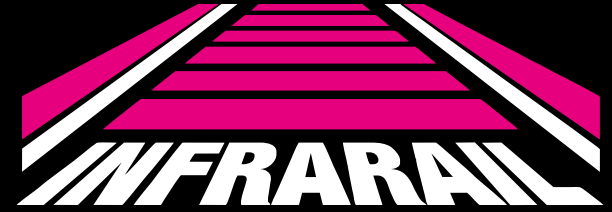




RailEngineer
Technical Seminars



Electromagnetic Compatibility for Infrastructure and Products

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Electromagnetic Compatibility for Infrastructure and Products

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EMC | What is the Risk?

- Non-compliance – Emissions
- Non-compliance – Immunity
- Safety Concerns
 - Touch Voltage
 - EMF
- Operational Concerns
- Financial Concerns
- Brand Protection
- Business Risk



European EMC Regulation

- EMC controlled in Europe by regulation
- EMC Directive 2014/30/EU
- Implemented in:
 - All 28 EU member states
 - 3 out of 4 EFTA states
 - Switzerland (non-mandatory)
 - Turkey and 6 Balkan states



UK EMC Regulation

- The UK implementation is:
 - ‘The Electromagnetic Compatibility Regulations’
SI No. 1091 for 2014/30/EU
 - This is criminal law
- Enforced by:
 - OFCOM (for spectrum matters)
 - Local weights & measures authorities (GB)
 - Dept Enterprise, Trade & Investment (NI)



In Scope – EMC Directive

- Apparatus
- Components or sub-assemblies (depending upon their use)
- Mobile installations
- Fixed installations



Essential Requirements - Apparatus

- Protection Requirements
- Equipment designed and manufactured, having regard to the 'state of the art', to ensure that:
 - the EM disturbance generated does not exceed the level above which radio and telecommunications equipment or other equipment cannot operate as intended;
 - it has a level of immunity to the EM disturbance to be expected in its intended use which allows it to operate without unacceptable degradation of its intended use

Fixed Installations

A particular combination of several types of apparatus and, where applicable, other devices, which are assembled, installed and intended to be used permanently at a predefined location

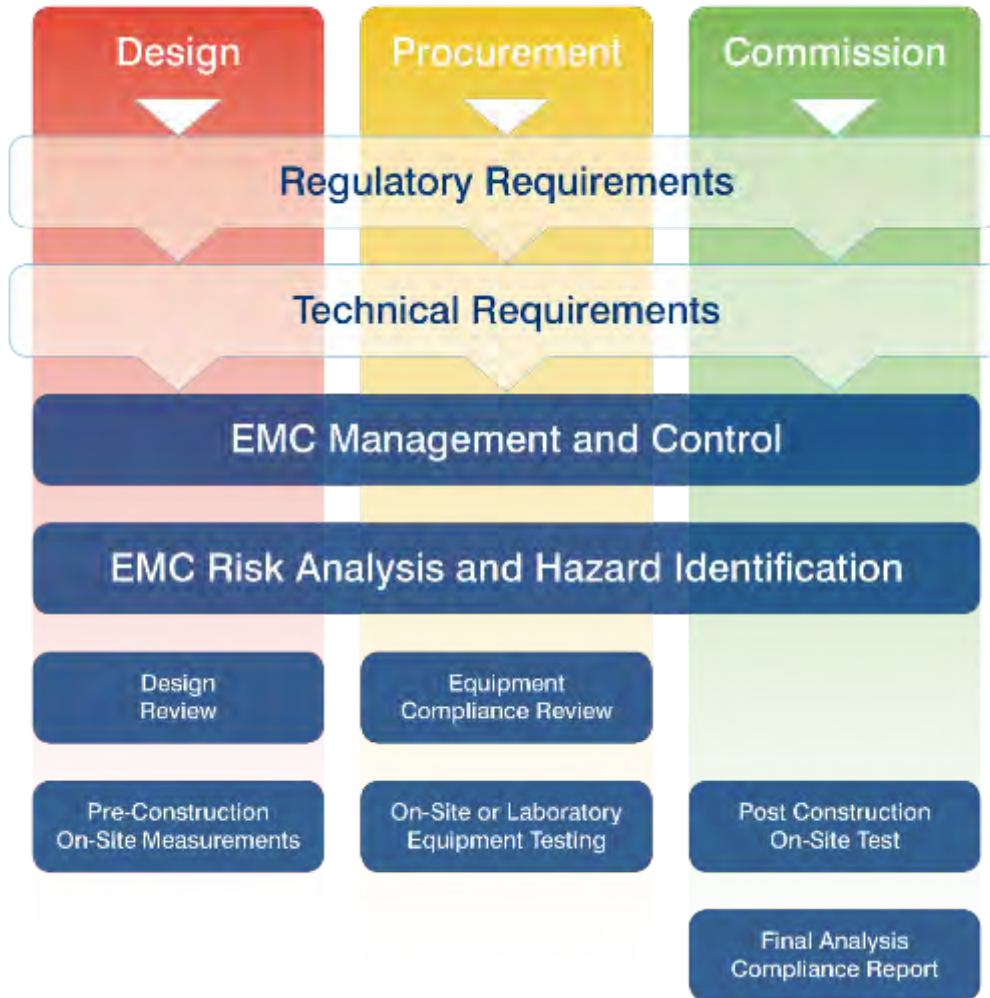


Essential Requirements – Fixed Installations

- *[Be suitably non-emissive for environment]*
- *[Be suitably immune for intended purposes]*

Specific *additional* requirements for fixed installations:

- A fixed installation shall be installed applying good engineering practices and respecting the information on the intended use of its components, with a view to meeting the Protection Requirements
- *Those good engineering practices shall be documented and the documentation shall be held by the person(s) responsible at the disposal of the relevant national authorities for inspection purposes for as long as the installation is in operation*



Am I doing it right?

