INDUSTRIAL FIRE JOURNAL

FOR PROFESSIONALS PROTECTING LIVES, ASSETS AND INFRASTRUCTURE WORLDWIDE

Second quarter 2016 issue no.104

www.hemmingfire.com

Smell the rubber

Europe's largest tyre graveyard burns down

Toxic culture

Report damns management of contaminated fire training college in Australia

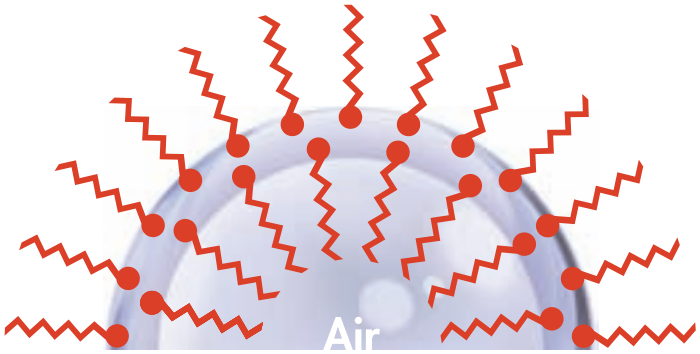
Fragile bytes

Fire protection for ICT infrastructure

FIREX International

JOIFF

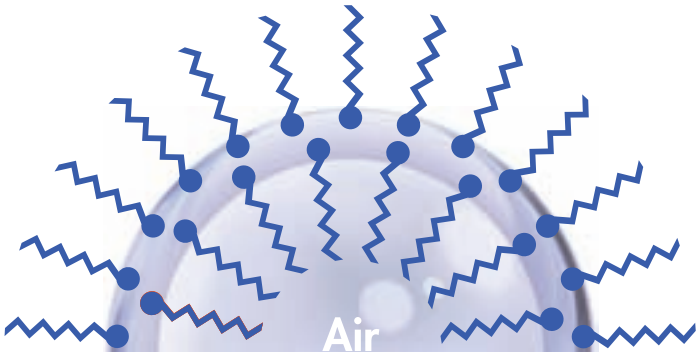
Fatal Attraction



Fluorine-free foam bubble

F3 Foam **attracts** hydrocarbon fuels

Hydrocarbon surfactant
(Hydrocarbon tails are fuel-loving)



Fluorinated foam bubble

AFFF Foam **repels** hydrocarbon fuels

Fluorosurfactant
(Fluorocarbon tails are fuel-hating)

FORCEFUL F3 APPLICATION:

- Foam attracts fuel
- Foam becomes flammable
- Foam has reduced performance
- Foam use is increased

Need proof? See F3 foams on fire:

FORCEFUL AFFF APPLICATION:

- Foam repels fuel
- Foam is NOT flammable
- Foam has superior performance
- Foam use is reduced

One year ahead of the US EPA 2010 / 2015 PFOA Stewardship Program deadline, Dynax only manufactures high purity C6 Fluorosurfactants, Foam Stabilizers and optimized High Performance Blends meeting the toughest fire performance specifications (including Mil F) at traditional / reduced Fluorine Levels.

DYNAX CORPORATION
PO Box 285, Pound Ridge, NY 10576 USA
T 914 764 0202 techinfo@dynaxcorp.com
F 914 764 0553 www.dynaxcorp.com

dynax FLUOROCHEMICALS

Published Quarterly by

HEMMING MEDIA

A division of Hemming Group Ltd,
32, Vauxhall Bridge Road,
London, SW1V 2SS, England
Tel: + 44 (0) 20 7973 6694
E-mail: m.spillane@hgluk.com
Website: www.hemmingfire.com

Editor
Jose Maria Sanchez de Muniain
j.sanchez@hgluk.com
+44 (0)1935 37 4011

Deputy Editor
Ann-Marie Knegt
am.knegt@hgluk.com
+44 (0)1935 37 4001

International Sales Manager
Mike Coward
m.coward@hgluk.com
+44 (0)1935 37 4003

Group Sales Manager
Kelly Francis
k.francis@hgluk.com
+44 (0)207 973 4666

Production – Tim Malone
t.malone@hgluk.com
+44 (0)1935 37 4014

Managing Director
Graham Bond

TAKE OUT A SUBSCRIPTION AT:
http://www.hemmingfire.com/subscription.php

Annual Subscription:
Europe £40.00 or €60 (incl. p&p); rest of world £50.00 or US$80.00 (incl. p&p).
Send all subscriptions, changes of address and correspondence to address above.

