

APPROVED PRODUCT NEWS

VOLUME 30 NUMBER 2 | 2014

UAE building boom
triggers change

Joining forces on
standards development

An industry first
approaches



Fakes, Frauds and Phonies in the Marketplace

Taking a closer look at the increasingly
sophisticated marketplace for counterfeit products



Member of the FM Global Group

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Building Boom Triggers Necessary Changes in UAE



Burj Khalifa tower in Dubai, United Arab Emirates, is the world's tallest manmade structure at 2,717 feet (828 meters) and 163 floors.

The Arab world's second largest economy okays code revisions, clarifications and improvements; loss prevention support strengthens product certification

The United Arab Emirates (UAE), a federation of seven emirates located on the southeast end of the Arabian Peninsula, is famous for its multitrillion-dollar building boom that has led to hundreds of new high-rise buildings, including the world's tallest—Dubai's Burj Khalifa, standing 2,717 feet (828 meters) with 163 floors.

Ranked as the Arab world's second largest economy, the UAE is recovering rapidly from the global economic crisis that hit it hard in 2008 and 2009. In fact, a recent report noted that an estimated US\$669 billion worth of projects are currently under way or slated in the UAE, including projects to support World Expo 2020, awarded to Dubai in November 2013.

The stress of maintaining high-rise safety turned the spotlight on the need for a unified set of building codes. As a result, the UAE Department of Civil Defense, under the Ministry of Interior, set out to clarify local codes and incorporate international codes and standards into a comprehensive document. This effort resulted in the UAE Fire and Life Safety Code of Practice, published in July 2011.

The UAE Fire and Life Safety Code of

Practice was amended in 2012 to provide even tougher rules for specific construction elements, including fire stopping, exterior wall cladding and roofing systems. The 2012 33-page annex to the UAE code document denotes test standards that these constructions products and systems must meet. FM Approvals standards are included among the standards in the 2012 annex:

- **Approval Standard 4470**,
Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction
- **Approval Standard 4471**,
Class 1 Panel Roofs
- **Approval Standard 4880**,
Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems
- **Approval Standard 4881**,
Class 1 Exterior Wall Systems
- **Approval Standard 4990**,
Firestopping
- **Approval Standard 4991**,
Approval of Firestop Contractors

FM Approvals has worked closely with the UAE Civil Defense for many years, and is currently a recognized UAE certification body for a wide range of fire protection products and building systems and components. Many manufacturers producing FM Approved products are selling products into this region in support of the building boom.

FM Approvals, with guidance and support from Lt. Col. Jamal Ibrahim and the UAE Civil Defense, hosted an educational seminar in Dubai in the fall of 2011 to share knowledge in loss prevention with the UAE Civil Defense and consultant community in all aspects of FM Approved products, as well as engineering recommendations related to fire protection systems and building envelopes. Recently, the UAE

Civil Defense introduced a new requirement for manufacturers wishing to place fire and life safety products on the UAE market. Manufacturers and their agents are now required to provide the UAE Civil Defense with a Certificate of Compliance (CoC) issued by a certification body recognized by the UAE Civil Defense. FM Approvals customers may request a UAE CoC by emailing information@fmapprovals.com.

“The new Certificate of Compliance does not require any additional product testing to obtain,” notes Abby So, FM Approvals manager, new business, Asia/Pacific. “The new CoC is the latest step by the UAE Civil Defense to harmonize their standards and code activities across all emirates in the country. This represents an additional level of security to ensure that all fire and life safety products coming into the country have been tested and certified by a third-party agency, such as FM Approvals.”

Said 1st Lt. Hamad Almaazmi of the UAE Civil Defense, “We encourage qualified manufacturers to trade with the UAE. We are not imposing a barrier to trade in any way. Any manufacturer that is already working with a certified testing agency, such as FM Approvals or other labs, should have no problem with our new Certificate of Compliance.”

Almaazmi adds, “We have had a long and productive relationship with FM Approvals. We value their support and the quality of the information they provide to us is always distinct. We encourage all testing laboratories around the world to get in touch with us and help us provide the highest quality fire and life safety products to make our country more safe and secure. Implementation of our new certification program must be a cooperative effort involving all of our partners.” ■

Get to Know Us Better

Understanding the Benefits

FM Approvals' *Understanding the Benefits* (UTB) slip sheets helps customers, end users, and code and industry officials understand the advantages of using FM Approved products. FM Approvals' enhanced performance testing leads to the uniqueness—and clear value—of the FM Approved product. Each slip sheet in the UTB series highlights the importance of choosing FM Approvals tested and certified products that meet specific performance requirements over products that have no certification and may only meet minimum code requirements.

The entire collection of UTBs to date can be found at fmapprovals.com. Click on Customer Resources.

Fakes, Frauds and Phonies in the Marketplace



FM Approvals takes a closer look at an increasingly sophisticated market of counterfeiting and other infringements

The FM APPROVED mark is a powerful symbol indicating that FM Approvals, an accredited testing and certification organization has carefully evaluated a product or building system in accordance with established standards and verified the product's performance. FM Approvals is dedicated to encouraging the development and use of FM Approved products and services that improve and advance property loss prevention. As a member of the FM Global Group, FM Approvals supports the loss prevention needs of FM Global insureds worldwide.

By misusing or misappropriating the FM APPROVED mark, a manufacturer and its distributors are illegally infringing on the rights of manufacturers of legitimate FM Approved

products, as well as potentially endangering the property and safety of anyone who purchases and installs these illegally marked products. Over the past decade, as FM Global's business has expanded around the world, so too has the awareness and use of FM Approved products and services.

Since the early 2000s, FM Approvals has seen a major shift in its customer base from predominantly North American-centric to a truly global distribution. In fact, last year a full 47 percent of customers who obtained product approval during the year hailed from outside the Americas, up from 19 percent in 2002. During this period of growth, the increase in incidents of infringement on the FM APPROVED mark and the outright counterfeiting of look-alike FM Approved products has risen correspondingly.

Counterfeiting and other unauthorized uses of FM Approvals' certification marks have the potential for causing considerable harm to FM Approvals' customers and the public at large. It is FM Approvals' policy to diligently pursue and stop counterfeiting and other misuses whenever they are brought to its attention. FM Approvals classifies infringements into the following four general categories:

- **Counterfeit**—a product that is not FM Approved but bears the FM APPROVED mark(s) and is not made by the manufacturer of record (OEM); or a manufacturer claiming that it meets FM Approvals requirements.
- **Unauthorized product modification**—an FM Approved product currently manufactured that is inconsistent with currently Approved design (includes marking Approved product that has been determined to have quality assurance or performance deficiencies).
- **Misrepresentation of FM APPROVED marks or unauthorized use of intellectual prop-**

erty—a manufacturer using the FM APPROVED mark on a product that is not FM Approved and is the producer of the product.

- **Misuse of FM APPROVED mark and/or certificate**—an FM Approved product that is sold by someone other than the manufacturer of record (OEM).

Global impact growing

Over the past seven years, FM Approvals has received reports of counterfeit products and other mark or name infringements from 45 countries/regions, including China, India, the Middle East, South America, Turkey, Australia, Latvia, Vietnam and many others. Infringements range from outright counterfeit products—such as sprinklers, valves, fire

promote local regulations and standards that go beyond the minimum criteria for product quality when it comes to property loss prevention products in particular.”

In Brazil, for instance, Azimi notes that FM Approvals and FM Global are playing a key role in helping to promote the use of automatic sprinkler systems, including a founding role in the creation of the Brazilian Associations of Sprinklers (Associação Brasileira de Sprinklers) in 2011. “We hear reports that the majority of sprinklers entering Brazil are from unknown sources,” Azimi observes. “The incidents of counterfeiting, misrepresentation and other misuse are directly dependent on the regulatory and enforcement environment of each country. How strongly do they monitor the prod-

COUNTERFEITING AND OTHER UN-AUTHORIZED USES OF FM APPROVALS' CERTIFICATION MARKS HAVE THE POTENTIAL FOR CAUSING CONSIDERABLE HARM TO FM APPROVALS' CUSTOMERS AND THE PUBLIC AT LARGE.

hose, smoke detectors and radios—to counterfeit Certificates of Compliance (CoC) and Certificates of Registration.