Is it going to work when I turn it on or hand it over?

Do I meet the legislative requirements?

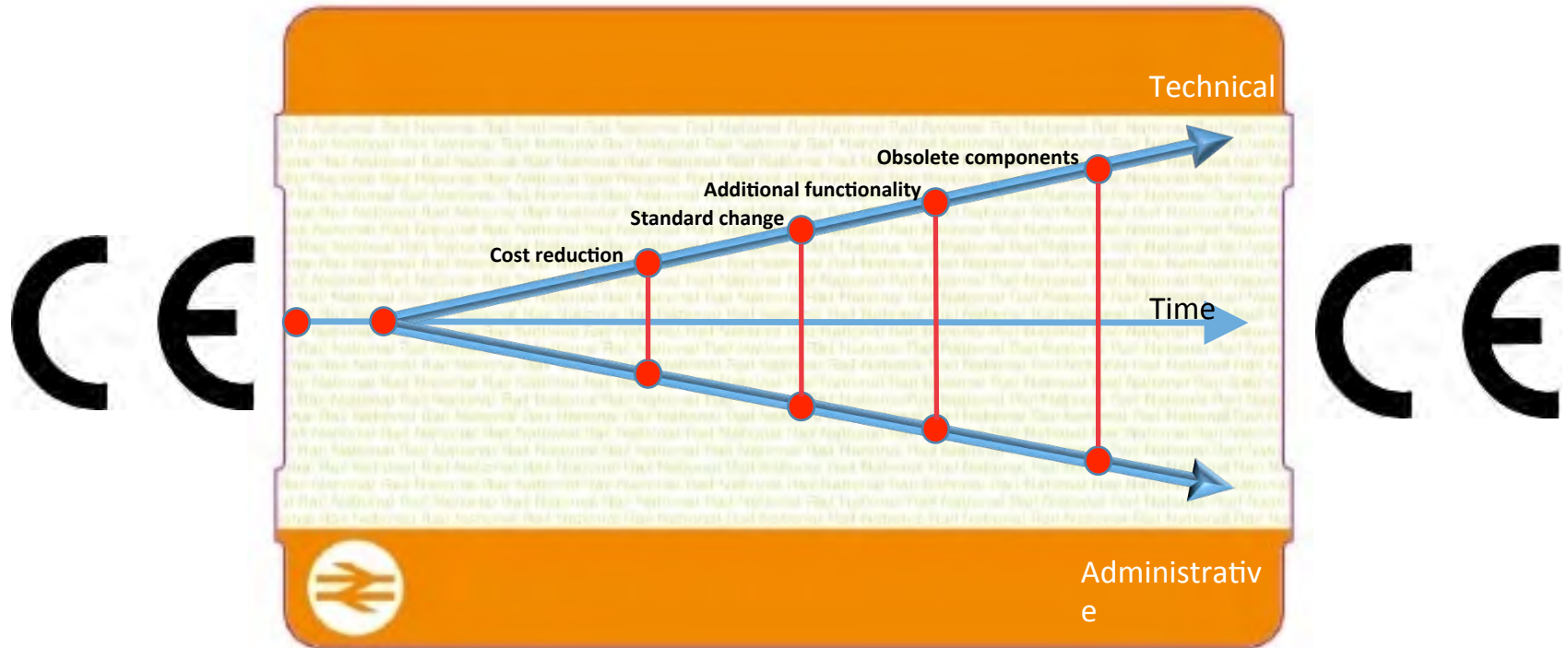
How do I manage the EMC Risks?

EMC Design



- Cable Management – Threats and Victims
- Apparatus Placement
- The importance of good EMC Management and Design

The Forgotten Risks



CE Marking Rules

- Initials 'CE' are in the standard, recognisable form
- If scaled they must be in proportion
- CE marking must be at least 5mm
- CE marking is easily visible, readable and permanent
- CE marking is placed onto the product or to its data plate
 - If not possible it must be placed onto the packaging and accompanying documents



For Products - Declaration of Conformity

- Declaration that apparatus meets 2014/30/EU
- Identification of apparatus
- Name and address of the manufacturer (and Authorised Representative if used)
- Dated reference to specifications under which conformity is declared
- Notified Body details (if used)
- Date of declaration
- Signature & identity of person binding the Manufacturer or the Authorised Representative

Purpose of documentation

Document	Demonstrates	
	Good Engineering Practice	Intended use of Components
EMC Strategy EMC Management Plan EMC Control Plan	Yes	
EMC Risk Assessment and EMC Hazard Analysis	Yes	
EMC Design Review	Yes	Yes
EMC Equipment Review		Yes
On-site measurements (if required)	Yes	
Final EMC Documentation	Yes	Yes

Further Details and Support

Training Courses, Consultancy Support, EMC and Risk Management and Control, EMC Testing and Investigations

EMC Workshops, EMC Clinics and EMC Surgeries

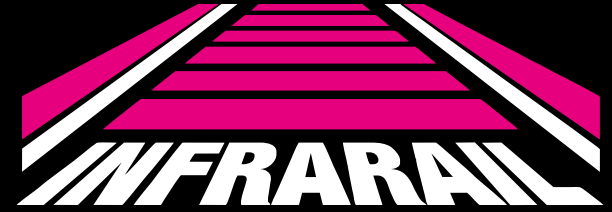
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Any Questions?



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Q&A

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