Industrial Fire Journal, ISSN 0964 - 9719 (USPS 021-884), is published quarterly March, May, September, December, by Hemming Information Services, a division of Hemming Group Ltd, 8 The Old Yarn Mills, Sherborne, Dorset DT9 3RQ. UK. The US annual subscription price is $80. Airfreight and mailing in the USA by agent named Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Periodicals postage paid at Jamaica NY 11431. US Postmaster: Send address changes to Industrial Fire Journal, Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA Subscription records are maintained at Hemming Information Services, a division of Hemming Group Ltd, 32 Vauxhall Bridge Road, London, SW1V 2SS, UK. Air Business Ltd is acting as our mailing agent.

Design & Artwork by
Graphic Examples, Sherborne.

Printed in England by
Latimer Trend & Co Ltd, Plymouth, UK.

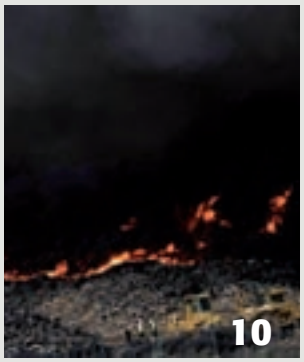
DISCLAIMER: The views and opinions expressed in INDUSTRIAL FIRE JOURNAL are not necessarily those of Hemming Information Services. IFJ is in no way responsible or legally liable for any statements, picture captions, reports or technical anomalies made by authors in their commissioned articles.

© 2016 All Rights Reserved
Industrial Fire Journal (ISSN 0964-9719)

IWMA International Water Mist Association

JOIFF

CONTENTS



4 News, events & comment

10 Industrial protection and response
Exclusive report from Europe's biggest tyre fire; waste industry safety group searches for fire science.

20 Pumps and hoses
Practical considerations for LDH; contract wins on the rise for unique proportioner.

24 ARFF
Report from the Airport Fire Officers Association conference – part two.

26 Training and education
High-risk safety management apprentices begin placement; Norwegian college launches master's degree; construction begins for US$60 million nuclear training facility.

28 Protective clothing
Cancer link puts the spotlight on cleaning and maintenance.

30 Foam
Fiskville firefighters entitled to redress; how milspec foams provide operational and environmental performance; success for Angus-CFB RM foam school; LASTFIRE opens membership; latest on C6 and fluorine-free foams.

38 Data centres
The University of Cambridge's new US$30 million computing centre; technology options for data centre protection.

42 Detection
Tackling unwanted and false alarms; Patol to unveil new ASD technology during Firex; detectors launched with intruder detection.

48 Suppression/extinguishing
IWMA embarks on research project; Marioff introduces an electric pump with a twist; entrepreneur seeks support for water mist extinguishers; solenoid valve for gaseous/clean-agent extinguishing systems makes NFPA debut.

Front cover photo: Denis Doyle, Getty.

INDUSTRIAL FIRE JOURNAL FIRE & RESCUE FIRETRADE EUROPE FIRETRADE ASIA & MIDDLE EAST

Comment

As a result of some high-profile incidents – the latest being the devastating tyre graveyard fire in Spain featured on our front cover – the waste and recycling industry together with a number of organisations is turning to fire science to try and get some definitive answers to a problem that is costing the taxpayer big bucks in fire response. The results of the research are not expected until the end of the year but in this issue we glimpse some of the rather unexpected surprises that the testing has thrown up so far, such as the fact that fire on waste material doesn't seem to burrow downwards and that it is actually rather difficult to set fire to waste materials.

It's not just response to real incidents that is wasting money, however. False alarms are estimated to cost around US$1.5 billion a year in the UK alone, largely as a result of business disruption, so it is little wonder then that this subject is top of the agenda for fire sector professionals. Detector manufacturer Apollo should be praised for making a proactive attempt to tackle the problem partly through clever product design, partly through calls for international standardisation.

In this issue we also highlight the human and environmental cost of the improper handling of materials used in fire training. The report by a Victorian parliamentary committee into the Country Fire Authority's Fiskville Training College is a tragic reminder of what can go wrong when senior management ignores its contamination problem and regional agency oversight is ineffectual.

Jose Maria Sanchez de Muniain, Editor

HAINES TAKES OVER IN THE US

The US distribution of Hytrans' mobile water supply systems has been taken over by Haines Fire & Risk Consulting.

Under the new arrangement HFRC heads up the distribution of floating submersible pumps and hose laying systems throughout the USA as of 1 April.

According to a press notice, Task Force Tips is stepping back as the main distributor to focus on the growth and expansion of its product lines and the recent acquisition of rescue tool manufacturer Amkus. TFT will continue to work closely with Hytrans and HFRC to ensure a smooth transition.