FM Approvals new business development managers for the Americas, EMEA (Europe, Middle East and Africa), and Asia/Pacific are among the first to learn of counterfeiting and misuse reports from their regions. “Each country in a region sets its own standards and regulatory environment when it comes to product importation and quality certification,” notes Bob Azimi, manager of FM Approvals new business development for the Americas. “Our goal is always to help

ucts that are allowed into the country? We are working hard to champion on multiple fronts for regulations and codes to ensure that products critical to asset protection and loss prevention are actually going to work.”

The Asia/Pacific region has seen the highest number of cases of reported counterfeit products, with a number of cases from China and India, but increasingly from other countries as well. “It used to be that people were reluctant to report incidents of counterfeiting or misuse of the FM APPROVED mark,” says Abby So, FM Approvals manager of new business development for the



Profile view of an authentic Tyco TY3251 sprinkler (left) and the sprinkler identified as counterfeit (right).

region. “We see that attitude changing. More and more end users, designers and contractors are reaching out and asking us to verify whether a product is FM Approved.”

He believes the increase in reporting is a direct result of the growing awareness in the value of the FM APPROVED mark in the region. “End users want to be sure they are getting a legitimate FM Approved product, and contractors and distributors realize the value that the FM APPROVED certification mark brings and are more willing to report others who may misuse or misrepresent the mark. Counterfeit FM Approvals certificates are the most common thing we see, followed by products that have been falsely labeled as FM Approved.”

In the EMEA region, the challenges are mixed. According to Jean-Philippe Roisin, FM Approvals manager of new business development for the region, the environment in Europe is similar to that of North America. “We don’t see a lot of outright counterfeiting of products in Europe,” he notes. “The regulations here are quite strict and anybody playing that game would be subject to lawsuits and other direct actions. In Europe, we

see more cases of misinterpretation or misapplication of the FM APPROVED mark on the part of legitimate manufacturers of FM Approved products. It could be on a website or in advertising. Maybe the details of their Approved products are not quite right or not precise enough. In those cases, we go to the manufacturer and explain how they should be using the mark or information and it typically gets resolved quickly, without further action.”

Well-established notification process

The initial notification of a possible infringement on FM APPROVED certification marks, known as a Notification of Concern (NoC), can come from almost any source, including:

- FM Approvals’ engineer and/or auditor
- FM Global (field engineers, sales, account, claims, manager intellectual property, law and government affairs, engineering standards)
- Authority having jurisdiction (AHJ)
- End users
- Manufacturers or distributors
- Other (e.g., government, industry organization)

All NoCs are routed immediately to Tom McCarty, FM Approvals loss prevention coordinator within the quality assurance group. McCarty alerts the technical area manager for the product area impacted by the suspected infringement and enters the NoC into a central database used to track NoC status. The quality assurance team begins investigating the NoC to determine if action is needed.

The NoC investigation process includes a hazards evaluation to determine if the NoC represents a potential property loss risk to FM Global clients. If a clear risk is posed by the NoC or if counterfeiting is verified, a Product Alert (see sidebar) will be issued to the public containing information on how to identify the hazard such as a counterfeit sprinkler, for example.

In most cases, the manufacturer of the FM Approved product associated with the NoC is notified of the potential infringement. In other cases, the manufacturer will be asked to submit a plan to correct the infringement. If these measures fail to correct the situation, additional action may be taken, including litigation.

Many willing to pay the price

According to Bob Lovell, FM Approvals manager of auditing and quality assurance, a key problem outside of North America is that buyers are more willing to put price above quality. “It’s one thing to be cost-conscious, but if it means making a deal with an unqualified distributor or seller, that’s where you can run into counterfeit products, falsified certificates and misuse of the mark,” Lovell observes. “Unless you’re buying from the OEM or their legitimate distributor, you have to be careful of the source and check the Approval Guide to determine if the product is actually FM Approved.”

While counterfeit products—particularly sprinklers and other components of automatic sprinkler systems—are still discovered on a regular basis, that challenge is over-

shadowed in some respects by the increased prevalence of counterfeit certificates and counterfeit Approval reports. “The falsified certificate is supporting a product that is not FM Approved, yet purports to be,” Lovell notes. “It’s also surprising what people will accept. There’s the case where a counterfeiter imprinted their product with a triangle instead of the FM APPROVED mark. Even without a mark, the seller tells the buyer they will send an Approval certificate, which of course is falsified. And buyers often accept this as evidence of certification.”

Tom McCarty has seen it all when it comes to this issue. As the FM Approvals loss prevention coordinator, McCarty handles all reports of counterfeiting and other potential infringements from a variety of sources. “We see a lot of honest mistakes by legitimate manufacturers of FM Approved products,” he says. “For instance, a maker of ignitable liquid containers may have two products that are FM Approved, yet they may list seven or eight on their website and, usually inadvertently, implying that all their containers are FM Approved. We consider this misrepresentation of the FM APPROVED mark and we notify that manufacturer that they need to correct their website or literature. These are usually resolved quickly.”

In other cases, a distributor may be misrepresenting an FM Approved manufacturer’s product as its own. Beware: The product will not be in the *Approval Guide*. “We see this from time to time,” notes McCarty. “The distributor is not the manufacturer of record and may be misusing the FM APPROVED mark. We pursue those cases quite aggressively because that’s how we protect the integrity of the FM APPROVED mark and the integrity of our legitimate customers, the mark holders.”

Mark holders weigh in

“Counterfeiting is a big issue for Tyco Fire Protection Products and we take it very seriously,” notes James Golinveaux, who is a Tyco senior fellow and has worked with

FM Approvals for more than 25 years. Tyco is a leader in fire protection, detection and mechanical life safety solutions for commercial, industrial, institutional, governmental and residential customers. “We are in the life safety business and have to take counterfeiting seriously. Our customers trust the Tyco brand and believe they are buying a quality product that they can trust. We react very swiftly when we learn of any Tyco product that is being counterfeited. We have an established task group within Tyco that works with FM Approvals and other certification laboratories, as well as INTERPOL, local police and local governments to track down the source of counterfeits.”

In general, notes Golinveaux, if it sounds too good to be true it probably is. “Customers will hear of some fantastic deal or our distributors will find out that they are competing against another Tyco distributor in their region when there is no other legitimate distributor in that area. We encourage buy-

Mike Bosma, president of Viking Corporation, a leading manufacturer of fire protection products, notes that his company also pursues reports of counterfeiting very aggressively. “When I look upon counterfeiting, I tend to put it into three categories,” Bosma observes. “The first category is traditional counterfeiting, where someone copies your product, including your name and even certificate marks such as the FM APPROVED mark, with no regard for performance—the goal is for the counterfeit to look like the original. We primarily find this form of counterfeiting coming out of Asian countries, particularly China. We spend a good deal of time and money around the world pursuing product counterfeiters. It can be frustrating—you find one and shut them down and another one pops up a month or two later.”

“The second category is what I refer to as ‘bait-and-switch’ and this represents more of a problem for us because it extends

EACH OF THE TECHNICAL AREAS WITHIN FM APPROVALS—BUILDING MATERIALS, ELECTRICAL SYSTEMS AND FIRE PROTECTION—IS IMPACTED BY COUNTERFEITING AND CERTIFICATION MARK INFRINGEMENTS IN DIFFERENT WAYS.

ers who encounter significant discounting, wherever it’s found, to check with us and let us validate it. If people do find counterfeiting, we recommend they report to us and then back away—some counterfeit operations can be run by dangerous people. They are organized criminals in many cases and we have to be careful in how we approach them—that’s why we work with international police in our investigations.”

beyond the more limited counterfeit market. In these cases, a manufacturer may obtain an FM APPROVED mark for one or more of its products, but then they go to market with a lower quality product that does not meet FM Approvals standards. We also see this happening with other certification marks as well. We will go out and obtain samples of these suspect products. Even though they may have certification marks on them, the

Heads up! Product Alert makes a difference

One of the many tools used by FM Approvals to combat counterfeiting is the Product Alert, which provides customers, the general public, field engineers, auditors, authorities having jurisdiction and others with the latest information on counterfeit products, falsified certificates, and incidents of mark misuse or misrepresentation.

