“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:
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Director, Fire Protection
FM Approvals
A Member of the FM Global Group

April 15, 2010
A property insurance company specializing in loss prevention through engineering in the commercial and industrial sector.

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

- **FM Global**: 27%
- **AIG**: 15%
- **Zurich**: 15%
- **Allianz**: 12%
- **ACE**: 8%
- **XL**: 6%
- **All others**: 17%

Worldwide Market $16 billion
1,028 Field Engineers

271 Field Engineers

71 Field Engineers

46 Field Engineers

29 Field Engineers

Insure over 120,000 facilities in 132 countries
Significant Asian Growth

FM Approvals

Seoul
4 Consultant Engineers

Yokohama
8 Consultant Engineers

Shanghai
19 Consultant Engineers

Hong Kong
7 Consultant Engineers

Bangalore
10 Consultant Engineers

Bangkok
3 Consultant Engineers

Manila
2 Consultant Engineers

Kuala Lumpur
7 Consultant Engineers

Singapore
11 Consultant Engineers
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
Standards Development

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

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

Engineering

FM Approvals

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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 1933, shows FM Global's very first designated research facility for fire testing, established on the grounds of an apple farm in Webster, Mass. USA. In 1934, the company conducted its first test on automatic sprinklers, marking the beginning of its applied research.

Now

FM Global's 1,500-acre campus now comprises four distinct labs—Natural Hazards, Fire Testing, Hydraulics, and Materials Labs—and averages at least one kind or another every few moments.
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)
2010 Trade Shows

Trade Shows Exhibited at:

- India – 5th International exhibition and Conference on Automation
- China – Shanghai Fire and Security
- China - International Construction Steel Structure Expo
- China – China Fire 2010
- China – 7th Pump, Valve and Pipeline Exposition
- China - China International Expo for Roofing & Waterproofing Technology
- Taiwan - Taipei International Building, Construction & Decoration Exhibition
- China – China Insulation Trade Show
- India – Fire Safety and Security
- India – Roof and Cladding Exhibition
- India – National Seminar & Exhibition on Green Building for Sustainability
- India – Engineering Safe and Secure India
- Japan – 39th Internepcon
- 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

- Dubai - Fire Middle East
- Japan – Measurement and Control 2010
- Dubai - Fire Middle East
- 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
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- Taiwan - SEMICON
- Germany – Interkama
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- Belgium – International Water Mist
- France – International Fire and Security
- France - BATIMAT

- 6 in the USA
- 2 in China
- 2 in India
- 2 in Germany
- 1 in Belgium
- Attended 23 trade shows in USA, China, India, Dubai, Japan, Korea, Taiwan, Germany, France
Seminars

China

• Presented:
  – 10 seminars in China
  – 2 seminars in India
  – 1 Seminar in Japan
  – 1 Seminar in Korea
  – 1 Seminar in Vietnam

• Chinese Academy for Building Research (CABR)

• FM Approvals
  – Discussion on Design Review and Product Certification
  – Roofing seminars and presentations
  – Introduction of FM Approvals and RoofNav

• Fire Protection in External Thermal Insulation System

• Cooling Tower of FM Approvals

• TPC/OB/C national code drafting FM suggestions

• Sprinkler Seminars
  – FM Global Windstorm Training
  – FM standard 1920 fitting and couplings for manufacturers
  – Introduction of FM Approvals and Electrical Products
  – Passive Fire Protection
  – Fire Preventing for Facility Surface
  – Fire Safe Pipe Insulation

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/Singapore/Japan:

• Sprinkler Testing for KFI
• Handling Flammable Liquid
• Sprinkler seminar in Korea and Japan
Asia Seminars – CABR

Media Interview
12 publications – 620,000
23 online sites
Experts From China and America Discuss Fire Protection Technology Regarding External Thermal Insulation

Testing & Approvals Solves Fire Hazard Problem of Public Buildings

2009 Seminar of Fire Protection In External Thermal Insulation System Held In Beijing
Building and operating for sustainability

Fire continues to be the leading cause of commercial and industrial property damage worldwide. In fact, according to FM Global’s 2015 Annual Report, total property damage due to fire is responsible for $172 billion in worldwide losses. The cost of fire damage is staggering, and it is a common occurrence in many industries.

Fire prevention strategies include the use of automatic fire sprinkler systems, which are designed to detecting and extinguishing fires before they become too large. These systems work by releasing water or other fire-fighting agents in the event of a fire, providing a quick and effective way to contain and extinguish a fire.

Feeling the burn
When a fire breaks out in a facility, there are a few steps that can be taken to help prevent the spread of the fire and protect the building and its contents. First, it is important to have a fire suppression system in place. This system should be regularly inspected and maintained to ensure that it is working properly.

Insight: Building and operating for sustainability

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 insights on the valuable role certified loss prevention products can play to help organizations better manage property risk and keep their businesses operational and their bottom-line profitable.