HFRC is based in Southampton, New Jersey and has been working with Hytrans and TFT since the end of 2014.

Culture shift required

The US Chemical Safety Board has warned that offshore regulatory changes made following the Deepwater Horizon have not done enough to place the onus on industry to reduce risk, nor do they sufficiently empower the regulator to proactively oversee industry's efforts to prevent another similar disaster.

The CSB's damning report found that a culture of minimal regulatory compliance continued to exist in the Gulf of Mexico and that risk reduction continued to prove elusive.

The Deepwater Horizon incident took place April 20, 2010 and killed 11 workers, causing the biggest oil spill in the history of offshore drilling. The Macondo blowout, which occurred 50 miles off the Louisiana coast under the direction of Transocean and BP, affected the oil and gas industry worldwide.

Following the 2010 incident the Department of Interior reorganised how it regulated offshore drilling and production. However, CSB investigators have found that many of the risk management policies Transocean and BP had in place before the disaster would have satisfied the new post-Macondo federal requirements. An audit by the Bureau of Ocean Energy Management has also found that some companies are still placing more emphasis on documenting regulatory compliance than actually managing risks.

'In the complex offshore drilling industry, the key to ensuring safety is not just teaching people procedures, but how to adapt and be flexible during pressure-packed emergencies,' CSB investigator MacKenzie said. 'Industry's focus must shift from correcting individual ''errors'' identified post-incident to a systematic approach for managing human factors.'

Eleven recommendations for safety change have been proposed, including a more robust risk management regulatory framework that includes regulatory input from other offshore regions worldwide.

HOCHIKI LAYS OUT THE CABLE

A new range of linear heat detection has been launched by Hochiki Europe for heat detection over long distances and challenging environments. The LHD system is designed to provide early detection of fire and overheating in circumstances where other forms of detection would not be viable.

The conventional linear heat detection cable (LHDC) is able to identify the zones in a fire condition, while the addressable LHDC version can isolate the heat to within one metre.

The LHDC system can handle up to two kilometres of cabling and is ideally suited for applications in road and rail tunnels, conveyor systems, indoor car parks and cable trays in building interiors. It can also be used in harsh environments such as recycling and food processing plants.

UNDERSTANDING FIRES IN SPACE

NASA is undertaking a series of experiments to understand how fire spreads and different materials burn in a microgravity environment. The Saffire – Spacecraft Fire Experiment – was designed and built at NASA's Glenn Research Centre and comprises a number of remotely operated, 1 x 1.5m modules. These will be carried into space by Cygnus automated cargo spacecraft over the coming months.

Each module is split into two areas, one for the avionics bay and data processing equipment and the other for the hardware required to automatically ignite a large flame and burn the fabrics and materials inside.

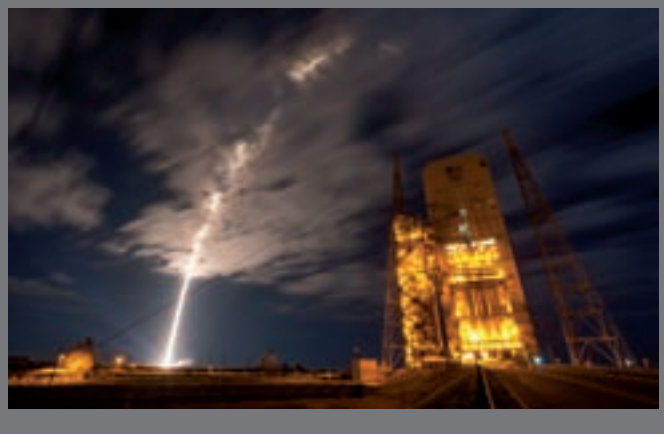
The experiments will take place once each cargo supply mission has been completed and the Cygnus has undocked from the International Space Station.

The fire experiments will then run automatically within the Saffire module on board the cargo vehicle, and the results transmitted back to Earth. Once complete, the Cygnus vehicle and its singed cargo will burn up on re-entry into Earth's atmosphere.

Later in the summer another Saffire module will ignite a mix of nine different samples of materials used routinely on the space station including flame retardant fabrics used for astronaut clothing, station Plexiglas window samples and structures used for storage containers and silicone composites.

Additional Saffire missions are in development to focus further on flame spread, smoke propagation, detection and suppression of fire.

'Saffire is all about gaining a better understanding of how fire behaves in space so NASA can develop better materials, technologies and procedures to reduce crew risk and increase space flight safety,' said Gary Ruff, Saffire project manager.



