



“ International Codes and Standards”

The FM Global and FM Approvals Way

Presented to:

**The New Jersey Chapter , Society of Fire Protection
Engineers Annual Technical Seminar**

Presented by:

**Mark D. Juitt
Director, Fire Protection
FM Approvals
A Member of the FM Global Group**

April 15, 2010

FM Global



A property insurance company specializing in loss prevention through engineering in the commercial and industrial sector

FM Approvals



*Test and Certify products that promote fire protection and loss prevention efforts
Standard Writing Body*

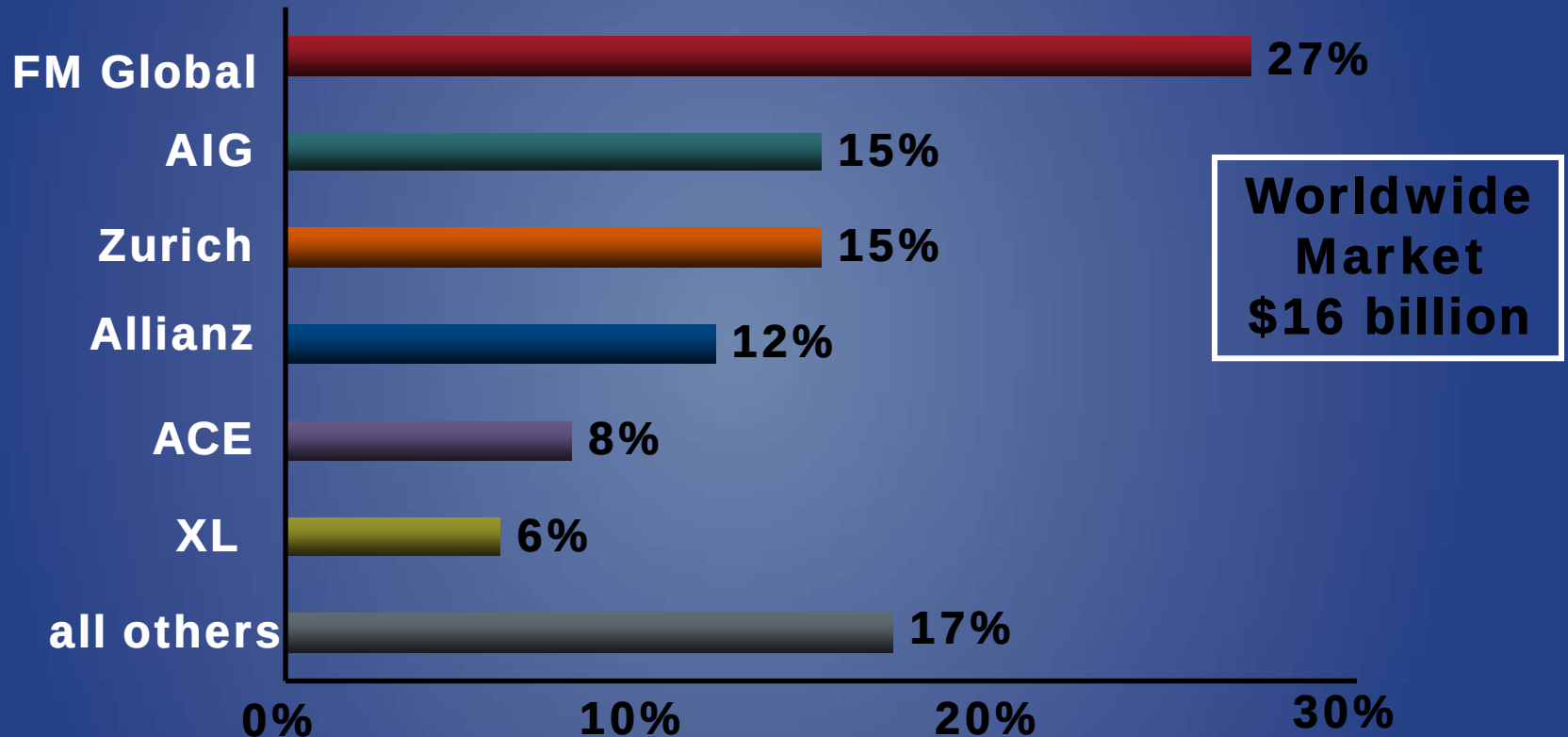
Our Philosophy

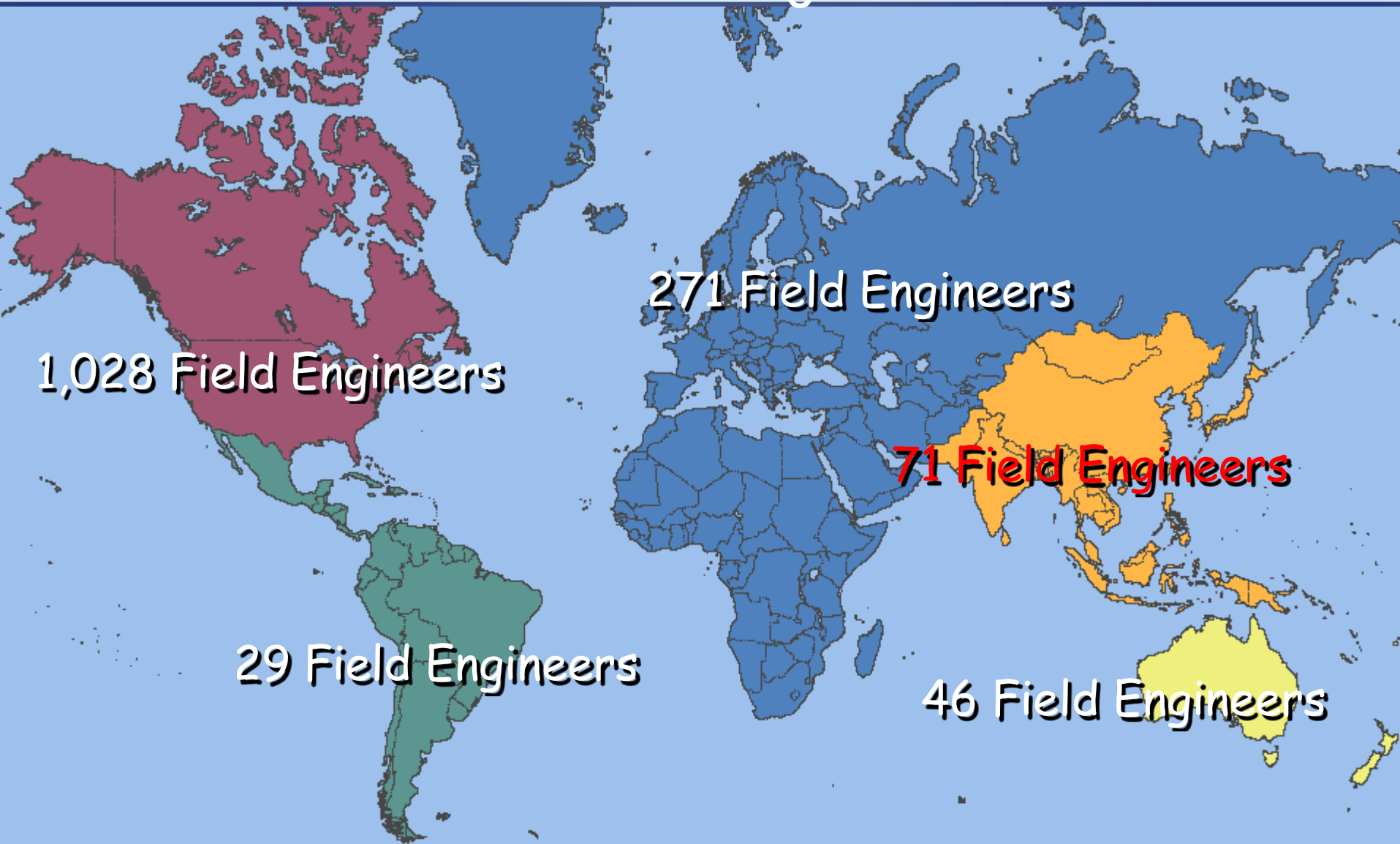
- **The majority of losses are preventable**
 - **Founding premise of FM Global**
 - **Continues to be our main differentiator**
- **Scientifically based knowledge to promote loss prevention**
 - **Engineering delivers cost effective solutions to reduce risk**