FM Approvals began issuing Product Alerts in 2007 as part of a new process for handling potential infringements. Product Alerts are initiated based on reports from a variety of sources, including end users, manufacturers, distributors, auditors and many others. Once sufficient evidence is collected—such as samples of counterfeit products, photographs, and/or copies of falsified certificates—FM Approvals drafts an alert, which is then reviewed by FM Approvals management, legal counsel and intellectual property manager. In many cases, a courtesy review is provided by the manufacturer of the legitimate FM Approved product that is being infringed upon.

Such was the case in July, when Viking Corporation informed FM Approvals that automatic fire sprinklers were being counterfeited in Malaysia with both the FM APPROVED mark and the Viking name. Viking obtained samples of the counterfeit sprinklers and sent some of them to the FM Approvals fire protection laboratory in West Gloucester, Rhode Island.

A detailed comparison of the counterfeit and authentic sprinklers was conducted and a four-page Product Alert, complete with photos and descriptions of the counterfeit and authentic sprinklers was issued on Sept. 9, 2014. “We have hired local counsel to pursue the distributor of that

product under trademark infringement,” says Viking president Mike Bosma. “While most lawyers will tell you that because the counterfeiter is in Malaysia we may not get real satisfaction; however, what we can get is local pressure on the counterfeiter and information on how many of these counterfeits are on the market and where they may have been shipped. In that way, we can notify people who were in the supply chain and make them aware of these counterfeit Viking products.”

Tyco Safety Products Pvt. Ltd. of India assisted FM Approvals with a similar Product Alert last spring. The firm’s manager in India sent detailed photos of the counterfeit Tyco automatic sprinklers to FM Approvals. Working with local Tyco contacts, FM Approvals identified the counterfeit aspects of the sprinklers and created a five-page Product Alert, complete with comparison photos and descriptions. The alert was issued on March 24, 2014.

“We appreciate any assistance we can get in helping to alert the public when a counterfeit product has been identified,” notes Tyco senior fellow James Golinveaux. “Our main goal is always to track the product down to the source and shut them down. Bulletins such as the FM Approvals Product Alerts are an excellent way to inform field engineers and others who may come in contact with counterfeit products. It is very difficult for an end user to identify a counterfeit product when it looks like our product to the untrained eye. Bulletins are one of many tools we use to help stop counterfeiting.”

To find the latest Product Alerts, please visit the News and Alerts link under Customer Resources at fmapprovals.com.

actual materials or construction is not what was submitted when they got the approval or were tested.”

Bosma considers misrepresentation of data as a third category. “In our competitive world, certification marks and their meaning are very important,” he notes. “Sometimes we find that meaningful model numbers or part numbers and designations are purposely intertwined into a company’s marketing language so that the implication is that the product meets certain criteria that is not necessarily true. Fortunately, these abuses do not typically last very long before they are discovered and someone gets in trouble. It’s the bait-and-switch counterfeiters that really cause me to lose sleep because they are hard to catch, hard to prosecute and hurt the worst.”

Protecting the mark is critical

Each of the technical areas within FM Approvals—building materials, electrical systems and fire protection—is impacted by counterfeiting and certification mark infringements in different ways. Let’s take a look at each area and learn from the managers how this issue affects operations.

Building materials

The FM Approvals building materials group, based in Norwood, Massachusetts, USA, uses full- and small-scale testing to evaluate materials and assemblies based on a variety of standards. The group evaluates roofing and walls, cooling towers, fire protective coatings, fire stops, fire doors, fenestrations, pipe and duct insulation, pallets and many other products.

According to FM Approvals building materials technical area manager Cindy Frank, while the incidence of outright product counterfeiting for her group is quite low, the group does encounter frequent instances of unauthorized product modification and counterfeit certificates. “We typically learn about counterfeit certificates from FM Global field engineers,” Frank says. “The field engineer

may notice that the 'Approved' product is not in the *Approval Guide* but the Certification of Compliance documentation that has been provided to them indicates the product is approved. Knowing the *Approval Guide* is the authoritative source, they report the inconsistency to Tom McCarty."

In one recent case, a manufacturer of a pipe insulation was in the early stages of an FM Approvals certification program and chose to circumvent the process. "We had just written up the proposal and they had agreed to the testing program," Frank recalls. "Then a field engineer discovered a counterfeit Certificate of Compliance for the product that we hadn't tested yet. Primarily, we see this outside of North America where someone is claiming their product is FM Approved and assuming no one will check. We urge everyone to check the *Approval Guide* and check RoofNav®. If it's not listed in either of those sources, it's not FM Approved."

As for the manufacturer who falsified the CoC, "We ceased working with them," Frank notes. "They will never be able to enter the Approval process again, as this behavior was misleading and not the type of behavior that would be expected from a high-quality manufacturer. We can't take that risk of allowing them to become FM Approved because it's our end users who would pay the price."

According to Frank, all cases of unauthorized product modifications are misunderstandings involving manufacturers of legitimate FM Approved products. "It could be an unauthorized product modification is discovered during an audit or inspection, for instance," she says. The FM Global field engineer is frequently the source who provides us with unauthorized product modifications, however we do hear from competitors of our customers too. They have a vested interest in making sure that only FM Approved product is indeed listed as Approved. "Tom McCarty handles all our misrepresentation and noncompliance

issues. He'll open a dialogue with the manufacturer and work with them to resolve the issue."

Electrical systems

The FM Approvals electrical systems group, also based in Norwood, provides evaluation and certification services for a wide range of products and systems, including fire alarm and signaling systems, gas detection equipment, combustion control equipment and equipment for use in hazardous (classified) locations.

According to FM Approvals electrical systems technical area manager Jim Marquedant, the greatest issue facing his group and its customers is that counterfeit products will ultimately fail to perform when called upon and cast doubt on proven FM Approved products.

"For instance, we had a case recently where the maker of FM Approved land mobile radios got a call from one of its distributors informing them that an oil rig in the Gulf of Mexico had some radios that needed to be repaired," Marquedant explains. "The radios were imprinted with the FM APPROVED mark, but it was not an FM Approved radio. An unknown party unlawfully added the FM Approvals' certification mark. It was a safety concern because they were being used in a hazardous area. We got the batch of radios removed from the platform."

In another case, a counterfeit of an FM Approved smoke detector was discovered in Egypt last spring. The smoke detector was labeled with the name of the legitimate manufacturer of the FM Approved version, as well as the FM APPROVED mark. However, while it looked very similar on the outside, the internal mechanism was found to be very different and did not function as intended according to tests conducted on the counterfeit by the manufacturer.

"With the counterfeit smoke detectors and radios, both of these represent real risks

to end users," Marquedant emphasizes. "Customers believe they are receiving an FM Approved product certified to perform according to the manufacturer's specifications, be it for hazardous locations or fire protection purposes such as a smoke detector. It not only diminishes the reputation of the FM APPROVED mark, but can represent safety and conformance issues that can have real consequences."

Fire protection

The FM Approvals fire protection group, based in West Glocester, Rhode Island, evaluates and certifies a wide range of fire protection products and systems, including automatic sprinkler systems, valves, couplings, pipe, meters, fittings, hydrants, extinguishers, fire pumps and many other products.