Today’s global financial crisis has shaken some of the more powerful economies around the world. This is particularly true in the case of many companies that have experienced significant losses due to the financial crisis. One of the ways that companies can protect themselves from these losses is by investing in certified loss prevention products.

Sprinklers: A deceptively simple but effective solution

Sprinklers are a critical component of fire protection systems, and they are designed to detect and extinguish fires automatically. They work by releasing water or other fire-fighting agents in the event of a fire, providing a quick and effective way to contain and extinguish a fire.

Failure to Launch

Despite the fact that the successful companies understand that no amount of insurance will ever protect them entirely from a potential loss, few of those same organizations put enough attention on the importance of investing in property loss prevention and selecting certified products to keep their buildings intact and ensure business continuity.

Take, for example, according to FM Global studies, fires continue to be the leading cause of loss for commercial and industrial property damage worldwide—costing businesses nearly $172 billion in losses each year. To protect companies and their businesses, the use of fire protection systems, such as automatic sprinklers, valves, and fire pumps, is essential. These systems work by detecting fires early and extinguishing them quickly, which can help prevent the spread of a fire and minimize property damage.

Buyer: Be Aware

The above scenario is not meant to cause alarm, but it is real and it happens. More than once it should. This is why it is critical for savvy, insurance companies to strategically invest in property loss prevention systems and seek out certified protection products that can be both trusted and certified by an independent third party.
Publications

Understanding the Benefit

FM Approved High Density Polyethylene (HDPE) Pipe and Fittings

Benefits of HDPE:
- Excellent corrosion resistance
- Low maintenance requirements
- Durability and longevity

Understanding the Benefit

FM Approved Fire Protection

Benefits of FM Approved Fire Protection:
- FM Approved Standard 1311, Horizontal Stills Case Pumps
- FM Approved Standard 1312, Vertical Turbine Pumps
- FM Approved Standard 1313, Positive Displacement Pumps
- FM Approved Standard 1319, Horizontal End Suction Pumps
- FM Approved Standard 1320/1321, Electric and Diesel Fire Pump Controllers
- FM Approved Standard 1330, Diesel Engines
- FM Approved Standard 1330, Right Angle Gear Drives
- FM Approved Standard 1331, Line Pumps

Benefits of FM Approved:
- Tested in internationally recognized third-party certification organizations
- Producing locations subject to regular quality audits
- Manufacturers’ websites on line
- Approved Guide

Understanding the Benefit

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

Thermal Hazard
Facer coatings, furnish 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 requirements 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 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 everyday 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 9.23 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

- **IEC**
- **ISA**
- **NFPA**
- **ANSI**
- **IECEx**
- **NEMA**

**Electrical (84)**
- **NFPA**
- **ISO**
- **EOTA**
- **ANSI**
- **EFSN**

**Hydraulics (21)**
- **NFPA**
- **ASTM**
- **EOTA**
- **IAS**
- **ANSI**
- **ICBO**

**Materials (31)**

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
热塑性聚烯烃（TPO）防水卷材

Thermoplastic polyolefin (TPO) sheets for waterproofing

聚氯乙烯（PVC）防水卷材

Polyvinyl chloride (PVC) plastic sheets for waterproofing
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.”
How to get the CE Mark in Europe?

**Notified Body**
Test and Certify to hEN Standards
FM Approvals is number 1725
Currently over 2,231 NBs

**Approval Body**
Develops EOTA Standards and Test and Certify
FM Approvals is a member of EOTA
Currently 44 members
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 Global

- Codes & Standards
- The drivers
- What we’re doing, worldwide
The slaughterhouse and the deboning unit to be shut down

closing down the slaughterhouse and the deboning unit in [redacted] 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.
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
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**

**FM Global Property Loss Prevention Data Sheets**

- **2-0**
  - March 2010
  - Page 1 of 114

- **8-9**
  - September 2010
  - Page 1 of 68

**INSTALLATION GUIDELINES FOR AUTOMATIC SPRINKLERS**

**STORAGE OF CLASS 1, 2, 3, 4 AND PLASTIC COMMODITIES**

**Proteção contra incêndio por chuveiros automáticos**

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Regulatory recognition...

Savings ~ $100,000
Getting Started

Welcome to the Approval Guide, your source for the most up-to-date information about FM Approved products and services. The Approval Guide provides many ways to perform your searches:

- Hierarchical searching in the content tree for each division of the Guide
- Parametric searching within folders of the content tree
- Keyword searching within Company and Product names
- Text based keyword searches
- Searching by country
- Searching by certification type

For new users of the Approval Guide, we recommend you read our Quick Start Guide which is available here. This guide provides a quick overview of each of the search methods listed above. Once you have read the guide, or if you'd rather get started right now, just click on one of the pictures below to enter that division of the Guide and begin your search.
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