FM Global

- **Largest industrial and commercial insurance company in the world**
 - ~5\$ billion in annual premiums
 - Over 6.2\$ billion in cash reserves
- **Property Insurance Company Established in 1835**
- **One out of three Fortune 1000 companies are FM Global clients**

Global Market Share Worldwide Market

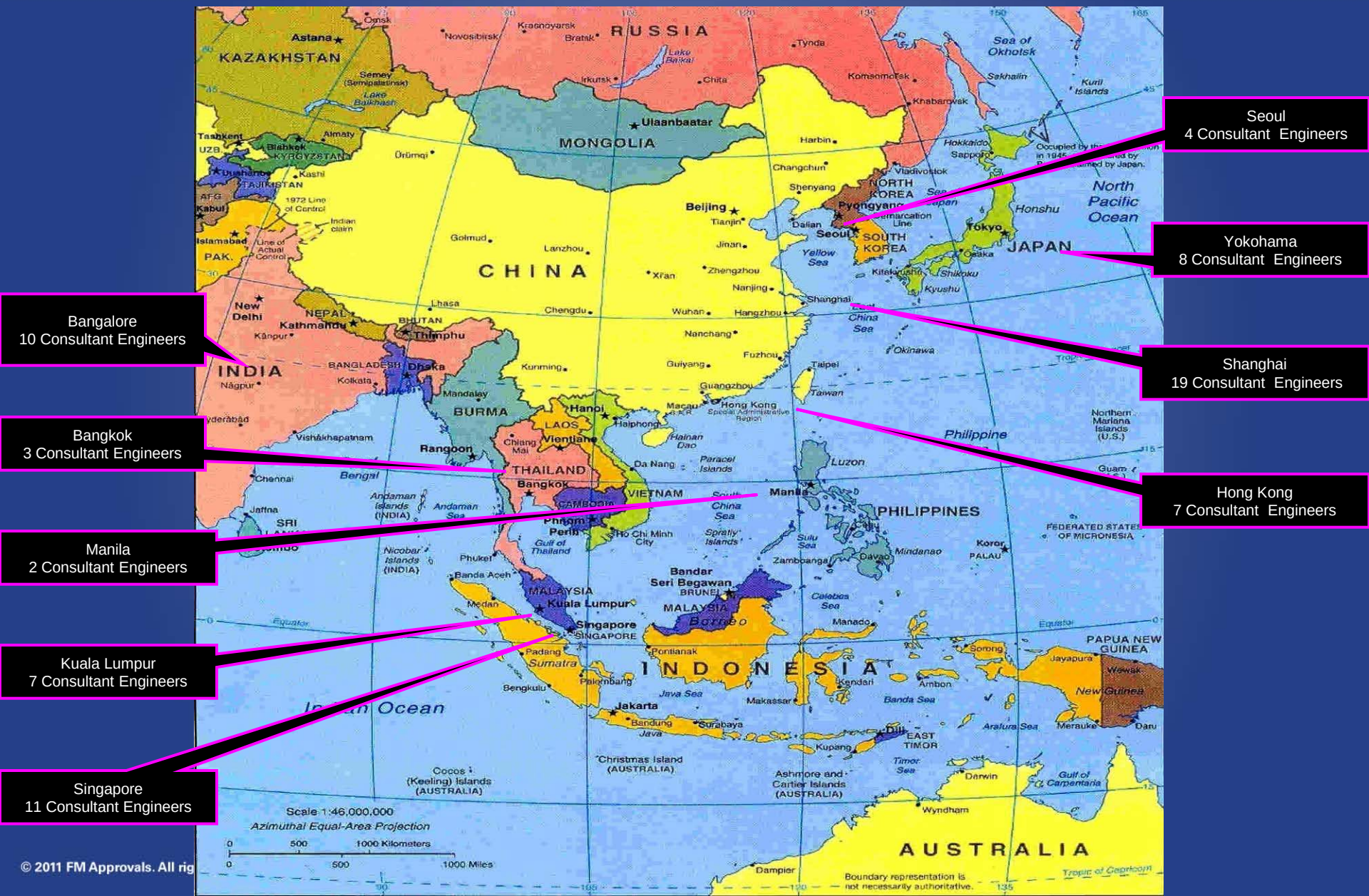




Insure over 120,000 facilities in 132 countries

Significant Asian Growth

FM Approvals

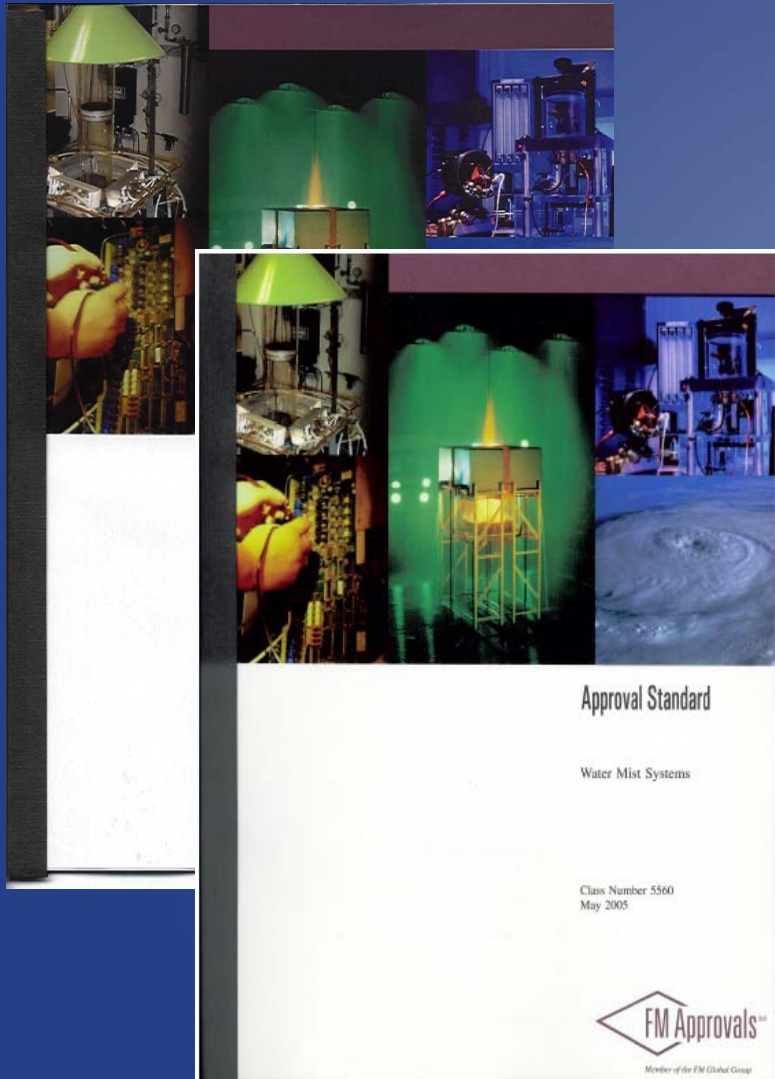


FM Approvals

- **Testing started 114 years ago in 1897**
- **Fire Protection / Materials / Electrical**
- **Product Testing and Certifications for access to the world market**
- **Influencing product testing standards in North America, Europe, Asia and South America**

Global Certification and Standards Activity

- **We are a ISO 17025 and Guide 65 accredited. We are accredited to EN45011/12**
- **We are accredited by OSHA, IAS, SCC, UKAS, IECEx, EGOLF to offer conformity assessment services**
 - **FM Approvals standards**
 - **ANSI standards**
 - **International standards -ISO and IEC**
 - **Standards under the Construction Products Directive (CPD) and ATEX in the EU**
 - **We are member of EOTA in the EU (the only non-EU based company to be a member)**
 - **We participate in all major product testing standards development forums in USA, Canada and the EU**