According to FM Approvals fire protection technical area manager Rick Dunne, the rise in occurrence of infringements of the FM Approvals' certification marks hits his group especially hard. "Sprinklers seem to be a favorite target of counterfeiters in the fire protection industry," he observes. "Most of the cases of counterfeiting relating to our group that have been reported or investigated have involved sprinklers, but we've also seen cases of counterfeit valves and pipe fittings."

The fire protection group is a major supporter of the formalized policy for responding to infringements on the FM Approvals' certification marks. "We hear about counterfeits and other misuse of the mark from many sources," Dunne notes. "It could be an FM Global field engineer who discovers a counterfeit sprinkler or a distributor who was outbid on a deal and grew suspicious that the competitor's price was too good to be true—in most cases it is. When we receive a report, we act on it immediately. With our global scope, we have to be aggressive in chasing down every case." ■

Nitrogen Generator Standard Nears Completion



After more than two years of study, a new Approval Standard provides FM Approved corrosion mitigation solution for dry/preaction sprinkler systems, an industry first.

Organizations that rely on dry and preaction sprinkler systems to protect unheated garages, hangers, freezer warehouses, and sensitive areas such as pharmaceutical processing, computer rooms and rare book depositories will soon have FM Approved solutions to help prevent corrosion and sprinkler pipe leakage. A new standard—Approval Standard 1035, *Nitrogen Generators*—is undergoing final internal review and the first FM Approved systems are expected in 2015.

Nitrogen generators provide a cost-effective and relatively low-maintenance means

to deliver a continuous supply of compressed nitrogen for use as supervisory gas in dry and preaction sprinkler systems. When inert nitrogen (N_2) replaces the oxygen in sprinkler piping, it dramatically reduces the rate of corrosion in both internally galvanized and unprotected steel pipe.

Corrosion of automatic sprinkler systems piping is a long-standing and serious problem that can lead to costly damage from leaks and catastrophic losses when impaired sprinkler systems result in uncontrolled fires. For many years, FM Approvals and FM Global have provided standards, research, engineering guidance and data

sheets intended to help organizations avoid corrosion in sprinkler piping through proper installation, maintenance and mitigation strategies.

Despite these efforts, corrosion continues to be a major issue for automatic sprinkler systems. While corrosion may be expected in a wet system where metal piping is in continuous contact with water, the corrosion problem in supposedly water-free dry and preaction systems can be surprisingly aggressive. In fact, FM Global loss data during a recent 20-year period shows that dry and preaction sprinkler systems are involved in the majority (59 percent) of fire losses where the sprinkler system was found to be obstructed.

Residual water left behind from initial testing and condensation, combined with the supervisory compressed air typically used to keep the dry pipe valve closed, can result in heavy corrosion and leaks within just a few years in many cases.

Nitrogen has long been suggested as a supervisory gas for dry and preaction sprinkler systems. In fact, since 2001 the FM Global Property Loss Prevention Data Sheet 2-1, *Prevention and Control of Internal Corrosion in Automatic Sprinkler Systems*, has recommended the use of bottled or plant-supplied nitrogen for this purpose.

Despite the fact that nitrogen can inhibit corrosion and extend the life of sprinkler piping, adoption of nitrogen as a supervisory gas has been slow. It is believed that this is due, in part, to the cost and inconvenience of bottled nitrogen systems.

The introduction of compact cost-effective nitrogen generation systems in recent years has led to new interest in using nitrogen for corrosion mitigation in dry and preaction sprinkler systems. The new systems use various forms of separation technology to extract 98 percent pure nitrogen gas from surrounding air for use as compressed supervisory gas.

Until now, there have been no standards for the evaluation of the performance of nitrogen generation systems. The new Approval Standard for nitrogen generators is an industry first and will eventually provide FM Approved systems on a global basis, as well as a means for manufacturers to certify the performance of their products.

Team effort leads to new standard

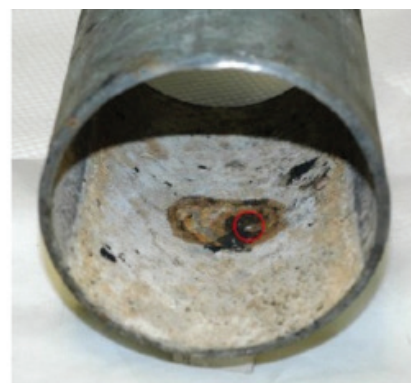
The new nitrogen generator standard is the culmination of more than two years of study by FM Global research, FM Global engineering standards and FM Approvals. “When we started seeing these systems in the field and getting inquiries from FM Global clients, we really didn’t know a lot about nitrogen generators,” says David Fuller, manager, protection and special hazards, for FM Global engineering standards. “We found that some manufacturers of these systems had done their own research showing that their systems would work; however, we needed to see for ourselves.”

FM Global research already had an ongoing strategic program of corrosion research and welcomed the challenge of evaluating the

effectiveness of nitrogen generators for corrosion mitigation (see sidebar). “Our clients have been experiencing leakage issues for a very long time and don’t know how to solve it,” notes Paul Su, a senior scientist and corrosion specialist for FM Global research. Su is a member of the National Association of Corrosion Engineers (NACE International) and chairs two of the organization’s technical committees.

“Even though our data sheets and field engineers recommend proper sloping and drainage as well as the use of galvanized pipe, dry and preaction systems can still experience inadequate pitching or other drainage issues,” Su says. “Trapped water and dissolved oxygen and carbon dioxide can lead to very high corrosion rates, even in galvanized pipe. We’ve seen leaks begin in sprinkler piping in as little as two to three years.”

Su and his research team evaluated the effectiveness of compressed nitrogen for corrosion mitigation in dry and preaction sprinkler systems at the FM Global Center for Property Risk Solutions research facility in Norwood, Massachusetts, USA. A test apparatus was built to test full-scale sprinkler



Photograph showing tubercles and pinhole (circled) leakage of galvanized steel sprinkler pipe in dry pipe systems. On left: tubercles heavily formed inside a galvanized steel pipe (4-inch [10-cm] diameter). On right: through-wall (circled) leakage underneath a tubercle (removed) on a galvanized steel pipe. From Research Technical Report, *Corrosion and Corrosion Mitigation in Fire Protection Systems*, page 28.

Landmark corrosion study leads to new standard

New research conducted by FM Global Research and FM Global Engineering Standards to verify the effectiveness of nitrogen generators for use in corrosion mitigation is included in a major update and rerelease in July of the FM Global research technical report, *Corrosion and Corrosion Mitigation in Fire Protection Systems*.

The report, coauthored by FM Global Research senior scientist Paul Su and David Fuller, manager, protection and special hazards, for FM Global engineering standards, is available for free to the public at www.fmglobal.com. The 98-page report comprehensively explains corrosion in fire protection systems (FPS), covering such factors as:

- pipe weld corrosion
- residual water in dry/preaction sprinkler systems
- trapped air in wet pipe systems
- microbiologically influenced corrosion (MIC)
- corrosive water chemistry.

Covered in the report is the status of current global standards, forms of corrosion, an examination of field leakage examples, corrosion mitigation strategies and recommendations for further study. Under mitigation strategies, the results of research into the effectiveness of nitrogen generators in providing nitrogen as a supervisory gas for dry/preaction sprinkler systems is covered. The report notes that replacing the oxygen in these systems with nitrogen significantly reduces the impact of oxygen-related electrochemical corrosion.

The decision to move ahead with the development of Approval Standard 1035, *Nitrogen Generators*, was based on the success of the FM Global research program. It was determined that nitrogen generators provided an effective new way to provide a continuous supply of nitrogen for use as supervisory gas. The first FM Approved nitrogen generators are expected to be available in 2015.

pipe samples, including both galvanized and unprotected steel. Sample pipes were filled with a small amount of water to simulate typical residual water left over from commissioning, flow testing or condensation. The sample pipes were also filled with either compressed room air or nitrogen produced by a nitrogen generator.

