



Spring/Summer 2009

 **PRODUCT UPDATE**

# New StrikeRisk software for lightning calculations!

The Furse technical team have developed and improved the popular StrikeRisk software, making lightning risk assessments lightning fast!

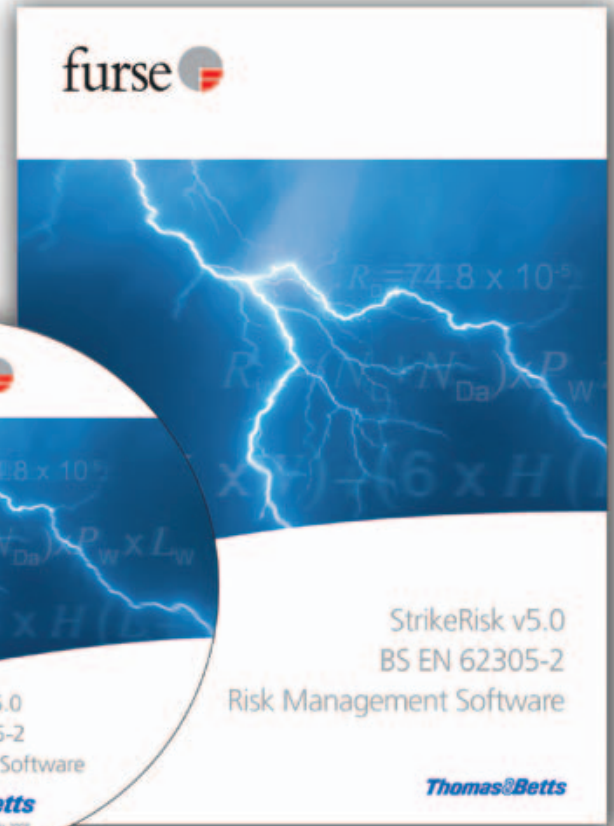
Specifically designed for anyone working on the complex risk calculations demanded by the new Lightning Protection Standard BS EN 62305, StrikeRisk's new improved interface helps users complete the complex calculations in minutes rather than the hours it would take doing them by hand.

StrikeRisk v5.0 also allows users to carry out and view multiple risk assessments under the banner of a single project, build new projects from previously

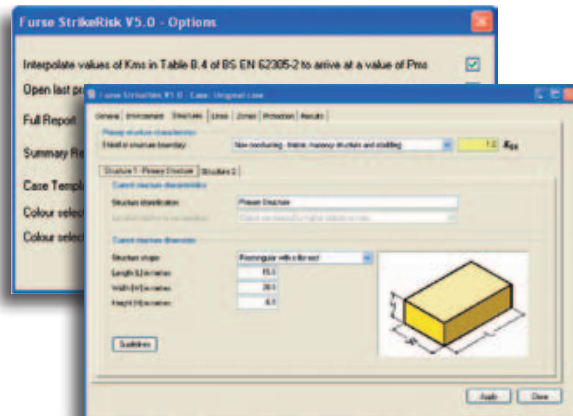
saved cases and create templates for standard cases.

StrikeRisk also enables users to split a structure into multiple zones to highlight high risk areas, as well as considering multiple cables connected to the structure and multiple remotely connected structures.

For more information or to request a free trial, please visit [www.furse.com](http://www.furse.com) or call **0115 964 3700**



Download your **FREE** trial copy of StrikeRisk now at [www.furse.com](http://www.furse.com)



**StrikeRisk now includes an improved user interface, expanded multi-user licensing, plus an in-depth reporting facility.**

Toni Merrill  
Furse Technical Department



## Q&A

### QUESTIONS & ANSWERS

The introduction of the new and more complex standard **BS EN 62305:2006 Protection against lightning** has led to many new questions and the resurfacing of several old chestnuts. Here's a few of the most frequently asked questions fielded by our engineers.

**⚡ "My building has stood for 100 years, and has never been hit. So there is no chance of it being struck now!"**

Not being hit by lightning in the past has no bearing on being struck in the future. The probability of a strike and whether protection should be fitted will be shown by carrying out a risk assessment. York Minster was around 600 years old when it was 'eventually' struck by lightning in 1984, causing extensive irreplaceable damage. Remember a direct strike to the structure is not even necessary for lightning to cause damage through fire, electric shock or electronic systems failure.

**⚡ "I have an air finial on the tallest part of the building and a down conductor, so that should be adequate?"**

This is unlikely to give adequate protection in accordance with BS EN 62305 which calls for a full Faraday Cage, comprising a number of conductors on and around the building.