- Over 250 standards
- Technically rigorous
- Based on research
- Publicly available for free at www.fmapprovals.com
- ANSI, ASTM, SCC, BSI Recognized

FM Approvals in 2011





FM Approvals' Certification Marks are recognized and accepted by regulators and end-users in markets throughout the world



Research

Engineering



APPROVALS

Our Approach

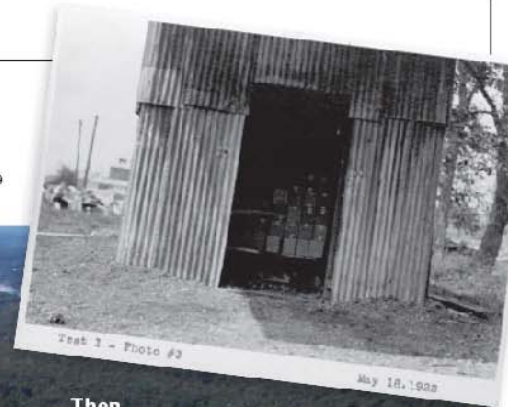
- **Practical and Proven Global Loss Prevention Engineering Solutions**
 - **Research develops test protocol used by FM Approvals in developing Approval standards**
 - **Engineering Standards in the development of the data sheets**
 - **FM Approvals focus on products that help property loss prevention**

We have come a long way.....

Now And Then

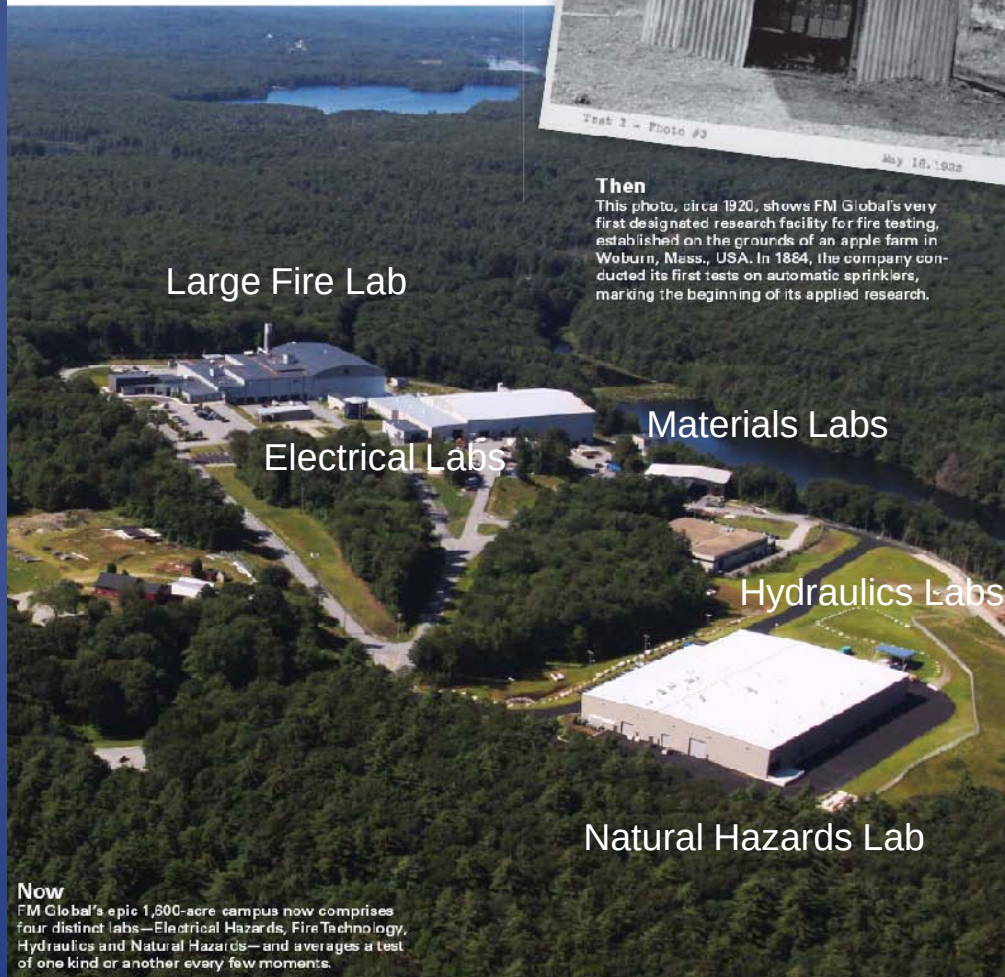
Spreading Out

FM Global's Research Campus, the world's most sophisticated center for advancing the science of property loss prevention, grows in both size and scope



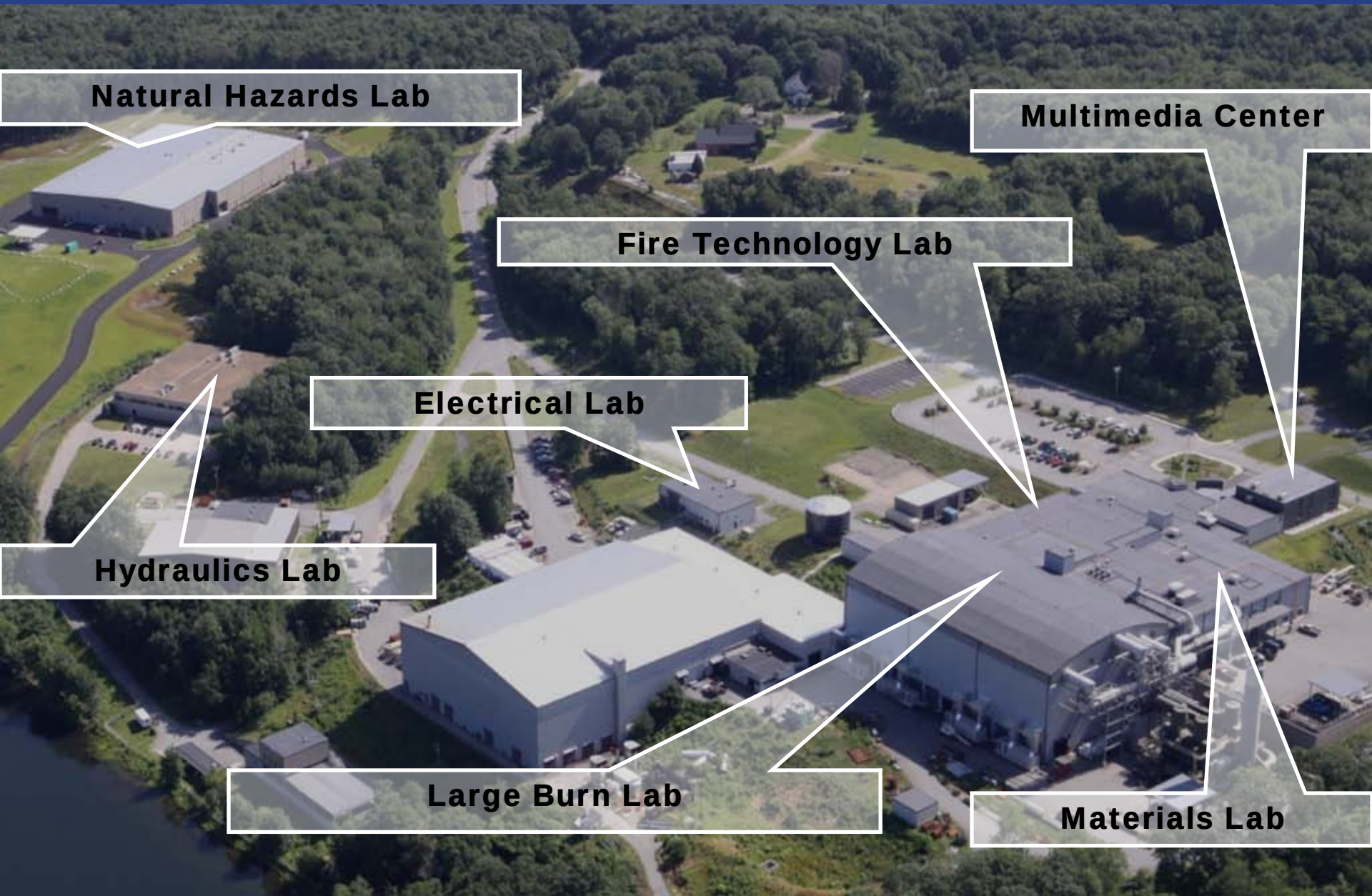
Then

This photo, circa 1920, shows FM Global's very first designated research facility for fire testing, established on the grounds of an apple farm in Woburn, Mass., USA. In 1884, the company conducted its first tests on automatic sprinklers, marking the beginning of its applied research.