In addition, test coupons of unprotected carbon steel and galvanized steel were submerged in tap water and exposed to room air or nitrogen. Coupons were evaluated using weight loss analysis at periodic intervals and the corrosion rate (CR) calculated. Based on this testing, Su and his team found that the use of a nitrogen generator to provide nitrogen as a supervisory gas for dry/preaction sprinkler systems was extremely effective in reducing corrosion rates.

For instance, the corrosion rate for unprotected carbon steel coupons (representing the most common type of sprinkler piping) was up to 50 times greater in room air than in nitrogen. Not surprisingly, galvanized steel coupons performed much better in the

testing. Even so, the corrosion rate of galvanized steel in room air versus nitrogen was up to two times greater.

Based on these and other research results, FM Global requested that FM Approvals move ahead with the development of a new Approval Standard to cover nitrogen generators. “Our clients were already moving ahead with nitrogen generators and installing them in their facilities,” notes Fuller. “Once we saw just how effective these systems were, we requested the new standard from FM Approvals. They had a head start based on earlier meetings, so they were able to hit the ground running.”

FM Approvals senior engineer Bruce Wood, who developed an Approval Standard late last year for air drying units used to prevent condensation-based icing in dry/preaction sprinkler systems, was assigned the nitrogen generator standard as well.

“I went out and met with two manufacturers of nitrogen generators in order to educate myself and to help us determine what per-

formance factors to include in our standard,” Wood explains. “Similar to our standard for air drying units, we decided to evaluate nitrogen generators based on their capability to produce a specified volume of nitrogen over a given period and list them based on volume capacity in the Approval Guide.”

Approval Standard 1035, *Nitrogen Generators*, includes performance tests to determine the amount of compressed air the system can produce in 30 minutes—a requirement under NFPA 13 in order to restore supervisory air pressure—and verification of the system’s ability to produce sufficient 98 percent purity nitrogen to fill the same sprinkler system within 24 hours. These capacity figures will be listed in the *Approval Guide* to provide end users with a means to select the correct size unit to match their sprinkler system volume requirements.

Other performance requirements contained in the new standard include:

- **Maintenance assessment**—Manufacturer’s guidelines will be used to perform all standard maintenance on

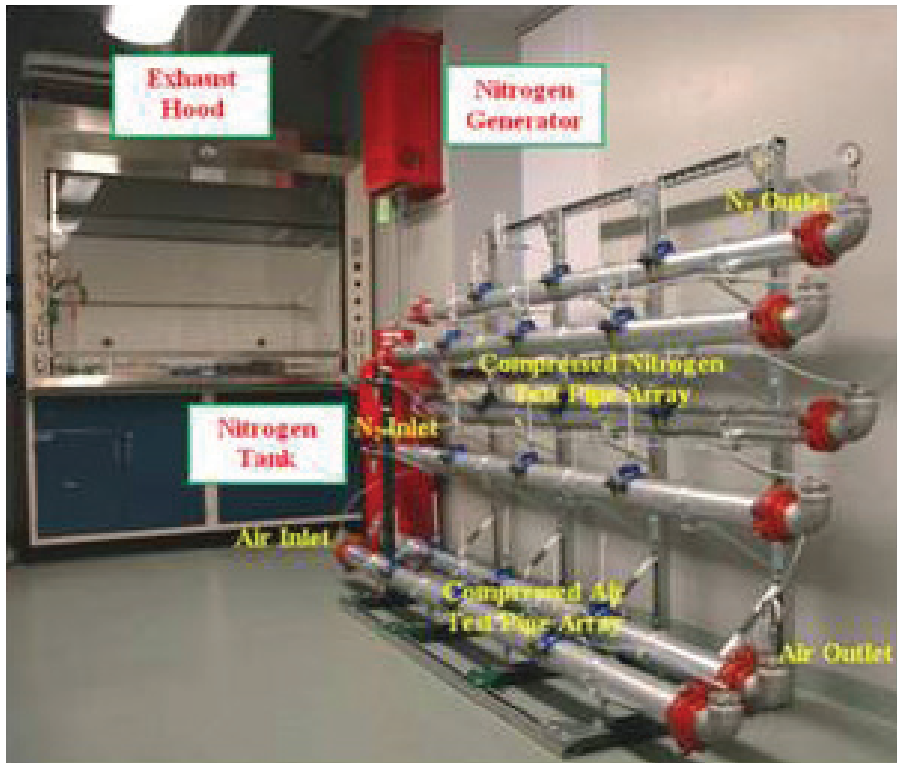
the unit, including replacement of membranes or adsorbent materials and filters.

- **Pressure integrity**—Components of the nitrogen generator must be able to withstand pressure equal to or greater than two times the rated working pressure for a period of five minutes without leakage or rupture.
- **System durability**—The system must be able to produce 25 times system capacity without dropping below 98 percent nitrogen purity and without maintenance.
- **Control panel cycling (dual tower systems only)**—A sample device will be subjected to 25,000 cycles of operation without mechanical failure or change in operating characteristics.
- **Dielectric strength**—Electrical components shall withstand twice their rated voltage plus 1,000 volts between all terminals provided for external connection and ground for a duration of one minute.

“I took part in early briefings provided by FM Global to learn as much as possible about the system performance characteristics and what we were hearing from customers,” Wood notes. “I think this new standard will provide a strong foundation for the industry. We’re collecting industry feedback on it right now, but we’re not anticipating any pushback due to the fact that we based our performance tests, in large part, on what we learned from manufacturers.”

While the development of an Approval Standard for a new product category is not a unique event, the extent to which the development of the standard for nitrogen generators involved all facets of FM Approvals and FM Global made the process particularly satisfying for all involved.

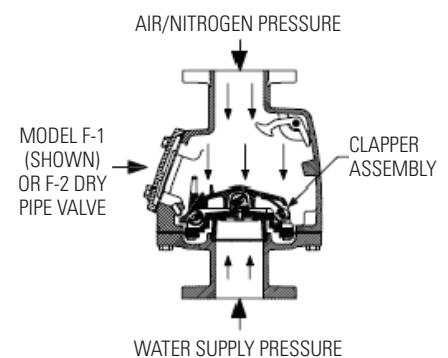
“FM Global clients and any industry that makes a huge investment in fire protection



Compressed nitrogen test apparatus in FM Global research laboratory. Part of the two-year study of nitrogen’s effectiveness in corrosion mitigation in dry and preaction sprinkler systems.

systems does so to avoid business interruption and property loss,” notes Rick Dunne, manager of FM Approvals fire protection group. “Protecting that system is of paramount importance. This standard and the FM Approved systems that will result from it represent a major new tool in the fight against corrosion.”

He adds, “We invest significant effort on updating and revising our Approval Standards every year. Not only was this a new standard, but it was strongly supported by the field who needed it, research to verify performance and our FM Approvals standards development process. It was really a team effort and we’re extremely proud of the results.” ■



Dry pipe sprinkler valve showing supervisory air or nitrogen holding valve closed against water supply. System is triggered when the fusible link on a sprinkler head releases supervisory gas pressure thereby allowing water to flow into the sprinkler piping. *Courtesy Viking Corp.*

Joining Forces on the Standards Development Process



FM Approvals, FM Global, manufacturers and end users work together toward common goals

The president of Viking Corporation, Mike Bosma, heads a leading manufacturer of fire protection products. “The FM Approvals’ certification mark helps set our products apart from others on the market,” says Mike Bosma, “The beauty of the FM Approvals standards development process is that it’s not just theoretical; it’s based on real-world experience with end users, manufacturers and others, and is ultimately intended to help solve very real property protection problems.”

FM Approvals has developed and currently maintains more than 250 standards and test

specifications for products ranging from the seemingly simple to the highly complex, including automatic sprinkler systems, fire pumps, gas detection instruments and roofing assemblies. Each year, more than a dozen standards are newly developed or revised based on a variety of factors. Products that meet the requirements of an FM Approvals standard are listed in the *Approval Guide*, a web-based publication of FM Approvals, or RoofNav®, a web-based tool for roofing professionals that takes the guesswork out of configuring an FM Approved roofing system.