Xtralis acquired by Honeywell

Manufacturer of aspirating smoke detection and video analytics software Xtralis has been acquired by Honeywell Analytics for US$480 million.

Xtralis's smoke detection solutions provide early warning for a wide variety of environments including data centres, historical buildings, airports, industrial sites and manufacturing facilities.

Xtralis, which is headquartered in Dublin, Ireland has now become part of Honeywell Security and Fire, a business unit of Honeywell Automation and Control Solutions.

Honeywell Analytics recently paid around US$123 million for RSI Video Technologies – known by the Videofied brand – which supplies intrusion detection systems for commercial and residential security applications.

CSA opens office in Australia

CSA Ocean Sciences has announced it is opening an office in Perth, Australia to integrate its international network of marine environmental consulting services and risk management expertise. The office will offer marine environmental services for spill response; environmental data and geospatial services; and marine sampling capabilities.

CSA has offices in the US, Cyprus, Qatar, Trinidad, Brazil, Singapore, and Australia.

GOING THERMAL WITH AERIAL

A thermal imaging camera for aerial ladders has been launched by Flir Systems.

The new Flir KF6 provides firefighters with a thermal view from the sky to better observe and plan attacks on large buildings, warehouses and other structural fires.

The fixed, aerial-mounted thermal camera enables operators to see through smoke to identify the seat of the fire and other hot spots for accurate targeting. With a crisp 640 x 480 pixels resolution thermal image and 69° field of view, the KF6 uses Flir's own FSX technology to provide thermal detail even at extreme temperatures.

The KF6 meets MIL-STD-810G specifications and is not affected by smoke or water. It is simple to install on any ladder and streams composite video to aerial pedestals or in-vehicle displays.

The company has also announced that it will begin distributing bundled packages of the DJI Zenmuse XT stabilised thermal camera – powered by FLIR – with the DJI Inspire 1 drone in ready-to-fly bundles.

Two configurations of the Flir Aerial First Responder Kit will be distributed – basic or advanced – to bring drone-powered thermal imaging to firefighters, emergency response teams and search and rescue operations.

Jeff Frank, Flir's senior vice president for product strategy, said: 'We are pleased that our strategic collaboration with DJI enables us to deliver complete drone solutions that aid first responders in saving lives. With our heritage of providing products to first responders, we're in a perfect position to bring these technologies to those who dedicate their lives to keeping our communities safe.'

SEE THE LIGHT

Peli has launched an Atex Cat 1 (zone 0) rechargeable torch. The 3765Z0 LED right-angle torch provides a powerful 194 lumens of illumination in high mode and 92 lumens in low mode and includes a flashing mode. It features a built-in battery life indicator as well as a tethered battery door; a heavy-duty rear clip; and a fast charger approved by the NFPA.

ANOTHER DEADLY BLAST AT PEMEX

Thirty-two people died on 20 April after a leak caused a deadly petrochemical plant blast at Pemex's Petroquimica Mexicana de Vinilo facility in Coatzacoalcos in the Gulf state of Veracruz, Mexico.

PMV, a vinyl petrochemical plant, is a joint venture between Pemex's petrochemical unit and Mexican plastic pipe maker Mexichem.

The fire at the Chlorinate-3 plant resulted in the evacuation of around 2,000 local residents and was attended by municipal fire brigades as well as Pemex industrial fire responders.

Mexico's Civil Defence Secretariat said that the fire following the explosion, which sent a large dark plume of smoke soaring into the sky, was producing toxic gases and particles containing glass fibre and chloroethane. During the incident local emergency responders reported a strong smell of chlorine that affected eyes and throat.

The director general of Petróleos Mexicanos, José Antonio González Anaya, visited the plant in the evening of the day of the explosion and subsequently met with some of the injured workers in hospital.

The cause of the explosion is still unknown, but safety issues are not new to the plant or to Pemex's other sites. In February a worker at PMV died following severe burns in the incinerator area.

Thirty-seven people died in 2013 as a result of a blast at the Pemex Mexico City headquarters, Torre Ejecutiva Pemex, when a build-up of gas ignited in the skyscraper's basement. In addition 26 people died in 2012 in a fire at a Pemex natural gas facility near the city of Reynosa in northern Mexico.

SAFER TRAINS

A unique fire retardant coating for train car exteriors has met EN 455545-2 (*Fire test to railway components*) hazard level 3.

Ceramifying polymeric technology pioneered by Finnish company Finnester Coatings was recently tested by VTT Technology against temperatures as high as 1,000 °C. When exposed to fire, Hybridred forms a stable ceramic shield, unlike carbon foam formed by intumescent systems.

