

Demo Equipment:

- IO-Controller (Codesys software running on a Raspberry Pi)
- Indu-sol PROmash B8 switch for MPR ring
- Indu-sol PROFNET-Inspektor network monitor
- Turck TBEN IO-Link master

Class Day Information

- Attendees must bring a laptop or tablet which can read a USB drive.
- Attendees will receive a support USB drive with an electronic version of the materials plus key PI documents.
- Students will receive a certificate of attendance and 37.5 verifiable professional development hours
- Certificates as a Certified PROFINET Engineer (CPNE), Certified PROFINET Engineer Process Automation Module (CPNE-PA) and Certified PROFINET Installer (CPNI). The certificates are given only if the student passes the in-class written and practical test.
- Attendees will receive a copy of *'Catching the process Fieldbus – An introduction to PROFIBUS and PROFINET'* co-written by the instructor James Powell
- Class size is limited to a maximum of 8 students (2 students per training rack).

Course duration

This course is delivered over five days. Each day requires 7.5 hours of instruction which includes two 15 minute breaks and one 30 minute lunch break.

Scheduled Classes

- Please check our website for scheduled classes or contact us to arrange a training date
- On-site or online classes are available upon request

Course code and Prerequisites

- Course code: C-PROFINET-03
- There are no prerequisites for this course. However, it is highly recommended that the student has been introduced to PROFINET before.

Instructor

James Powell, P.Eng., is the principal engineer and owner of JCOM Automation Inc. He has written many articles and two books: *HART Communication Protocol – a practical guide,* and *Catching the process fieldbus – An introduction to PROFIBUS and PROFINET*. James is a certified PROFIBUS DP, PA, and PROFINET network engineer, PROFIBUS System Design Engineer and has over 20 years of experience with PROFIBUS, PROFINET, EtherNet/IP, Modbus, and HART installations.

JCOM Automation is a member of PROFIBUS PROFINET North America and is a certified PROFIBUS and PROFINET training center and Competence Center.

To book this course for yourself or your team, please contact JCOM Automation at admin@jcomautomation.ca or +1-705-868-8745.