Approval Standards are revised for many reasons, including expansion of scope, to add/modify/replace outdated performance tests, and to add new levels of certification to reflect manufacturer or market needs. Once revised, manufacturers of products approved under the original Approval Standard, are required to comply with the revised standard within the specified compliance period. A paper review is conducted for each FM Approved product and the manufacturer is notified if additional testing is required. The compliance period for revised standards typically ranges from six to 18 months, depending on product complexity.

New Approval Standards typically result from a need identified by one or more sources, including FM Approvals engineers, FM Global engineering standards, FM Global field engineering, FM Global research, FM Global clients and other Approved product end users and product

manager evaluates the request and makes a recommendation on whether to move ahead with the development process. The FM Approvals manager must consider many factors in this decision, including:

- Does the product support property loss prevention
- Is there a need to modify the standard to remain current with similar international standards
- The benefit to FM Global clients and the industry as a whole
- Is the required technical skill set available to research and write the Approval Standard
- Availability of resources, including staff, equipment and facilities to perform the required research and testing
- The need for jurisdictional acceptance of the standard

“Our Approval Standards are living documents that require regular updates and

and certification. “For both revised and new standards, we rely on input from internal as well as outside sources. It’s really a partnership between FM Approvals and all of those who have a stake in the standards development process.”

Ferron noted that some clients and others in the industry occasionally ask why some standards take longer than others to develop or revise. “We follow a proven standards development process that includes the request for a standard, proposal review by FM Approvals and FM Global management, research support if necessary, and a review cycle that includes outside reviewers such as manufacturers, interested parties and other user groups. How long a standard takes to develop or revise really depends on complexity. If extensive research is required due to the complexity of the product or the variations of the risk to be protected, that can extend the development process.”

For a current example of the FM Approvals standards development process, turn to the story in this issue on the development of Approval Standard 1035, *Nitrogen Generators*. This industry-first standard for nitrogen generators for corrosion mitigation is undergoing final internal review (see review stages below) and will be released in the coming months. The need for this new standard was first identified by FM Global field engineers who had begun to encounter these devices at client locations. Because the technology was new to the market and to FM Approvals, FM Global research was asked to evaluate nitrogen generators as part of its ongoing strategic research program on corrosion mitigation. Due to the complexity of the corrosion problem and the various issues and possible corrective actions, the research program took nearly two years to

APPROVAL STANDARDS ARE REVISED FOR MANY REASONS, INCLUDING EXPANSION OF SCOPE, TO ADD/MODIFY/REPLACE OUTDATED PERFORMANCE TESTS, AND TO ADD NEW LEVELS OF CERTIFICATION TO REFLECT MANUFACTURER OR MARKET NEEDS.

manufacturers. The request for a new (or revised) standard is sent to the appropriate technical area manager for building materials, electrical systems or fire protection. The

review in order to remain current and result in only robust products meeting the criteria,” notes Rich Ferron, FM Approvals operations vice president and manager of testing

ONCE AUTHORIZED FOR DEVELOPMENT, THE STANDARD IS ASSIGNED TO A TEAM CONSISTING OF AN FM APPROVALS ENGINEER (THE PRIMARY AUTHOR OF THE STANDARD), AN FM GLOBAL RESEARCH SCIENTIST OR ENGINEER, AND A MEMBER OF FM GLOBAL ENGINEERING STANDARDS.

complete a thorough evaluation, making the entire standard development process about three years.

At the other end of the standards development time frame is Approval Standard 7745, *Hydrocarbon Leak Detectors*, which took just four months to revise. First published in 2009 as a diesel fuel detector standard, the intent of the original standard was to help protect properties that stored diesel fuel to power backup generators and other equipment. However, the wide range of hydrocarbon-based liquids found in the field prompted the demand for a broader standard. Approval Standard 7745 was revised to encompass any hydrocarbon liquid such as gasoline, diesel, hydraulic fluid, heating oil and jet fuel. The standard was rereleased in October 2012 after a rapid four-month revision cycle. Manufacturers of Approved detectors were given until March 31, 2014, to comply with the new requirements.

“Each Approval Standard is unique and the program to develop or revise that standard must be custom-tailored to meet specific goals,” Ferron observes. “We work hard to

address the needs of all those who have a stake in a particular standard; however, our ultimate goal is to evaluate and certify the best solutions for property loss protection. In some cases, that may mean incorporating national or international standards, particularly in the case of the many electrical standards.”

Jim Marquedant, manager of FM Approvals’ electrical systems group, concurs with Ferron’s assessment. “Our situation in the electrical systems group is a bit different from building materials and fire protection in that we are not typically as involved with FM Global research or engineering standards in the development of our standards. We are, however, very active in the development of national and international consensus standards through our involvement with organizations such as ANSI (American National Standards Institute), the IEC (International Electrotechnical Commission) and others. When it comes to FM Approved electrical products, particularly those intended for hazardous locations, we take a truly global view and incorporate the best standards from around the world when it makes sense.”

Viking’s Bosma has worked with FM Approvals in reviewing draft standards and through many product Approval programs. He believes that FM Approvals is addressing the full circle of needs in the property protection market. “FM Approvals and FM Global are at the front edge of the demand for new loss protection solutions,” he observes. “They are able to bring so many capabilities to bear—research, standards, engineering—and can look at problems not only from a scientific perspective, but also how will a standard fit or mesh with other standards or building codes. When it comes time to review standards, we are happy to be part of that process. If I see something in a standard that I believe just would not work, they certainly listen to me. I know that they carefully consider the concerns that are voiced.”

Ultimately, all FM Approvals standards must adhere to, and support, the organization’s mission to:

- objectively test property loss prevention products and services and certify those that meet rigorous loss prevention standards; and
- encourage the development and use of FM Approved products and services that improve and advance property loss prevention practices.

Once a proposed Approval Standard is authorized to be created or revised by the appropriate FM Approvals manager, it must also be authorized by the senior management, including FM Approvals general manager Paris Stavriandis, FM Global research manager Lou Gritzso, and FM Global engineering standards manager Gary Keith. This high-level authorization is needed to provide the necessary staff, facilities and budget required to fully develop the new standard.

Once authorized for development, the standard is assigned to a team consisting of an FM Approvals engineer (the primary author of the standard), an FM Global research scientist or engineer, and a member of FM Global engineering standards. The three-person development team meets on a regular basis to review progress and resolve any challenges. Once research, if needed, is completed, the standard is drafted and moves through a series of reviews that include:

- **First Review Draft (FRD)**—the document used for the 30-day internal review within FM Approvals and FM Global.

procedures, but also includes review of any final formatting and changes resulting from external comments.

- **Final Draft for Vote (FDV)**—the document that has gone through final review and has no outstanding comments. This review and authorization is undertaken by the senior management of FM Approvals, FM Global research and FM Global engineering standards.

All external comments are entered into a spreadsheet and addressed by the three-person standards team as part of the external review cycle. The team seeks input

must be very robust in order to deliver the loss prevention products required by our end users. We're more stringent than most other testing agencies, but that's why the FM APPROVED certification mark is the mark of choice in the property protection market."

At Tyco Fire Protection Products, the FM APPROVED mark can be found on many products. The firm is a leader in fire protection, detection and mechanical life safety solutions for commercial, industrial, institutional, governmental and residential customers.