**⚡ "How do I know if my building needs lightning protection and, if so, what level of lightning protection system (LPS) is required?"**

There's no intuitive way of doing this – you need to carry out a risk assessment in accordance with BS EN 62305:2006 Part 2. The risk assessment in BS EN 62305-2 is much more detailed and has many more parameters than the assessment contained in BS 6651. Furse has developed a bespoke risk assessment software package to simplify and speed the process, called StrikeRisk. It has just been updated to version 5, and a free trial version is available to download from our website [www.furse.com](http://www.furse.com)

**⚡ "I have looked at the number of parameters required to carry out a risk assessment, but cannot find all the information. What should I do?"**

The risk assessment carries default values, which can be used where accurate information is not available. However, these values are conservative, so you should try and obtain as much accurate information as possible.

**⚡ "Can I get a site survey to plan a surge protection system?"**

Yes, Furse can do site surveys for surge protection – they are free on mainland UK. Unfortunately we can't check an existing structural lightning protection system or do a survey for one. You would need to call a specialist lightning protection installer.

**⚡ "I have a lightning conductor system on my building, so will this protect my electronics within the building?"**

No, this will protect the structure itself but not the electronics within it. You therefore need specialist surge protection to prevent equipment damage from Lightning Electromagnetic Impulses (LEMP).

BS EN 62305 focuses on coordinated SPDs (Surge Protection Devices), where the locations and LEMP handling attributes of a series of SPDs are coordinated to nullify the conducted LEMP effects – thereby protecting equipment within their environment.

For more information or to book a free site survey visit [www.furse.com](http://www.furse.com) or call us on **0115 964 3700**

### LITERATURE UPDATE

## Request your new Furse product literature now

As a world leader in lightning protection Furse produce a renowned platform of technical support material, covering everything from sales literature and product catalogues, through to technical guide books, seminars and training.

**New! Furse Total Solution Catalogue**

2 Furse Total Solution Catalogue has been updated! Including information on the entire Furse range of products; Earthing, Conductors, Structural Lightning Protection, Electronic

Systems Protection and FurseWELD.

The catalogue also covers essential technical and specification data, plus a key introduction to the new lightning standards BS EN 62305.

**New! A Guide to BS EN 62305:2006 Protection Against Lightning (2nd Edition)**

The brand new 'Guide to BS EN 62305:2006 Protection Against Lightning' is now available.

This essential 120 page A4 guide clearly and concisely details the latest

Request your FREE copies now at [www.furse.com](http://www.furse.com)



requirements of the new standards. Key information includes Theory of Lightning, New Standards update General Principles, Risk Management and Electrical & Electronic Systems.

Request your free literature now at [www.furse.com](http://www.furse.com) or call **0115 964 3700**



## STANDARDS UPDATE: ESP

# Electronic Systems Protection (also known as surge protection)

Now an integral part of Lightning Standards!

**Samad Khan, Product Manager, Electronic Systems Protection reviews the new focus on protection against Lightning Electromagnetic Impulses (LEMP) and the role of Surge Protection Devices.**

### The importance of LEMP protection

In BS 6651, the protection of electronic and electrical equipment was included as a recommendation only, with its own independent risk assessment. As a result, protection was often fitted after damage had been suffered. With BS EN 62305, this protection has been made an integral part of the standard and is considered within the overall risk assessment detailed in part 2. Structural lightning protection cannot now be considered in isolation from transient overvoltage or surge protection.

### Surge Protection Devices

SPDs are key in providing LEMP protection. Superior or enhanced SPDs

provide protection against surges in both common mode (between live conductors and earth) and differential mode (between live conductors). As terminal equipment, e.g. computers, tends to be more vulnerable to differential mode surges, this additional protection can be a vital consideration. BS EN 62305 focuses on co-ordinating SPDs, where the locations and LEMP handling attributes of a series of SPDs are co-ordinated to nullify the conducted LEMP effects – thereby protecting equipment within their environment. So, for a building with an LPS fitted or an exposed overhead electrical service line, there may be a

heavy duty lightning current mains Type 1, signal/telecom Category D SPDs at the service entrance to handle the majority of the surge energy, plus downstream overvoltage SPDs (mains Type 2 and 3, signal/telecom Category C SPDs) to protect equipment from transient overvoltages. Mains type 3 (signal/telecom Category C) SPDs are used close to terminal equipment and can also provide local protection from potential damage by switching sources, e.g. large inductive motors (as used in lifts), air conditioning, transformers.

For more information on the Furse ESP solutions visit [www.furse.com](http://www.furse.com) or call 0115 964 3700



## PRODUCT FOCUS: RAIL

# Specialist surge protection for rail systems

**Furse, has developed its specialist range of transient overvoltage or surge protection devices to protect vital electronic systems in the rail industry.**

Electronic systems have become an integral part of the safe and effective running of the railway system. However, transient overvoltages – the sub-millisecond voltage increases of up

to 6,000V that are the secondary effects of lightning can cause extensive damage to system critical electronic equipment. From specialist protection for trackside Solid State Interlocking (SSI) systems to power, data and video line protectors for passenger information display and CCTV systems, Furse can provide an effective surge protector.

