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Your insight into BS 7671 www.theiet.org/wm

Importance of electrical safety management

During 2013/14, 674 cases of safety non-compliance were prosecuted by the Health and Safety Executive, an Environmental Health Officer or Procurator Fiscal, with a 94 % success rate. As of March 2015, 186 individuals had received immediate or suspended prison sentences for Health and Safety at Work offences since 1975. Of those, 137 occurred since May 2008.

Bill Bates is an electrical engineer with over 40 years of experience including many years as an HSE inspector – so who better to give us some pointers on electrical safety management? Amy Walker interviews Bill for an overview of what you should look out for when it comes to managing the electrical safety of your workplace.

Tell me about your experience and background, and what interests you about electrical safety management?

After 40 years associated with the electrotechnical industry, and 21 years involved with inspection and investigation of incidents, I have profound feelings of frustration at foreseeable issues leading to incidents, and sympathy for those suffering as a result of incidents. All incidents can be upsetting, some with life-changing injuries. Every injury causes suffering. It is so often the case that simple steps would have prevented the incidents. Giving evidence at inquests, you see the emotional suffering of family, friends and fellow workers.

Has any incident been particularly costly?

All incidents have costs, whether it is the Buncefield explosion or a flashover at a low voltage panel. To an individual these costs can be greater than a larger penalty to a big organisation. The financial costs can be paid off quickly, but the most telling costs are more often the longer term reputational and emotional costs to all those involved. Some people never recover.

Can incidents lead to prosecution?

Many incidents result in some form of penalty. These can be prosecutions with fines, costs and terms of imprisonment. I have been involved in cases where a company had fines and costs of over £500,000 or where an individual was sentenced to a year in prison.

There are also other forms of enforcement of the law. These range from written advice and guidance, through Improvement or Prosecution Notices, to prosecution. All of these have significant financial costs for non-compliance with the Regulations.

Can you tell us about some common elements you see, that lead to injury?

The most common incidents involving low voltage installations that I saw resulted from:

(a) Poor design – this may be the wrong cable or equipment in a wet, dusty, hot or otherwise adverse environment, or an overloaded circuit etc.

(b) Poor installation – there were many complex installations that had problems, such as damaged cables or equipment, but something as simple as wiring up a plug wrongly can be fatal.

(c) Poor operational procedures – the most frustrating incidents often resulted from work where the circuit had not been switched off and securely isolated. This could be because of incorrect identification due to poor labelling, or perhaps because someone thought they did not have to isolate. One third of the incidents I investigated involved flashovers on low voltage equipment or switchgear, where electrically experienced workers used inappropriate procedures or tools adjacent to exposed live conductors or terminals. Workers are also exposed to other risks such as asbestos, working at height, or flammable or corrosive materials.

(d) Poor maintenance – basic poor work like taped joints, broken plugs, socket-outlets and switchgear, loose connections, poor earthing, incorrect fusing, damaged or unsupported cables, poor asset records or lack of testing are all signs of poor maintenance that can have serious consequences.

What are the consequences involved with such incidents?

There are significant consequences for business if there is a serious mistake or incident. For example, disruption to work with productivity loss and unpredictable affect to business continuity. In addition, costs arise for the business from the injured person, the additional work and consequential costs for the company, for the community and prevention of further incidents. Ignoring these consequences and hoping they will not happen can be an expensive mistake.

Who is ultimately responsible?

The owner of the installation is ultimately responsible. However, managers and technical personnel are responsible for managing the risks, and the control of the electrical installation and the activities affected by it. The health and safety of an organisation's workers, contractors and others potentially at risk has to be managed. There have to be policies, procedures and competent people in place for that system. It is necessary to ensure that persons working at that installation are capable and have their limitations recognised and formally managed.

Often clients and managers lack the competence and confidence to improve their safety management. Safety management has to be made accessible to technical and non-technical people so that risks to people and their business are safely reduced.

There are serious effects of an incident on the company, injured person, other workers, families and members of public, and so on. Directors and managers can be jailed, while large fines and costs can adversely affect the organisation. That's before we start on the other consequential costs and psychological damage.

What would you tell business managers when it comes to avoiding workplace incidents?

Risk awareness is important in preventing incidents. Often workers can be asked to go beyond their limitations of competence if those involved do not understand the risk. There are workers who appear to be unaware of the danger from electricity, experienced workers who

believe that a 230 V shock cannot kill you, that you cannot get a shock if there is an RCD, that you cannot get an explosion from a low voltage circuit, or that having no circuit or equipment records does not matter. Managers need to ensure that all workers, whether 'electrical' or not, who may be exposed to electrical risk are trained and suitably aware of the dangers.

Workers should have suitable and sufficient procedures and instructions to allow them to complete their tasks safely and not endanger those affected by their work. Rules to control risk are important.

Responsibilities and worker limitations should be clear. There should be adequate information, instruction and supervision. Failure to do this will lead to danger.

What more can business owners and managers do to avoid risks?

Business owners and managers should be aware of the risks, responsibilities of their installations and consequences of failure to comply with standards and regulations. They must ensure that there are sufficient resources so that their installations are safely operated and maintained in a safe condition. They should follow good standards of safety, ensuring that bad habits and complacency do not undermine continuing improvements.

Do you have any advice for installers?

Installers have a professional responsibility to ensure that design, operation and maintenance are carried out to a safe standard. They are often the only electrically competent persons involved on site and work should be undertaken in a safe way for the protection of themselves and others affected. No assumptions can be made that someone else will solve any deficiencies. For example, perhaps children, elderly or vulnerable people may be involved who may not react in an expected way.