"When you have the FM APPROVED certification mark on your products, you gain instant recognition in the fire protection and industrial markets," notes James Golinveaux, who is a Tyco senior fellow and has worked with FM Approvals for more than 25 years. He is also a member of the FM Approvals North American Advisory Council. "The FM APPROVED mark is recognized as a mark of quality in many countries. The fact that FM Approvals works so closely with FM Global means they don't have to guess at an answer to your question. They have the resources they need to give you a definitive response that's based on scientific research and engineering. Property loss prevention is their sole focus and there's a lot at stake—they have to get it right. That level of conviction and authority is reflected in their standards." ■

AT TYCO FIRE PROTECTION PRODUCTS, THE FM APPROVED MARK CAN BE FOUND ON MANY PRODUCTS. THE FIRM IS A LEADER IN FIRE PROTECTION, DETECTION AND MECHANICAL LIFE SAFETY SOLUTIONS FOR COMMERCIAL, INDUSTRIAL, INSTITUTIONAL, GOVERNMENTAL AND RESIDENTIAL CUSTOMERS.

- **External Review Document (ERD)**—the document used for external reviewers comprised of manufacturers, other interested parties and other user groups. This step typically takes about 30 days.
- **Final Review (FR) document**—the document that is submitted for final internal review, which includes all of the associated test procedures. This review is primarily focused on the test

from technical experts and management as needed to resolve/incorporate external feedback. Not all feedback is integrated with the standard.

"Our standards are not consensus standards in the traditional sense," explains Cindy Frank, manager of FM Approvals materials group. "We incorporate consensus standards when it makes sense and work hard to gather and evaluate feedback from many different sectors. However, ultimately, our standards

TRADE SHOW CALENDAR

Association of State Floodplain Managers

Atlanta, Ga.

Hyatt Regency Atlanta

May 31 – June 5, 2015

The Association of State Floodplain Managers is an organization of professionals involved in floodplain management, flood hazard mitigation, the U.S. National Flood Insurance Program and flood preparedness, warning and recovery.

Interschutz

Hannover, Germany

June 8 – 13, 2015

International Exhibition for Rescue, Fire Prevention, Disaster Relief, Safety and Security. Originally conceived as a trade show for the fire services, Interschutz has grown to become the world's leading exhibition for fire prevention, disaster relief, rescue and safety and security. Commercial enterprises unveil their latest innovations at the show, while fire and rescue service professionals show the latest equipment and systems in action on the outdoor demonstration ground.

IFSEC International

London, U.K.

ExCel London

June 16 – 18, 2015

IFSEC International is a leading event that caters to the entire security buying chain. Attracting manufacturers, distributors, consultants, specifiers, installers, integrators and end users, IFSEC International brings the whole community together under one roof, providing education, networking and the latest products, and is part of the Protection & Management Series, made up of FIREX International, Facilities Show, Safety & Health Expo and Service Management Expo.

National Fire Protection Association

Chicago, Ill.

McCormick Place

June 22 – 25, 2015

National Fire Protection Association (NFPA) is an international nonprofit established in 1896. Its mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training and education. The world's leading advocate of fire prevention and an authoritative source on public safety, NFPA develops, publishes and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. NFPA membership totals more than 70,000 individuals around the world.

Fire India

New Delhi, India

Pragati Maidan

October 5 – 7, 2015

Fire India is the International Exhibition and Conference on Fire Fighting and Fire Protection. This event is the meeting point for the firefighting and fire protection systems industry to showcase their latest technologies and solutions for a wide range of appliances and needs.

APPROVAL STANDARDS AND COMMITTEE PARTICIPATION

Committees

Electrical Systems Committees

STP 60079

Bill Lawrence and Steve Henney attended the fall 2014 STP60079 (Hazardous Locations) meetings held in Pittsburgh, Pa., at the end of September 2014.

A series of 17 meetings were held over the one-week period, culminating in the STP60079 Plenary meeting, where all the task group leaders presented status reports and the future direction of the STP was established. The next STP60079 meetings will be in March 2015 in Savannah, Ga.

IECTC31

Bill Lawrence, Dave Baer, Patrick Byrne and Nick Ludlam attended the IEC TC31 meetings held in Northbrook, Ill. A series of 23 meetings were held over the two-week period, culminating in the Plenary meetings for SC31G, SC31J, SC31M and TC31. The next group of TC31 meetings will be at the end of March 2015, hosted in Toronto.

IECEX

Nick Ludlam and Jim Marquedant attended the 2014 IECEX meetings in late August. The meetings, hosted by DEKRA, were held at the Worldhotel Bel Air in The Hague, Netherlands, and attended by Ex experts from around the globe. The weeklong series of meetings began with the Ex Test and Assessment Group (ExTAG) meetings on Monday and Tuesday, which dealt with questions of practice relating to assessment and testing under the IECEX System. On Wednesday there was a workshop and debate on ATEX and IECEX, sponsored by the United Nations Economic Commission for Europe (UNECE). The final two days were the Ex Management Committee (ExMC) meetings which discussed issues and formed deci-

sions related to the operation of the IECEX System as a whole.

IECRE

Jim Marquedant attended the 2014 IECRE Management Committee meetings in mid-September. The meetings, hosted by the United States National Committee (USNC-IECRE), were held at the University of Colorado-Boulder, and attended by renewable energy experts from around the globe. This was the first meeting of the IEC's newest certification scheme focused on certification to standards relating to equipment for use in renewable energy applications. Much of the discussion during the course of the meetings centered on the election of officers, the establishment of the three Operational Management Committees (OMCs), Wind, Solar and Marine, and the basic rules of operation for the scheme.

NFPA 18

This committee is responsible for three standards; NFPA 18 (Wetting Agents), NFPA 18A (Water Additives for Fire Control and Vapor Mitigation) and NFPA 1150 (Foam Chemicals for Fires in Class A Fuels). All three standards are on the fall 2016 revision cycle. Recently, the NFPA Research Foundation released its report on the second phase of a project to develop test methodology relevant to NFPA 18A. This report will be distributed to committee members for possible incorporation of these methods into the standard. FM Approvals is represented on this committee by Armand Brandao (chairman).

NFPA 72

NFPA 72 serves as the basis for many FM Approval Standards related to detection (smoke, heat, radiant energy and visual) as well as the control, extinguishing and notification systems they report to.

The Second Draft meeting (previously called ROP or Review of Proposals), was held June 23 – 27 in La Jolla, Calif. This Second Draft review considers public comments made since the First Draft was released in 2013.

The Protected Premises (SIG-PRO), Fundamentals (SIG-FUN), Supervising Station (SIG-SSS) and Initiating Devices (SIG-IDS) technical committees for the National Fire Alarm and Signaling Code, NFPA 72, completed voting on the Second Draft revisions, i.e., committee actions taken on public comments related to First Draft actions, for the 2016 edition. All ballot items received the necessary affirmative votes to pass ballot. FM Approvals is represented on these technical committees by Paul Crowley, Walt Kessler, Bob Elliott and David Waite, respectively.

NFPA 12/12A/2001

The NFPA 12 and 12A Second Draft revisions were voted on by the Technical Committee, with all items passing ballot; there are no significant changes to these standards to report. The NFPA 2001 Second Draft revisions were voted on by the technical committee, with one item of note failing to get a two-thirds majority in the balloting. The item that failed ballot was to add the statement "Effects of acoustical noise in an occupancy containing noise-sensitive equipment shall be considered," as Section 1.4.2.5, along with some explanatory Annex material. FM Approvals is represented on this technical committee by Ray Stacy.

ISO TC21/SC3/WG24

The 36th meeting of TC 21/SC3 was held in Sydney, Australia, on September 24. Many topics were addressed including, but not limited to: the release of four new standards, an effort to better align the ISO 8201 evac-

APPROVAL STANDARDS AND COMMITTEE PARTICIPATION

uation signal with ANSI, the reports from five active work groups: 7240-2, Control and Indicating Equipment, -4, Power Supply Equipment, -8, CO Fire Detectors Using an Electro-Chemical cell in combination with a heat sensor, -20 Aspirating Smoke Detectors and -29 Video Fire Detectors. The Video Fire Detector Standard has been released by WG24 as a Draft International Standard (DIS).

The next meeting is scheduled for Japan in 2015, combined with ISO/TC Plenary. Bob Elliott, a member of the U.S. delegation, is in WG24 and represents FM Approvals.