Hybridred combines organic and inorganic materials and is designed for steel and aluminium substrates. 'Hybridred has the structural integrity to prolong ignition times and curtail smoke generation, which reduce the risk of fire in train or subway tunnels. This ceramifying polymeric material also protects carriages from corrosion, UV, ice, abrasion and graffiti. Smooth and gloss RAL finishes are easily applied and maintained,' explained Ari Hokkanen, president of Finnester Coatings.

European expansion for Ballyclare

Protective clothing specialist Ballyclare has created an operating company in north Germany to expand into the European market. UK managing director Carlton Greener commented: 'The creation of the new company marks the first appearance of the Ballyclare name in northern and central Europe and it's made all the more appealing by the fact that we have recruited prominent European workwear specialists to lead the company. Between them, Silke Hendricks, Hansjürgen Hübner and Karin Klein Hesselink have a wealth of experience in the protective clothing industry.'

Although Ballyclare will initially concentrate on fire protection garments, it will also be providing a full range of clothing for other sectors such as automotive, police, ambulance, rail and power.

Seventh generation Angus made welcome

Angus Fire's managing director Paul Williams welcomed special VIP visitors to his office in High Bentham, North Yorkshire, England in March. Jestyn Angus is the last member of the Angus family to have worked at the company which was started by his family over 220 years ago.

The foundations of Angus Fire were laid by William Angus in 1790 and the business remained in family hands until 1968, with company passing through the hands of several large corporations before returning to private ownership as part of a management team buy-out in 2013.

Mr and Mrs Angus were given a VIP site tour across the manufacturing areas of the hose, foam and engineering products, which triggered many memories of his time with the company.

Jestyn Angus, who was the seventh generation to have worked at the company, shared some unique Angus family history with the team and filled in some company history gaps. 'I am so pleased that the Angus history and past track record still count for so much in the successful progress and future of Angus Fire,' said Angus.

Coat for steel

A new waterborne thin-film intumescent coatings with minimal environmental impact that can deliver up to 120 minutes of cellulosic fire protection has been introduced by PPG.

The new Steelguard range has been formulated to reflect modern building design with a smooth and aesthetically pleasing finish whilst protecting the structure against corrosion and fire.

The heat insulation properties of the intumescent coatings maintain the steel's stability and provides up to 120 minutes of fire protection at temperatures ranging from 350°C to 750°C.

Steelguard 601 and 651 have been tested and certified to a number of standards including EN 13381-8:2013 (*Test methods for determining the contribution to the fire resistance of structural members: applied reactive protection to steel members*) and ISO 12944-2 (*Paints and varnishes -- corrosion protection of steel structures by protective paint systems*).

BATTERY FIRES

A novel means of tackling the risk posed by overheating lithium-ion batteries has been designed by Morgan Advanced Materials and tested with Germanwings, part of the Lufthansa Group.

The Firemaster battery bag measures 500mm x 500mm and comprises two specialist thermal materials that create a sealable, water-resistant compartment capable of containing the heat spread in the event of a primary-lithium or lithium-ion battery fire.

Thomas Schwarz of Morgan Advanced Materials said: 'The transportation of lithium-based batteries as cargo has been regulated by the aviation authorities for more than a decade, but no limitations have been placed on the transportation of these products within the main aircraft cabin.

'Thermal runaway, although a rare occurrence, can have a catastrophic effect on an aircraft in flight and passenger airlines have been proactive in trying to find a solution to this manageable danger. Now, thanks to the help of Germanwings, we have been able to leverage our expertise in the field of thermal technologies to create a solution to this problem.'

Bus retrofit project

The Government of New South Wales in Australia is to install automatic fire suppression in the engine compartments of 2,400 buses.

The retrofit will involve 40 bus depots of Transport for New South Wales in the Sydney, Newcastle, Blue Mountains and Wollongong areas.

Within the procurement specification is the call for systems to be certified to either the SP Technical Research Institute of Sweden's P-Mark SPCR 183 certification process (including SP 4912, *Method for testing the suppression performance of fire suppression systems installed in engine compartments of buses and coaches*) or an equivalent recognised certification, design and testing process.

The retrofit plan on existing buses is being implemented as a result of engine bay fire suppression systems having become a standard feature on all buses that are purchased by the NSW Government.

The planned installation period is from July 2016 to August 2018 for all 2,454 contract buses, which equates to an installation rate of approximately 100 buses per month.

The systems will be required to have an effective and efficient operational life of up to 25 years.