Now

FM Global's epic 1,800-acre campus now comprises four distinct labs—Electrical Hazards, Fire Technology, Hydraulics and Natural Hazards—and averages a test of one kind or another every few moments.



Natural Hazards Lab

Multimedia Center

Fire Technology Lab

Electrical Lab

Hydraulics Lab

Large Burn Lab

Materials Lab

Large Burn Lab



The Future

- **Our global footprint will grow**
- **Our focus on risk improvement will continue**
- **We will continue to work to improve local codes and standards**

European Relationships

- **U.K.**
 - **BRE**
 - **Baseefa**
 - **Sira - CSA**
- **GERMANY**
 - **VdS**
 - **DiBT**
 - **Exam - DEKRA**
- **FRANCE**
 - **CNPP**
- **NETHERLANDS**
 - **Kema - DEKRA**
- **EU**
 - **EGOLF**
 - **EOTA**

China Region Relationships

- **CWA (China Waterproofing Association)**
- **CWRD (China Waterproof Research Department)**
- **CFPA (China Fire Protection Association)**
- **CABR (China Academy of Building Research Architectural Design Institute)**
- **CIEEMA (China Insulation & Energy Efficiency Materials)**
- **HKISC (Hong Kong Institute of Steel Construction)**
- **HKFPA (Hong Kong Fire Protection Association)**
- **SFA (Shanghai Fire Association)**
- **CFPEAU (Chinese Fire Protection Engineer's Association Union)**
- **TFRI (Tianjin Fire Research Institute)**

Asia Region Relationships

- **India**
 - **FPAI (Fire Protection Association of India)**
 - **CII (Confederation of Indian Industry)**
 - **IGBC (Indian Green Building Council)**
- **Japan:**
 - **JEMIMA (Japan Electric Measuring Instrument Manufacturers' Association)**
 - **JMRA (Japan Metal Roofing Association)**
 - **CPOA (Cellular Plastic Outer-Insulation Association)**
- **Korea:**
 - **KFI (Korea Fire Institute)**

- India – 5th International exhibition and Conference on Automation
- **Trade Shows Exhibited at:**
 - China – Shanghai Fire and Security
 - China - International Construction Steel Structure Expo
 - **6 in the USA**
 - China – China Fire 2010
 - **2 in China**
 - China - 7th Pump, Valve and Pipeline Exposition
 - China - China International Expo for Roofing & Waterproofing Technology
 - **2 in India**
 - Taiwan - Taipei International Building, Construction & Decoration Exhibition
 - **2 in Germany**
 - China – China Insulation Trade Show
 - **1 in Belgium**
 - India – Fire Safety and Security
 - India – Roof and Cladding Exhibition
 - **Attended 23 trade shows in USA, China, India, Dubai, Japan, Korea, Taiwan, Germany, France**
 - India - National Seminar & Exhibition on Green Building for Sustainability
 - India – Engineering Safe and Secure India
 - Japan – Measurement and Control 2010
- Dubai - Fire Middle East
- Japan – 39th Internecon
- China - The 10th China International Petroleum & Petrochemical Technology and Equipment Exhibition
- Japan – 10th International Show of Building Materials
- China – Pump, Valve and Pipe 2010
- China – Flow Expo 2010
- China - The 24th International Exhibition of Plastics and Rubber Industries
- Taiwan – Fire and Safety
- India – Metal Building System Expo
- China – PV Power2010
- Japan – PV Japan 2010
- Taiwan – SEMICON
- Germany – Interkama
- Germany – Achema
- Belgium – International Water Mist
- France – International Fire and Security
- France - BATIMAT

China

- **Presented:**
- How FM Approvals help in Sales
- Discussion on Design Review and Product Certification
 - **10 seminars in China**
- Roofing seminars and presentations
 - **2 seminars in India**
- Introduction of FM Approvals and RoofNav
 - **1 Seminar in Japan**
- **Chinese Academy of Building Research (CABR)**
 - **1 seminar in Korea**
- FM Approvals for Insulation Materials
 - **1 Seminar in Vietnam**
- Fire Protection and Fire Protection System
- Cooling Tower of FM Approvals
- TPO & PVC national code drafting FM suggestion
- **Chinese Academy for Building Research (CABR)**
- FM Global Windstorm Training
- FM standard 1920 fitting and couplings for manufacturers
- **Sprinkler Seminars**
- Introduction of FM Approvals and Electrical Products
- Passive Fire Protection
- Fire Preventing for Facility Surface
- Fire Safe Pipe Insulation
- **Sprinkler seminar**

India:

- International Conference & Exhibition on Green Buildings
- Roof & Cladding India
- Fire Testing of Building Materials
- Ace-TECH 2009 – The future of Building
- FSAI – Fire and Safety Association of India

Korea/Japan/Singapore/Japan:

- Sprinkler Testing for KFI
- Handling Flammable Liquid
- Sprinkler seminar in Korea and Japan



Media Interview
12 publications – 620,000
23 online sites



Intelligent Building (November, 2009)
Science and Technology Daily (October, 2009)

Testing & Approvals
Solves Fire Hazard
Problem of Public

2009 Seminar of Fire Protection In External Thermal Insulation System Held In Beijing

2009建筑外墙外保温防火技术研讨会在京召开

2009年10月16日, 中国建筑学会建筑防火综合技术分会、北京消防协会城市规划与建筑防火专业委员会、美国FM认证 (FM Approvals) 联合在北京举办了2009建筑外墙外保温防火技术研讨会。会上, 中外专家就建筑外墙外保温防火性能等热点问题进行了探讨和交流。

住房和城乡建设部科技发展促进中心副总工程师杨西伟在致词中表示: “业界同仁非常关注外墙外保温的着火案例。据此, 我国部分知名火灾研究机构也已经纷纷立项, 就防止火势蔓延这一重要课题展开研究, 进行试验并发展评价方法。目前, 相关标准的编制和修订工作正在进行中, 新标准将尽力把技术做得更完善、更进步, 使我国的节能标准可以在更好的范围内安全实施。”

研讨会上, 美国法特瑞 (FM Global) 集团助理副总裁兼FM认证总监乔治·史密斯 (George Smith) 围绕北美国际建筑规范 (ICC) 的最新研究成果, 重点介绍了针对建筑外墙外保温材料及系统的测试与认证方法。

据介绍, 自1960年以来, FM认证就开始从事建筑外墙外保温材料的燃烧测试及认证工作, 并在该领域积累了大量的数据和丰富的经验。起初, FM认证的标准要求全尺寸7.7米 (25英尺) 角落火作为唯一的测试方法。1994年以后, 由于新技术的发展和应用, FM认证加入了小尺寸和中等尺寸燃烧测试, 并将其测试结果与全尺寸火灾测试数据相关联。这一世界领先的测试技术, 在保证质量的前提下大幅度降低了相关的时间和费用。

新型电子配线架技术研讨会即将召开

以色列瑞特科技有限公司将于2009年11月26日在京召开新型电子配线架技术研讨会, 届时将对该公司的新一代智能电子配线架产品EPV做详细介绍。该公司的在华代理——北京浩源同创智能科技有限责任公司将推出“用瑞特布线, 送电子配线架”的促销活动。研讨会是由中国建筑业协会智能建筑分会与以色列瑞特科技有限公司共同主办, 由北京浩源同创智能科技有限责任公司协办的。EPV电子配线架系统具有配置灵活、安装简单、操作方便、功能实用、价格低廉等优点, 非常适合在中国推广应用。相信这款产品的推出对提高我国的布线管理水平具有积极的作用。





ASIA INSURANCE REVIEW

DEDICATED TO ASIA'S INSURANCE INDUSTRY

RISK MANAGEMENT INSIGHTS

Building and operating for sustainability

It's inevitable: Buildings burn. And a whole litany of reasons can be assigned to the causes of fire. But, the reality is that most of these losses could have been prevented, or at least mitigated to some extent. **Mr Robert Azimi**, Vice President, Group Manager, Asia, FM Approvals, a member of the FM Global group, discusses the importance of maintaining a proper automatic fire protection system and how such an effective approach can help sustain the continuity of business operations.



