

EMC awareness for Industrial Automation Systems Training Course

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

Following the launch of the new PROFIBUS and PROFINET International (PI) guideline entitled “**Functional Bonding and Shielding of PROFIBUS and PROFINET**” Control Specialists Ltd, in conjunction with Verwer Training and Consultancy Ltd, are now offering a one-day training course on 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,

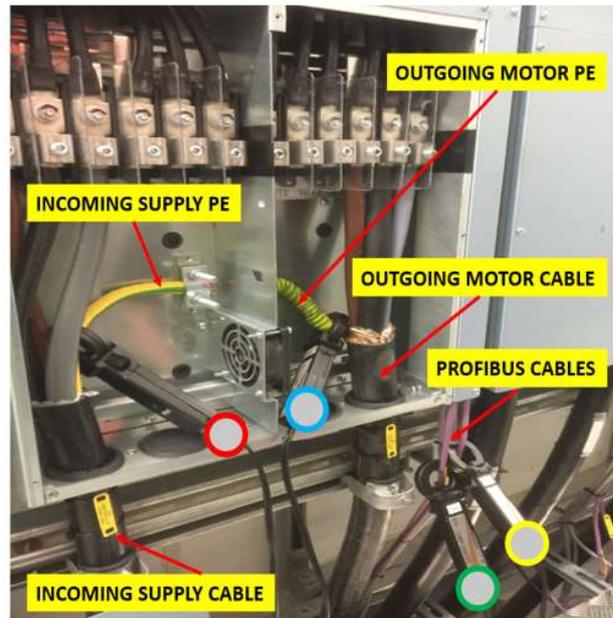
Course outline

FUNDAMENTALS:

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

EMC AND RELEVANT STANDARDS:

- ISO EN 61000-5-2.
- ISO EN 50310.
- ISO50174-2.
- BS 7671 18th Edition.

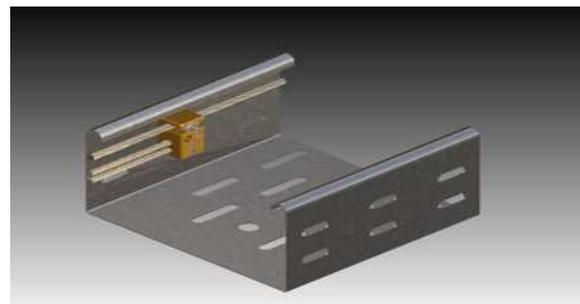


LOW VOLTAGE DISTRIBUTION SYSTEMS:

- 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:

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



CABLE SEGREGATION AND SHIELDING:

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



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.



VARIABLE SPEED DRIVES:

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

INSTALLATION & OPERATIONAL QUALIFICATION:

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

Booking Information – for dates, costs and booking information, please contact:



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Scheduled courses are available at several locations around the UK (see training page of our web site) and can also be delivered at your premises for between 6 and 10 people.

Control Specialists Ltd are a PROFIBUS and PROFINET International Training Centre (PITC) who provide site-based training and support on PROFIBUS, PROFINET, AS-i and CAN networks,