Samsung signs with Exova

Testing group Exova has signed a Global Partnership Agreement with Samsung C&T's for operations throughout the Middle East and Africa.

The agreement will allow the companies to collaborate in advancing supply chain integration and performance improvement on future projects.

The two businesses have previously worked together on a variety of projects including environmental monitoring, fire safety and civil materials testing for major construction projects in Abu Dhabi and Riyadh.

Matt Davies, managing director of Exova Middle East, Asia and Asia Pacific, commented: 'This Global Partnership Agreement means we will have early notification of partnership opportunities and project requirements where we can develop bespoke and cost-effective solutions.'

Circuit problems found in detectors

Honeywell Analytics is in the process of recalling a number of flame detectors following performance concerns.

The product recall is the result of a manufacturing defect in some of the Fire Sentry-branded flame detectors.

The fault relates to a faulty integrated circuit device which can, in certain instances, result in improper operation including false alarms, abnormal LED functionality and, in limited instances, failure to detect.

After identifying the problem at the end of 2015 the company replaced the component and alerted its customers to the issue with instructions on their return and replacement.

When contacted by *IFJ*, a Honeywell Analytics spokesperson said that the replacement programme was nearing completion and that the company was confident that the 'modification of supply of the third party component will ensure that this issue does not re-occur.'

The company also stated that it was not aware of any instance in which a detector had failed to report a life-safety event.

The models affected are SS4, SS2, FS7 and FS10R.

Anyone affected should contact their local Honeywell service office for immediate replacement.

21-23 JUNE, FIREX INTERNATIONAL, EXCEL, LONDON, UK

Firex is the only event that connects the global fire and security markets and registration includes access to four other co-located exhibitions in the organiser's protection and management series: Ifsec International, Facilities Show, Safety & Health Expo, and Service Management Expo.
Highlights of the upcoming event include a presentation on fire safety by the UK Government's Chief Fire and Rescue Adviser, Peter Holland CBE, on the first day of the three-day show.
The Association for Specialist Fire Protection will once again be welcoming visitors to its Passive Fire Protection Zone, which will feature a 12m^2 video screen to highlight the essential role of passive fire protection in today's built environment.
The ASFP will also be holding an interactive question time event in the UBM Expertise & Guidance Theatre on 22 June, giving visitors an opportunity to question a range of experts from across the built environment on passive fire protection issues that may impact their business.
The InnovationTrail will enable visitors to navigate all the newest products and services from across the fire safety industry, and keep up to speed with the hottest trends in life safety equipment and technology.
On Thursday the SHE1000 presentation and networking drinks event will take place. SHE1000 is a celebration of women working in the management and protection of buildings and people, and 1,000 successful females will come together to hear from networking expert Heather White, followed by prosecco and cupcakes.
During Firex there will also be a Tall Building Fire Safety Network meeting on 22 June where high-rise facade fires will take centre stage. Other areas that will be covered during the one-day Tall Building meeting are evacuation strategy and technology, passive fire protection and fire systems.
To register for Firex visit: www.firex.co.uk.

21-22 SEPTEMBER, THE EMERGENCY SERVICES SHOW, NEC, BIRMINGHAM, UK

The event has a host of new features for 2016 as it moves to the larger Hall 5 at the NEC and new seminar programmes will cover lessons learnt, ICT innovation and PPE. The Drone Zone brings together everything UAV (unmanned aerial vehicles) while ongoing popular features such as the Collaboration Zone and College of Paramedics CPD workshops have been enlarged.
As well as showcasing drone suppliers, the new Drone Zone will bring together industry specialists and end users while a number of presentations on UAV technology take place. The programme includes a presentation on risk management for remotely piloted aircraft systems (RPAS) and the factors affecting RPAS operational safety in both civil airspace and commercial space. Other sessions will cover privacy, security implications and legislation.
Several exhibitors are planning live demonstrations of equipment and rescue techniques and Harken Industrial's technical team will be demonstrating the operational features of the Powerseat man-riding winch by hoisting a person to the ceiling of the exhibition hall and back down again.
The Emergency Services Show is expected to feature over 450 exhibiting companies and organisations. The indoor and outdoor exhibition is a one-stop shop for sourcing all the latest services and equipment. Visitors can try out the latest kit, speak to industry colleagues and provide feedback to the suppliers. There will also be a wide range of vehicles as well as in and on-vehicle equipment on display.
The NEC is next to Birmingham International railway station and Birmingham Airport and is directly accessible by motorway.
Visitor entry, seminar theatre attendance and parking are free of charge.
To register visit www.emergencyuk.com.