Fire continues to be the leading cause of commercial and industrial property damage worldwide. In fact, according to FM Global recent studies, electricity stands as the most frequent and most costly cause of fires and explosions at FM global-insured properties – costing companies nearly US\$1 million on average per incident.

Why does it happen?

Automatic fire sprinkler systems are needed whenever combustible construction or products exist. They are also necessary wherever any activity might fuel, ignite or spread a fire and whenever something might be damaged by fire or products of combustion. Indeed, there are few places exist where sprinklers are not needed!

So the more companies know about fire sprinkler systems and how they operate, the more this can lower the risk of large loss. The average loss in a location without sprinklers is over five times greater than in a location with a properly designed, installed, and maintained sprinkler fire protection system. In addition, it has been documented that in places where sprinklers are installed, it only required six or less sprinkler heads to control 90% of fires.

Feeling the burn

What happens when a fire breaks out at a key facility and there is no automatic sprinkler system? What happens when a high-performance sprinkler system does not perform effectively? What's more, what happens when some or all sprinklers do not operate at all? Or, worse, what if the fire pump – the heart of the fire protection system, which provides the necessary flow and pressure of water to the sprinkler system – does not operate to control or extinguish the fire?

What happens is the fire grows and it grows in rapid form. In a building without sprinklers, the fire will burn uncontrollably. And by the time the fire service has been called and arrives at the scene heat, flames and smoke could be so intense they can easily exceed manual fire fighting capabilities. Therefore, every second that fire burns, so does a company's bottom-line.

Sprinklers: A downpour of support

Most basic automatic fire protection systems start with sprinklers installed into the ceiling of a building. Naturally, the most advanced, cutting-edge sprinkler system in



Insights

Tried and Tested: Certified Loss Prevention Products can Promote Sustainability

How do you know you can rely on the equipment and products in your facilities that are intended to prevent, or at the very least, mitigate a loss, should one occur? **Mr Robert Azimi**, Group Manager, Asia, FM Approvals, a member of the FM Global group, shares his insight on the valuable role certified loss prevention products can play to help organisations better manage property risk and keep their businesses operational and their bottom-line profitable.



Today's global financial crisis has shaken some of the most powerful economies around the world, where deepening concern for the future of many companies abound. Plummeting stock values, fluctuations in foreign exchanges, bankruptcy filings, and accumulating job cuts, are but a few realities that continue to keep many top-line executives stirring in their sleep. With such a sensitive economic environment, it can be easy to overlook some of the most obvious and preventable property risks businesses face – whether natural or man-made. But, let's go one step further. How do you know you can rely on the equipment and products in your facilities that are intended to prevent, or at the very least, mitigate a loss, should one occur?

Failure to Launch

Despite the fact that the savviest companies understand that no amount of insurance will ever help them recover entirely from a potential loss, few of those same organisations are not as keen on the importance of investing in property loss prevention and selecting certified products to keep their buildings intact to ensure business continuity.

Take fire, for example. According to FM Global studies, fire continues to be the leading cause of commercial and industrial property damage worldwide – costing businesses nearly US\$1 million dollars on average per incident. So, proactive companies arm themselves with fire protection equipment, such as automatic sprinklers, valves, fire

pumps, controllers, diesel drivers, special-protection fire extinguishing systems, backflow preventers, water-mist systems and smoke detectors – all in an effort to keep a minor distraction from turning into a major disruption.

But, what happens when a fire breaks out at one of your key facilities, and you do not have an automatic sprinkler system? What happens when the high-performance sprinkler system that you have does not perform effectively? What's more, what happens when some or all sprinklers do not operate at all? Or, worse, what if the fire pump – the heart of the fire protection system, providing the necessary flow and pressure of water to the sprinkler system – does not operate to control or extinguish the fire? Naturally, the most advanced, cutting-edge sprinkler system in the world would be rendered useless without the much-needed, instant flow of water. Meanwhile, every second that fire burns, so does your bottom-line.

Buyer: Be Aware

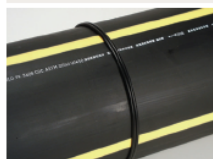
The above scenario is not meant to cause alarm, but it is real and it happens – much more than it should. That is why it is critical for savvy, risk-aware companies to strategically invest in property loss prevention systems and seek out loss prevention products that have been fully tested and certified by an independent third party.





Understanding the Benefit

FM Approved High Density Polyethylene (HDPE) Pipe and Fittings



One of a series of publications designed to help illustrate the benefits of using FM Approved products, including:

- FM Approval Standard 1613 Approval Standard for Polyethylene (PE) Pipe and Fittings for Underground Fire Protection.

Benefits of FM Approval:

- Reliable product performance
- FM Approvals oversight available worldwide.
- Technical product support by local representatives.
- Pipe of choice for many horizontal drilling applications.
- Corrosion- and microbiologically induced corrosion (MIC) resistant.
- Manufacturing locations subjected to regular quality audits.
- All resins used are suitable for potable water.
- Manufacturers' Web sites available via the online Approval Guide.



Understanding the Benefit

FM Approved Fire Protection



One of a series of publications designed to help illustrate the benefits of using FM Approved products, including:

- FM Approval Standard 1311, Horizontal Split-Case Pumps
- FM Approval Standard 1312, Vertical Turbine Pumps
- FM Approval Standard 1313, Positive Displacement Pumps
- FM Approval Standard 1319, Horizontal End Suction Pumps
- FM Approval Standard 1321/1323, Electric and Diesel Fire Pump Controllers
- FM Approval Standard 1333, Diesel Engines
- FM Approval Standard 1336, Right Angle Gear Drives
- FM Approval Standard 1371, In-Line Pumps

Benefits of FM Approval:

- Tested by an internationally recognized third-party certification organization.
- Manufacturing locations subjected to regular quality audits.
- Manufacturers' websites on online Approval Guide



One of a series of publications designed to help illustrate the benefits of using FM Approved products, including:

- FM 4881, Class 1 Exterior Wall Systems (testing for Natural)
- FM 4880, Class 1 Fire Rating Insulated Wall or Wall and Filing Panels, Interior Finish Materials, and Exterior Wall

Benefits of FM Approval:

- Large scale, not just bench-to samples fire and natural hazards
- Cyclically pressurized 18,000
- Hail and wind-borne debris test
- Manufacturing facility continuity audited

Benefits and Availability

FM Approved interior walls and ceiling standards. An FM Approved interior and will not require automatic sprinkler occupancy allows it.

FM Approved interior wall and ceiling standards. Argentina, Australia, Austria, Brazil, Republic, Finland, France, Germany, Northern Ireland, Slovenia, Spain, U



One of a series of publications designed to illustrate the importance of product testing and certification and the benefits of using products that have been tested and certified by reputable organizations such as FM Approvals.

- FM 4882, Class 1 Interior Wall and Ceiling Materials or Systems For Smoke Sensitive Occupancies.

Benefits of Accreditation:

- The only wall and ceiling panels in the world tested and certified for use in smoke sensitive occupancies such as pharmaceutical, food processing and other smoke sensitive industries
- Reduced fire loss, significant reduction in smoke related loss, and reduce business down time.
- Strong enough to be power washed.
- Sprinkler protection may be reduced or eliminated if the occupancy allows.

