

EMC Awareness for Industrial Automation Systems

The use of switching devices such as variable speed drives makes the likelihood of sporadic production outages due to the effects of interference and pickup more likely. This one-day course aims to raise awareness of the issues, the theory behind them and how to ensure that the design and installation of Industrial Automation systems can reduce the likelihood of Electro-Magnetic Compatibility (EMC) related issues in the future.

EMC and Industrial Automation

This course is particularly targeted to those people / organisations that are involved in industrial automation and who need to conform to the **IEE Wiring Regulations (BS 7671)**. This one-day training course covers a topic that continues to bring many misconceptions and challenges for both experienced technicians and engineers alike. This course, which includes practical exercises and demonstrations, aims to provide key players with the knowledge to make informed decisions during the design, installation and commissioning phases and ensure reliability of associated industrial networks and control systems.

Who should attend this course?

This course is aimed at people with a conventional low frequency electrical background who are involved in the design, installation, commissioning and support of the following aspects of industrial automation systems:-

- Control Panels.
- Cable layout / support.
- Variable Speed Drives.
- Industrial Communication Networks such as PROFIBUS and PROFINET,

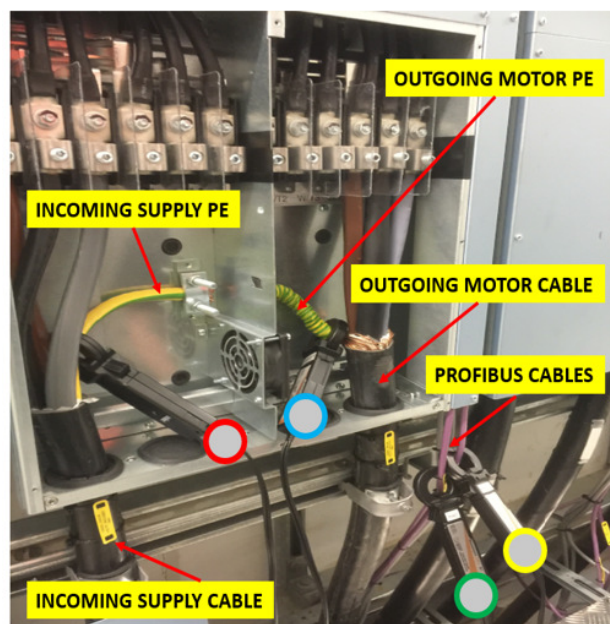
Course outline

FUNDAMENTALS:

- Impedance – Resistance / Inductance / Capacitance.
- Frequency / Wavelength.
- Resonance.
- Differential Mode v Common Mode currents.
- Methods of Coupling.

EMC AND RELEVANT STANDARDS:

- BS 7671 18th Edition.
- BS 6701
- BS 61000-5-2.
- BS 50310.
- BS 50174-2.

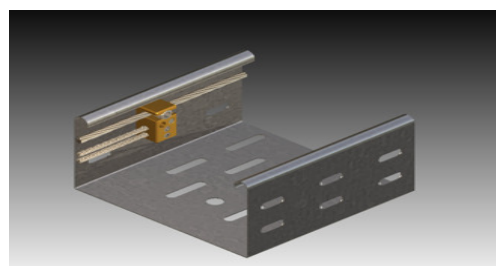


LOW VOLTAGE DISTRIBUTION SYSTEMS:

- TN-C, TN-S and others
- EMC considerations

EQUIPOTENTIAL BONDING TECHNIQUES:

- Bonding Straps v wires.
- Parallel Earth Conductors – wire / cable tray / conduit / armoured cable
- CBN / MESH-BN.
- Pragmatic improvements of existing bonding systems.



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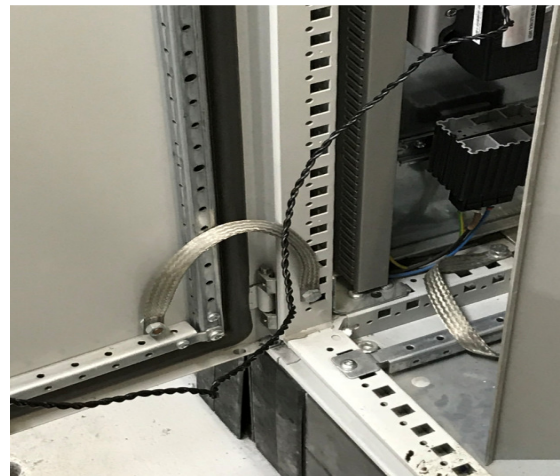
EMC TESTING AND EQUIPMENT:

- Oscilloscopes.
- Spectrum Analysers.
- Clamps and Probes.



ENCLOSURE (PANEL) DESIGN CONSIDERATIONS:

- Panel Layout (zoning).
- Internal Bonding.
- The use and purpose of a reference plane
- Potential issues associated with apertures.
- CE compliance of panels and devices inside them.



CABLE SEGREGATION AND SHIELDING:

- Cable Segregation.
- Shielding Theory.
- Shielding Connection Techniques.
- EMC Glands.



VARIABLE SPEED DRIVES:

- Basis of operation.
- Supply cabling / filtering / harmonics / Shielding / / Bearing Protection / Cable rating.
- Motor cabling / emissions / shielding.
- Common Problems.

INSTALLATION & OPERATIONAL QUALIFICATION:

- What to check and how to check it.
- IQ / OQ Documentation.



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Feedback from people that have attended this course



Dates and locations of our scheduled courses can be found on the training page of our web site -

https://controlspecialists.co.uk/support/industrial-network-support/training_courses/

For further information or to discuss the possibility of running this course at your premises for between 6 and 12 people, please contact:



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Other Courses by Control Specialists Ltd:

Control Specialists are accredited to deliver the following PI-certified training courses:-

- Certified PROFIBUS Installer
- Certified PROFIBUS Engineer
- Certified PROFIBUS Network Designer
- Certified PROFINET Installer
- Certified PROFINET Engineer

Non-certified Courses

- PROFIBUS Refresher
- CANOpen in Industrial Automation.
- ASi in Industrial Automation.