21-22 SEPTEMBER, 16TH INTERNATIONAL WATER MIST CONFERENCE, ARCOTEL WIMBERGER, VIENNA, AUSTRIA

The International Water Mist Association is expecting over 100 delegates from more than 20 countries at this highly international conference where speakers will be addressing the latest developments in fire protection with water mist.
All attendees will have the opportunity to exchange ideas, network and meet researchers, manufacturers and distributors as well as visit the exhibition that runs alongside the conference.
The first day of the conference will be dedicated exclusively to applications and can be booked separately. The programme will be available via the conference webpage from early July onwards.
All presentations will be in English but simultaneous translation into German will be provided.
Registrations for the conference are limited to 120 so those wanting to visit should not delay – the early-bird period ends 1 August.
To register visit: www.iwma.net.

16th International Water Mist Conference

21st & 22nd September 2016

Vienna, Austria

Arcotel Wimberger Wien

Sponsors:

Honorary Sponsors:

Media Partners:

Conference Webpage opens: 1st June / Early Bird Period ends: 1st August / www.iwma.net

Burning rubber

A massive fire continues to burn in Europe's biggest rubber tyre waste site, reports George Potter from Madrid, Spain.

The hollowed-out volume inside the tyre's body retains the oxygen-laden air as well as the heat, thus prolonging the fire.

Friday, May 13th, an ominous date with nearly tragic consequences. At around 01:30 hours, the Madrid regional emergency alarm and communications centre and the Castilla la Mancha emergency call centre received simultaneous communications of a fire in a property used for storing used vehicle tyres in the village of Seseña. The 11-hectare site had been used as a deposit for all types of motor vehicle tyres since the late 1990s, and over the years had accumulated nearly 100,000 tonnes of scrap rubber.

Initial response was from the Madrid provincial fire brigade station in Aranjuez and by the Toledo provincial brigade station in Illescas, both some 15km away. The response by brigades from two distinct fire services is due to the fact that the site is situated within the autonomous regions of Madrid and Castilla La Mancha.

Upon arrival, the respective unit commanders immediately requested additional resources. By dawn, the Madrid brigade had two pumps, two tankers, two command vehicles and more than 20 firefighters and officers on the scene, while the Toledo brigade also had two pumps and two tankers on scene but with less personnel.

One of the helicopters preparing to drop a load of water onto the fire. The pilots and crew were exposed to extreme risks in each attack, mainly from the thick smoke and changes in wind direction.

At first light, two helicopters normally assigned for wild-land fire combat were also attacking the fire, and before noon a third helicopter had also been mobilised. These aerial devices made countless drops of water onto the fire.

Seseña is one of a dozen similar tyre deposits located all around the country to which used tyres are sent when vehicle owners change their tyres in compliance with current legislation. According to sources, some of the tyres deposited in these sites are destined to be re-treaded, although the vast majority are converted into fuel for cement factories and additives for asphalt used for paving roads and highways.

During the early 2000s, the construction of an enormous residential complex of more than 15,000 flats began less than one kilometre away from the tyre graveyard. Only half of the initial number of flats was actually built, due in part to the economic crisis plus a series of judicial investigations related to possible corruption. Nearly 10,000 residents occupy the nearby residential complex. A commercial complex and several industrial parks are also located in the area. A major highway connecting Madrid to the southern regions passes within a few hundred metres from the dump.

The tyre dump was declared illegal in 2003 and was supposed to be vacated by the end of 2015. Instead of decreasing, the amount of tyres deposited there increased during that period. It has been estimated that approximately five million tyres were in the dump at the time of the fire. The owner has received numerous sanctions and fines, and has even been sentenced to three months in jail for repeated violations of environmental offences.

Fire brigade operations

The Madrid regional fire service is a full-time professional public service with 1,288 firefighters, officers and staff

An active deterrent against the misuse of Manual Call Points

Euro Stopper®

Prolong the life and reliability of Manual Call Points and Electrical Switches with STI's range of tough polycarbonate Protective Covers

On display at
FIREX International
FIRE PREVENTION, DETECTION & PROTECTION
21-23 JUNE 2016 EXCEL LONDON UK

Stand F170

STI
Safety Technology International (Europe) Ltd
For more information please contact Sales:
Telephone 01527 520999
info@sti-europe.com I www.sti-europe.com

INTUMESCENT FIRESTOP SYSTEMS

- Mixed-, cable- and pipe penetration sealings
- Joint seals with movement capability

References:

Medicine Management Transport Industry

www.z-z.eu

APPROVED BY CIVIL DEFENCE
UAE QATAR

ZZ ZAPP-ZIMMERMANN
INNOVATIVE FIRE-PROTECTION SYSTEMS

TYRE FIRES THROUGH HISTORY

Over the last 30+ years there have been numerous major tyre fires around the world, several of which have been confirmed as having been intentionally set or with indications of being deliberately provoked.