Understanding the Benefit

FM Approved Interior Wall and Ceiling Materials for Smoke-Sensitive Occupancies

The Hazard

Facer coatings, finish materials and bonding agents utilized in wall and ceiling panels may exhibit self-propagating fire behavior and generate large quantities of smoke in the event of even a small fire. The fuel contribution of some of these panels may result in the requirement of fire protection equipment such as an extensive sprinkler system. The use of FM Approved Class 1 interior wall and ceiling panels tested to Approval Standard 4880 will not allow self-propagation of a fire and may not require the use of an automatic sprinkler system to protect the building.

However, though fire in a smoke-sensitive occupancy that uses Class 1 Approved interior wall and ceiling panels will be small, the smoke damage can result in significant loss of stored product, in-process product and significant downtime for the business.

Low-smoke generation wall and ceiling materials are designed to meet all the requirements for Approval Standard 4880 for interior wall and ceiling panels (i.e., no self propagation of fire) with the additional requirement of generating significantly less smoke in the event of a fire.

Low-smoke wall and ceiling panels that receive FM Approval have been evaluated to provide assurance that they will limit fire propagation and generate significantly less smoke than a traditional wall or ceiling panels. These low smoke wall and ceiling panels have been utilized in the pharmaceutical and food processing industries.

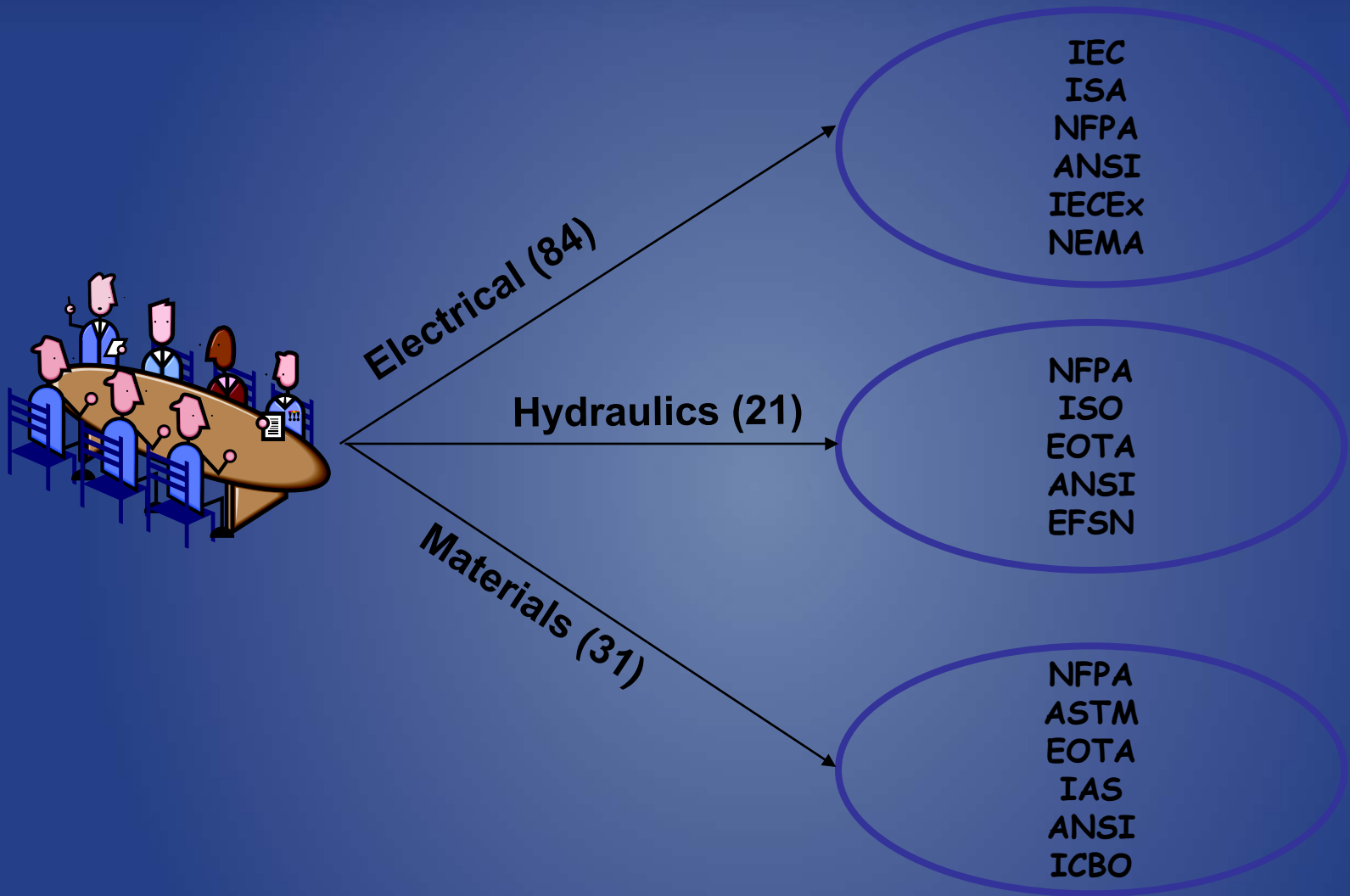
Testing Required for FM Approval

FM Approvals is the only organization in the world that has the technical expertise, knowledge and capability to test and certify these unique and innovative products.

FM Approved low-smoke wall and ceiling panels must pass small, intermediate and large scale fire testing in which numerous panels are installed to mimic field applications and then subjected to a corner fire test to quantify the extent of fire propagation. These fire tests of wall and ceiling material more closely relate to every-day installation, geometry and function. The results of the tests are analyzed and used to provide recommendations on limitations to the end use for which the wall and ceiling materials are FM Approved.

These panels must also demonstrate successful low smoke generation testing results. For testing, 128 ft² (11.9 m²) of material is burned under a fire products collector to determine the total amount of smoke generated during a fire. Panels must not exceed a smoke generation rate of 0.23 grams/sec. and the total smoke generated for the duration of the test must not exceed 60 grams. For more detail see Approval Standard 4882.

Committees



Standards Development

- **Saudi Arabia, Ireland and Dubai** rely on the following FM Approvals standards for their building codes:
 - FM 4450 (roofing)
 - FM 4470 (roofing)
 - FM 4880 (fire rating for walls and ceilings)
 - FM 4881 (natural hazards rating for exterior walls)
- **ISA (USA)** - FM 6325 Open Path Detection
- **IEC** - FM 6325 Open Path Detection
- **ANSI (USA)** – Water Mist FM 5560
- **U.K. and EU** – Water Mist FM 5560
- **CWA** in China - wind uplift standards
- **EOTA** – ESFR, Extended Coverage Sprinklers

Influencing Standards

- **China Waterproofing Association and FM 4474**
 - **Adopt FM 4474 and 4471 into China National Standard**
 - **Approvals assists CWA to build a test lab**
 - **Approvals to sub-contract work to CWA**
 - **CWA to work with Approvals on new opportunities**