If something is not right, make this clear to those responsible. The control of the installation can be complex, particularly for modification, refurbishing and handover. From the outset it is essential that the control of the installation is absolutely clear. Only one party can be in control of any part of the installation at any particular time. If necessary, special procedures to cover the work should be developed with all those responsible for, or involved in, the work. Live working has to be justified to comply with the regulations and should be very much the exception. Records are important.
Electrical incidents

Here are some examples of incidents that could have been prevented if the company had had effective electrical safety management.

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Flashover

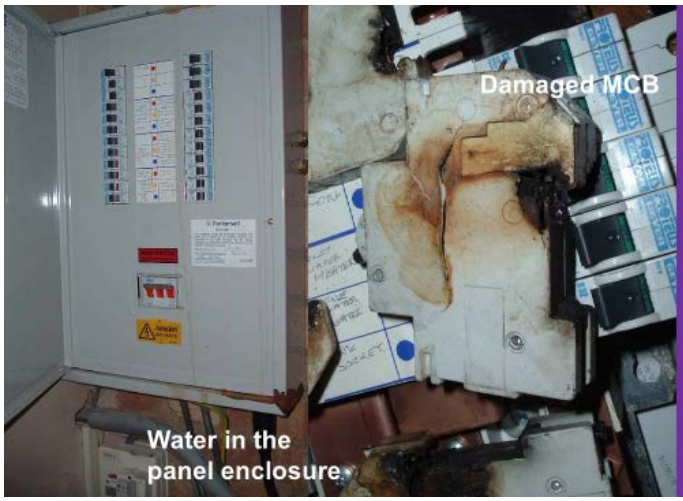
LV switchboard flashover causing serious burns.

Procedural, training and design issues.

Busbar explosion

LV flashover causing serious burns.

Procedural, training and management issues.



Leaky roof allowing water to damage installation causing electric shock

Maintenance and operational issues

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Accidents at work showing a downward trend – SELECT survey

SELECT have carried out a survey on accidents in the workplace, which shows a decrease in the number of incidents recorded in Scotland. Although this is good to see we must be aware that there are still a significant number of incidents occurring, therefore the risks must be effectively managed. There are also many mitigating factors involved that may have impacted the survey figures. As Jim Cornwall, Technical and Safety Adviser at SELECT, points out: "It is difficult to read concrete conclusions into the latest survey figures, since there have been so many reporting changes in the past few years.
"However, it is encouraging to see the number of companies who are again willingly responding to surveys such as this and the response is a credit to our survey team which compiles the statistics.

"It is reasonable to conclude from the figures, though, that members are aware of the importance of health and safety at work and are cascading the message down to their workforces."
By increasing the awareness of workplace incidents, and understanding the penalties that may come as a result of workplace incidents, we hope that the rate of incidents can continue to decline.

How can you learn more about electrical safety management?

IET Code of Practice for Electrical Safety Management

In 2013, the Institution of Engineering and Technology (IET) published the Code of Practice for Electrical Safety Management, as a tool to help organisations of all sizes to provide guidance on the process for managing electrical safety, and aiding responsible personnel to reach a certain level of knowledge and understanding to manage the risks associated with an electrical system.

The CoP provides a comprehensive overview of the fundamentals of electrical safety in the workplace. It has a structured approach to managing electrical safety and the result of applying the guidance is confidence that risks associated with an electrical system are adequately covered.

The structured approach was seen as an important aspect of the project to avoid issues associated with a ‘firefighting’ or ‘gap filling’ approach often witnessed when dealing with a broad range of individuals within organisations. Another important aspect of this structured approach is to offer a way of involving people, gathering evidence and determining where improvements are needed.

The IET’s ‘Code of Practice for Electrical Safety Management’ can be purchased for £130.00 (or £84.50 for IET Members) via the IET’s website, at: http://www.theiet.org/resources/standards/index.cfm

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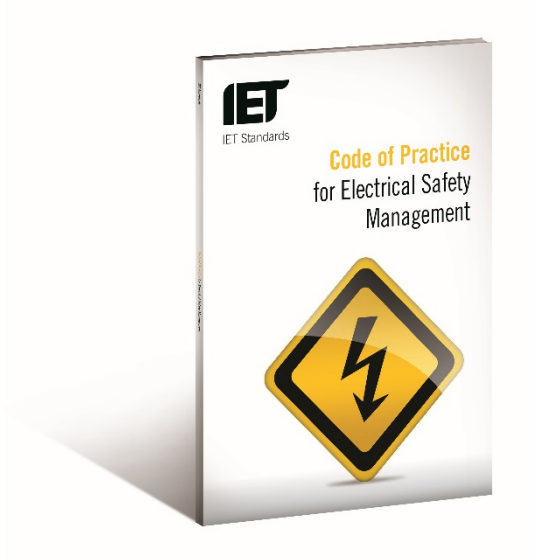

The IET has now set up a group on MyCommunity for anyone interested in this topic and who would like to learn more. This was a very popular idea at the ESM events held earlier in the year and is a great way to engage and discuss with others.

Electrical Safety Management – A practical course for managing risks associated with an electrical system

As this article conveys, many trained and untrained workers encounter electrical hazards in their workplace, some with disastrous results. If you have been asked to take responsibility for electrical safety matters make sure you are confident of tackling this thoroughly by attending this short but in-depth course.

Date: 4-5 November 2015

Venue: IET Birmingham, Austin Court

Find out more about the event at www.theiet.org/electrical-safety.