The ESP SSI/B modified base unit can be permanently wired into the system, while the ESP SSI/M plug-in protection module can be replaced without interfering with the operation of the SSI system. Furse has also developed the ESP PTE002 Portable Tester to support maintenance crews by providing a quick and easy way to test the ESP SSI/M protection module on site.

To prevent transient overvoltage damage to Solid State Interlocking (SSI) systems, protectors should be fitted in trackside cabinets and equipment rooms, on both the data link and the



mains power lines. The ESP SSI/120AC and ESP SSI/140AC are a compact size for easy installation on the single phase mains power lines in trackside cabinets and control rooms.

The Telecode TDM is a high integrity, point-to-point telecontrol system, using Time Division Multiplexing (TDM) principles to transmit and/or receive information from remote equipment along a dedicated communications link. The Furse ESP 06D is approved to protect data communications links on Telecode TDM/TEML40/TDDelphin 1024 systems.

For more information on Furse Surge Protection Devices visit [www.furse.com](http://www.furse.com) or call 0115 964 3700



**The Furse ESP SSI range of transient overvoltage protectors provides repeated protection to trackside Solid State Interlocking (SSI) systems, even in lightning intense environments.**



## CASE STUDY

### Furse rise to the challenge

In the past 12 months, Furse has worked on several prestigious contracts in the Middle East, including the Burj Dubai and the Bahrain Financial Harbor.

The Burj Dubai currently stands as the world's tallest building and on completion will represent a triumph in both design and engineering in downtown Dubai. This impressive structure will be home to hotels, residential suites, offices and leisure facilities and Furse overcame the many challenges that innovative architecture represents to produce an extensive lightning protection scheme design.

Furse have also been contracted to work on the prominent Bahrain Financial Harbor (BFH), of 10 projects in total, including office, residential, retail and leisure facilities. In such a vast development, lightning protection is an integral part of the completion of the build. Furse developed bespoke earthing and ESP equipment for the project – ensuring the protection of the thousands of personnel, plus the critical high technology electronic systems required by financial institutions.



## True or false?

### Think you know about Lightning Protection?

- 1 Lightning never strikes twice? True  or False

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- 2 You're safe from lightning damage if your site is surrounded by tall buildings? True  or False

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- 3 Underground cables do not require any protection? True  or False

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- 4 A UPS will protect computer systems from lightning damage? True  or False

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- 5 "I don't need surge protection because my building already has structural protection". True  or False

**Answers**

**1 False**  
 ● A site that has been struck once is clearly susceptible and will often suffer problems on a regular basis

**2 False**  
 ● Tall buildings may attract lightning away from your site, but, your systems will be at risk from the secondary effects caused by the electromagnetic pulse generated when lightning strikes nearby

● Your site is also at risk from surges and transients present on incoming power and communication cabling

**3 False**  
 ● When lightning strikes the ground, even up to 1 km away, the current discharged raised the ground potential in the surrounding area by 100,000s of volts depending on proximity to the strike. While the current dissipates through the ground, a difference between the building earth points stresses the cable and any connected equipment.

**4 False**  
 ● Most UPSs are not designed with BS EN 62305 in mind and

● Lightning conductors do not protect the sensitive equipment within the building

**5 False**  
 ● Structural lightning protection & afforded by the UPS

● UPS bypass switches, when in operation, reduce any protection equipment connected to it.

● Any protection fitted inside the UPS is specifically designed to protect its own electronics, not the surge handling capability.

fitted is likely to be limited in its consequently any surge protection

## SEMINARS New Furse seminar – Coming soon!

Furse are set to host a new series of a one day seminar covering all four parts of the new Lightning Protection Standard BS EN 62305:2006.

Specifically tailored to deliver the essential information on all sections of the new lightning protection standard, this key seminar will include breakout risk assessment workshops, plus Q&A sessions with the Furse panel of experts. Each seminar covers:

- **General Principles**
- **Risk Calculation & Management**

- **Physical Damage to Structures and Life Hazard** – Summary of different classes of lightning protection systems (LPS), Design of an air termination system, Down Conductor Systems & Earth Termination Systems and Equipotential bonding surge protection devices (SPDs)
- **Electrical & Electronic Systems within Structures** – Design of LEMP Protection Measures System (LPMS) and Coordinated SPDs (standard/enhanced)



Delegate spaces are strictly limited – to register your interest or for more information please email [seminar@furse.com](mailto:seminar@furse.com)