ICS91.120.30
Q17



中华人民共和国国家标准

GB ×××××-2010

热塑性聚烯烃（TPO）防水卷材

Thermoplastic polyolefin(TPO) sheets for waterproofing

（征求意见稿）

××××-××-××发布

××××-××-××实施

中华人民共和国国家质量监督检验检疫总局 发布
中国国家标准化管理委员会

ICS91.120.30
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中华人民共和国国家标准

GB 12952-2010
代替GB12952-2003

聚氯乙烯（PVC）防水卷材

Polyvinyl chloride (PVC) plastic sheets for waterproofing

（征求意见稿）

××××-××-××发布

××××-××-××实施

中华人民共和国国家质量监督检验检疫总局 发布
中国国家标准化管理委员会

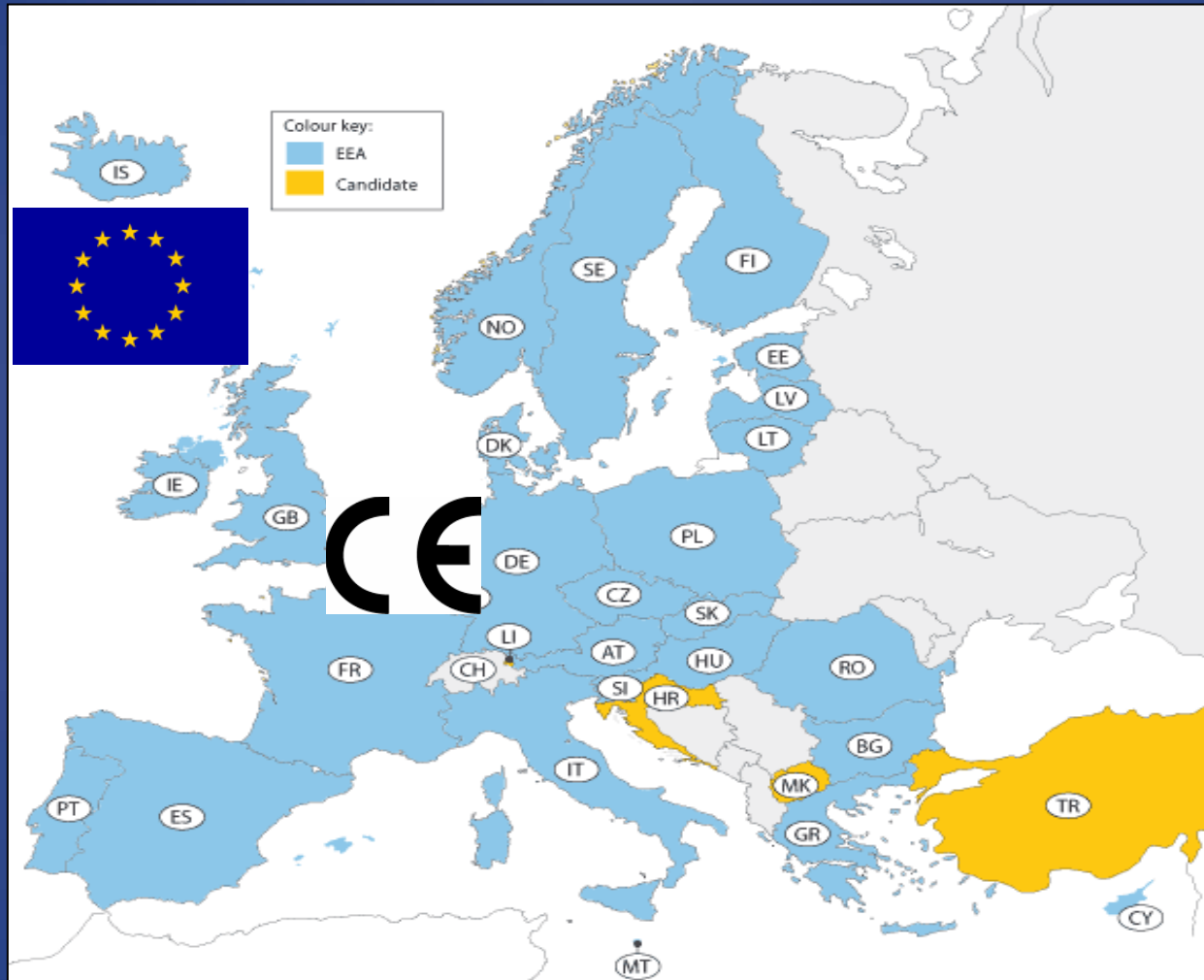
Influencing Standards

- **CWA would like to cooperate with FM Approvals**
 - **setting up a fire resistance test lab for roofing systems**
 - **developing hail resistance test, metal roof wind uplift test, and solar roof wind uplift tests**
 - **currently working on FM 4471 for standing seam roofs.**

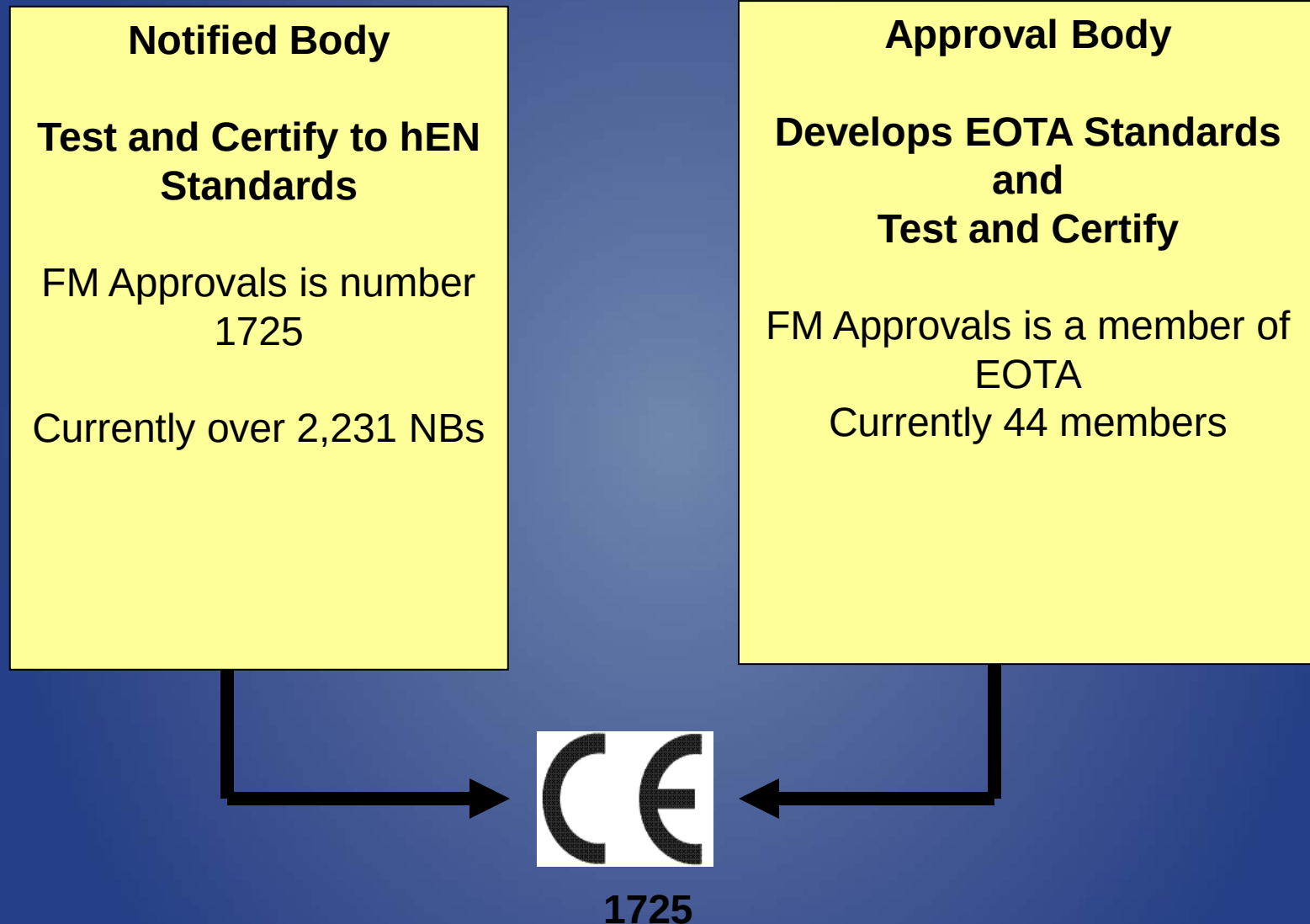


- Fire Extinguishing Fusible Alloy Link General Requirement with a designated code of GA 863-2010 on March 8. This compulsory standard took effect on April 1, 2010.
- “Foreign standards like **FM 2031:2001 Approval Standard for Heat Responsive Links for Fire Protection** were used for reference to draft the standard; a standard which has integrated with the international fire standards, and reached the advanced international level.”

Influencing Standards



How to get the CE Mark in Europe?