ISO/TC 21/SC8

The annual subcommittee meeting was held in Sydney, Australia, in September. Much of the meeting was dedicated to presentations and recommendations from each of the three working groups responsible for the maintenance of different parts of the ISO 14520 series of standards. The subcommittee chose to move ISO/CD 14520 and all of the chemical agent standards to Draft International Standard (DIS) stage and to send the inert gas standards directly to publication without the need for FDIS voting. In light of all the progress of the working groups, the need for a meeting in 2015 was questioned, and will be reviewed by the chairman as the time draws nearer. FM Approvals is represented on this subcommittee by Ray Stacy.

ANSI/UL 217/268

Bob Elliott has continued his participation in a Standards Technical Panel (STP) for ANSI/UL 217/268 Smoke Alarms & Smoke Detectors. The STP continued to debate the merits and concerns associated with the addition of new flaming and smoldering polyurethane (PU) foam fire tests. The rationale to include new testing is based on the desire

to expand the detector's capability to detect the smoke from modern furniture materials. Those opposing the new PU fire tests cite an increased false alarm rate that would have a negative effect on the use of smoke detection and life safety. The decision to include the new polyurethane fire tests was put to the vote by the STP, and was not accepted.

ANSI/UL 864

The 23 new proposals to the ninth edition, which were submitted to better align the product standard with changes incorporated into NFPA 72 (2010 and 2013 editions), have passed Standards Technical Panel (STP) voting with an effective date of October 2018. Contrary to previous reports that the edition number would not change, the new version of the standard has indeed been published as the tenth edition.

Fire Protection Committees IWMA

Jonathan Carpenter, advanced engineer, participated in the 2014 International Water Mist Association (IWMA) conference in Istanbul, Turkey, on October 22 and 23. Additionally Carpenter attended the annual IWMA board of directors meeting as well as the annual IWMA member meeting. During the conference a presentation was given on "Planned Updates to FM Approval Standard Class 5560, Water Mist Systems, for 2015 Revision," which included adding scaling methodology for total flooring applications and new fire test appendices for protection of data processing equipment rooms/halls.

UL 162

Bob Cordell, advanced engineer, participated in the UL 162 Standards Technical Panel (STP 162). The most recent topic of work was the inclusion of a drop test for IBC's in the UL 162 Standard. This proposal did not get the support to advance.

ISO 7076-5

Bob Cordell, advanced engineer, continued participation within the ISO 7076-5 Foam fire extinguishing systems (Part 6: Vehicle Mounted Compressed Air Foam Systems) committee working group in the drafting of this section of ISO 7076 as part of the TC21/SC6 USTAG.

ASFPM

Brian MacDonald, technical team manager, Kevin Black, engineer, and Charlie Mahall, senior engineer, staffed an FM Approvals booth at the ASFPM's annual conference in Seattle, Wash., on June 2 – 4. During the conference, FM Approvals hosted a 90-minute showcase session highlighting the National Flood Barrier Testing & Certification Program. Brian MacDonald moderated the session and presenters included Drew Whitehair (ASFPM), Randy Behm (USACE) and Kevin Black (FM Approvals).

Brian MacDonald, technical team manager, and Charlie Mahall, senior engineer, attended the ASFPM's National Flood Mitigation & Flood Proofing Workshop in Broomfield, Colo., on October 27 – 30. During this event a 90-minute workshop regarding the National Flood Barrier Testing & Certification Program was held. Brian MacDonald presented along with Alan Lull-off (ASFPM) and Randy Behm (USACE).

FM/UL/NFSA

Claude Bosio, technical team manager, participated in the FM/UL/NFSA meeting in July. Important discussion topics included CPVC compatibility testing and sensitivity testing of older sprinklers. Round robin CPVC testing continues at five different labs, including FM Approvals.

APPROVAL STANDARDS AND COMMITTEE PARTICIPATION

ISO TC21 SC5 USTAG

Claude Bosio, technical team manager, participated in the ISO TC21 SC5 USTAG standards development committee meeting in July and the ISO TC21 SC5 International meeting in September. The current FM Approvals method for EC sprinkler distribution was included in the draft of the ISO sprinkler standard and was unanimously accepted with minor clarifications. The FM Approvals test will be incorporated in a future combined ISO sprinkler standard. The combined standard, a document collating the provisions of four ISO sprinkler standards, was also reviewed. The attending delegations unanimously supported the consolidated sprinkler standard concept and will continue to develop the active component documents (Part 7 and Part 13) during the consolidation, so that these documents can be published without delay. A strategy was developed to simplify review of the combined document, and test sections were reviewed and categorized, with working groups tasked with development of the different sections to advance the effort.

NEMA SC10

Aaron Butler, advanced engineer, attended the NEMA SC10 meeting in Denver, Colo., in September. Topics related to the fire pump controller industry included proposed NFPA20 changes, remote connectivity and communication with the pump room (MOD-BUS), the maintenance of installed equipment and the handling and identification of damaged equipment in the field.

AWWA

Stan Ziobro, technical team manager, attended the AWWA Annual Conference in Boston, Mass., on June 10 – 11, participating in Standards Committee Meetings for Fire Hydrants and Polyolefin Pressure Pipe

and Fittings. The release of revised AWWA Standards C502 (Dry Barrel Fire Hydrants) and C503 (Wet Barrel Fire Hydrants) were approved by the board of directors with an effective date of August 2014.

Building Materials Committees ASTM D08

Len D'Angelo attended the June 2014 ASTM Committee D08 on Roofing. Len is the chair of a task group that is developing a standard on impact resistance to roof covers. He also chairs a task group that is reaffirming a current ASTM Standard titled Field Testing Uplift Resistance of Fully Adhered Membrane Roofing Systems.

Council of Canadian Fire Marshals and Fire Commissioners—Len D'Angelo and Cindy Frank attended a meeting to inform the commissioners on updates to FM Approval Standards that are currently recognized as Canadian ORDs (Other Recognized Documents) and to request reaffirmation of these ORDs.

Electrical Systems Standards

(New) Approval Standard 6340—Toxic Gas and Oxygen Depletion Detectors, June 2014.

This new Standard describes the performance requirements for toxic and oxygen depletion gas detectors whose purpose is for the detection, measurement and notification of toxic gas in air- or oxygen-deficient atmospheres. Toxic gas detectors must meet the performance requirements for each toxic gas that the manufacturer claims can be detected.

Fire Protection Standards

(Updated) Approval Standard 2111, 2131 for Fire Hose Assemblies and Fire Hose Couplings was revised to combine the

requirements of fire hose and fire hose couplings into one standard. Fire hoses must now be FM Approved as fire hose assemblies complete with attached couplings. The couplings must be FM Approved or at a minimum must be evaluated to the coupling requirements in the standard. Also, several enhancements were made including the requirement of a controlled hose specification document as well as the addition of several performance test requirements for both fire hose assemblies and fire hose couplings.

Building Materials Standards

(New) Approval Standard ANSI/ FM 4478 —Rigid Photovoltaic Modules, October 2014.

This standard has been approved as an American National Standard (ANS). The standard covers rigid photovoltaic modules that are installed with an FM Approved roof assembly. This standard evaluates rigid photovoltaic modules for performance in fire from above the structural deck, simulated wind uplift, susceptibility from hailstorm damage and seismic performance requirements.

(New) Approval Standard ANSI/ FM 4476 —Flexible Photovoltaic Modules, October 2014.

This standard has been approved as an American National Standard (ANS). This standard covers flexible photovoltaic modules used with an FM Approved roof assembly and applies to flexible photovoltaic modules when adhered to, or mechanically fastened through, an FM Approved single-ply, polymer-modified bitumen sheet, built-up roof, liquid applied or metal roof cover assembly. This standard evaluates flexible photovoltaic modules for performance in fire from above the structural deck, simulated wind uplift, hailstorm damage and heat aging effects.

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