EOTA

(European Organization for Technical Approvals)

- FM Approvals is the first organization to have published via EOTA a fire protection European standard for “innovative product” (ESFR)
- Working on extending ESFR EOTA standard, as well as developing an new EOTA standard for Extended Coverage Sprinklers



FM Approvals Ltd,
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Berkshire, SL4 1RS
UNITED KINGDOM



CUAP 11.03/03

Common Understanding of Assessment Procedure

for European Technical Approval according to Article 9.2
of the Construction Products Directive

Early Suppression, Fast Response (ESFR), K202, Upright and Pendent Automatic Fire Sprinkler

Version October 2009

Internal EOTA working document resulting from procedure
according to clause 3.2.3 of the Common Procedural Rules.

Endorsed by the Technical Board of EOTA.

Reference for the necessary consent of the relevant EOTA bodies
on draft ETA according to clause 3.2.5 of the Common Procedural
Rules.

To be applied in all cases in which the conditions of clause 3.2.4 of
the Common Procedural Rules are met.

Copy right for English reference version: EOTA
Copy right for translations: EOTA Body having prepared the translation.

EOTA

Kunstlaan 40 Avenue des Arts

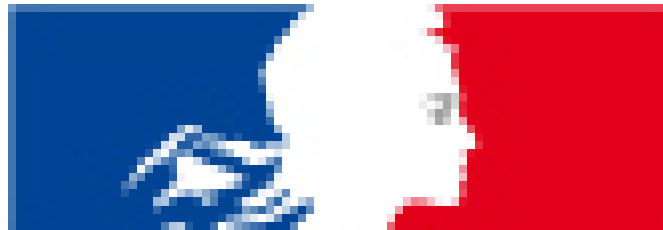
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FM Global

- Codes & Standards
 - The drivers
 - What we're doing, worldwide

IBC

INTERNATIONAL BUILDING CODE



Liberté • Égalité • Fraternité

RÉPUBLIQUE FRANÇAISE

Arrêté du 23/12/08



STANDARD



राष्ट्रीय भवन
संहिता 2005

National Building
Code of India 2005

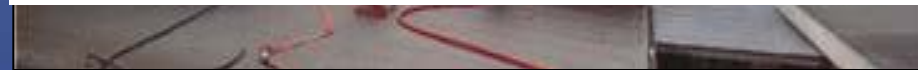




**The slaughterhouse and the deboning unit
to be shut down**

closing down the slaughterhouse and the
deboning unit in at the end of June 2008.

The reason for the decision is the need for adjustment of
capacity to a lower number of slaughterings, as the surplus
slaughterings have disappeared after the two large fires in
2007.



With fire sprinklers...



Barrier to Risk Improvement

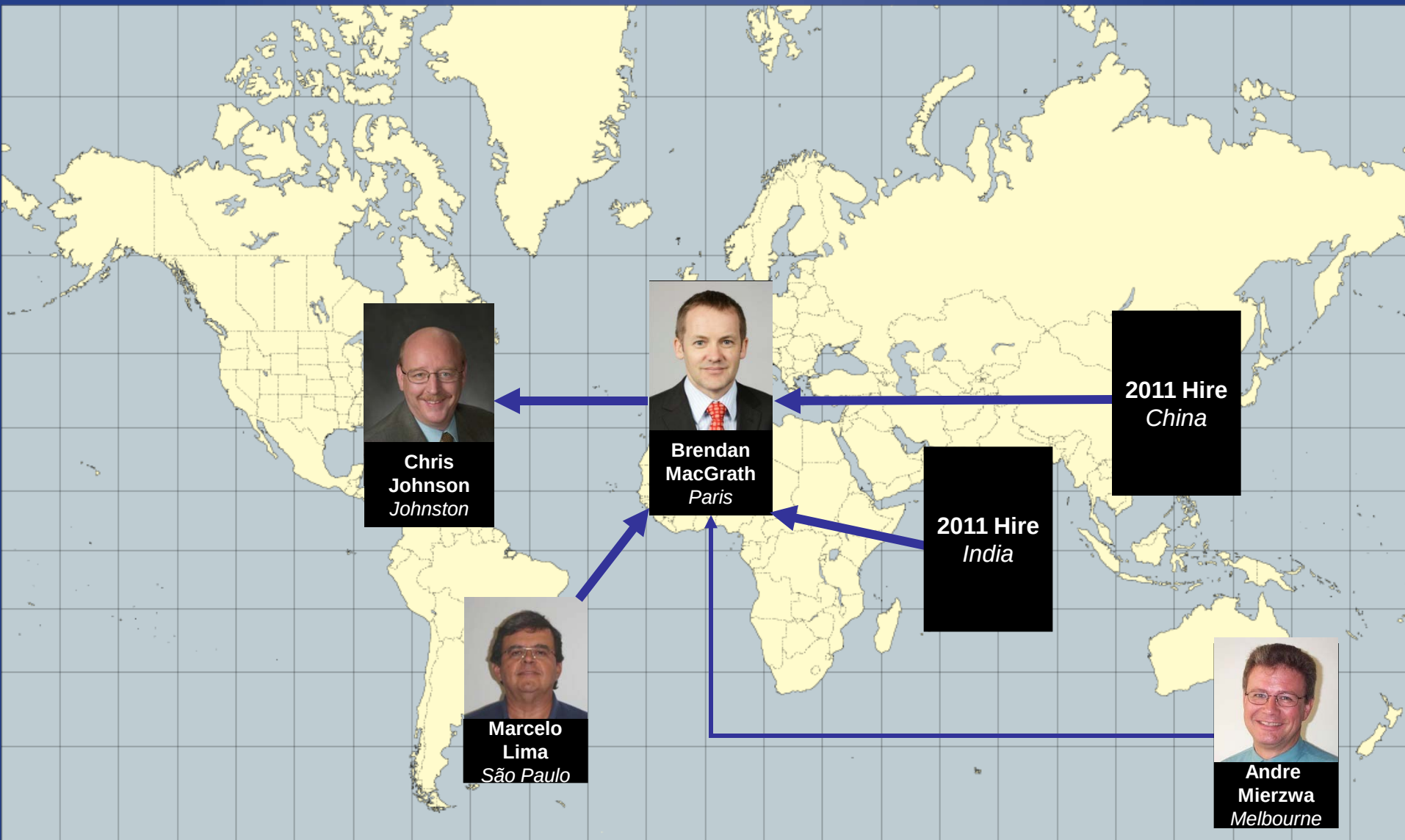
“Not Required by Code = Not Needed”

What do our Clients say?

- **Protect value - avoid loss**
- **Regulatory and norms environment**
- **Competitive disadvantage**

International Codes & Standards Group (ICSG)

FM Approvals



Mission

- **Codes**
 - **Regulatory recognition**
 - **Property resilience**
 - **Requirements, options, incentives**
- **Standards**
 - **FM Global standards widely accepted**
 - **Work to close gaps**



Symposium on Modern Storage Sprinkler Technology

FM Global
Property Loss Prevention Data Sheets

2-0

March 2010
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INSTALLATION GUIDELINES FOR AUTOMATIC SPRINKLERS

FM Global
Property Loss Prevention Data Sheets

8-9

September 2010
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STORAGE OF CLASS 1, 2, 3, 4 AND PLASTIC COMMODITIES



ABNT – Associação
Brasileira de
Normas Técnicas

VCS

ABRIL/2006

NBR 10897

Proteção contra incêndio por
chuveiros automáticos



Regulatory recognition...

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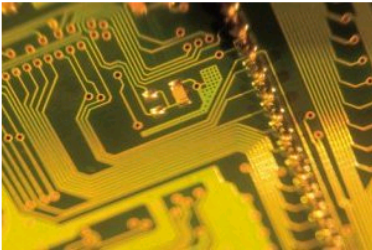
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Member of the FM Global Group

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Presented to:

**The New Jersey Chapter , Society of Fire Protection
Engineers Annual Technical Seminar**

Presented by:

**Mark D. Juitt
Director, Fire Protection
FM Approvals
A Member of the FM Global Group**

April 15, 2010