- 1983, Winchester, Virginia, USA: around seven million tyres burn for nine months causing major environmental damage
- 1989, Heyope, Wales, UK: a fire involving approximately 10 million tyres burns for 15 years, setting a world record.
- 1990, Hagersville, Ontario, Canada: 12 to 14 million tyres burn for 17 days, leading to the evacuation of 4,000 people.
- 1999, Sycamore, Ohio, USA: arsonists set fire to 25 million tyres. 250 firefighters, members of the National Guard and personnel of the Environmental Protection Agency spend around 30 hours combating the fire.
- 2012, Jahra, Kuwait: five million tyres burned by suspected scrap metal scavengers.
- 2005, Leon, Spain: several hundred thousand tyres burn for several hours before being controlled and extinguished.
- 2015, Leon, Spain: another tyre fire in the same location where a tyre fire had occurred ten years previously.

operating from 18 stations and equipped with a formidable fleet of mobile apparatus. The Toledo Fire Consortium is composed of 155 personnel operating out of five stations, proportionally less than Madrid. Both services dispatched apparatus and personnel so that, by mid-morning, more than 30 firefighters and officers were on site, including Madrid's mobile command post.

The overall Incident Management was initially assigned to senior officers from the Madrid brigade but later assumed by the Toledo brigade as more than two thirds of the tyre mass was situated in this region. The administrative and political organisation was assumed by the Castilla La Mancha regional authority. In addition, several vehicles and crews from the Castilla La Mancha forestry fire service were also on scene. Two Bombardier fire-fighting airplanes were mobilised around midday but these did not actually intervene.

The tyre waste site (in the circle) sits astride the border of two autonomous regions. To its right are several recently built residential and commercial complexes.

Initial operations were oriented to preventing the spread of the fire from the point of origin to the remainder of the mountains of tyres. Combined actions of the firefighters with hose lines directing water/foam mixtures onto the fire, bulldozers and other earth-moving machinery creating fire-breaks and the airborne discharges of water partially achieved this goal, but by nightfall the fire had extended to other piles of tyres.

At several times the flames rose above 20m and the black, dense smoke flowed sometimes to the east and sometimes to the southeast and south.

Authorities declared a Level 1 emergency, meaning that this was to be considered a major incident to be handled at a local level. Although there was a hydrant in the premises it was inoperative during the initial stages, although this was corrected later in the morning. A water relay system using tankers had to be used during most of the intervention. Another serious problem was a high-tension electric line stretching right above the dump, which eventually was cut by the fire, causing electric power failure to a large area around the town.

As the day progressed it became evident to the incident management team that this would be a prolonged event probably lasting several days. It also became evident that the possible origin of the fire was indeed intentionally provoked. Investigation is underway to determine or discard this theory as, during the days prior to the fire, rainfall had been almost constant.

By mid afternoon the emergency had been upgraded to Level 2, increasing the administrative participation in the incident management as well as mobilising more resources.

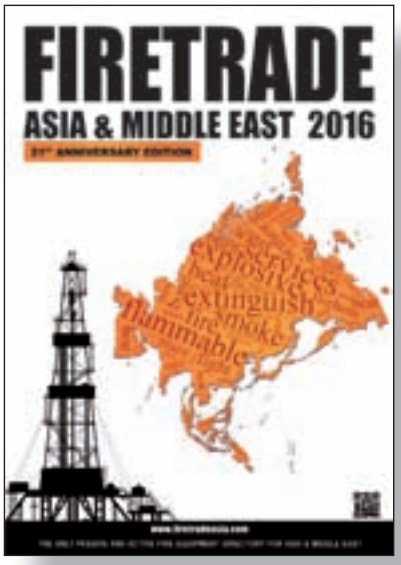
While residents in the immediate area were initially instructed to remain indoors, by early afternoon authorities ordered the evacuation of the residents of the complex adjacent to the graveyard due to the intense smoke and gases that were flowing directly over the complex. Three schools in the area were also closed as a precaution. While the smoke generated by the fire was not considered to be especially dangerous to human life, the multiple gases retained within the smoke mass could indeed be considered toxic. It was reported that some 9,000 persons were evacuated from the area and the confinement order eventually affected 31 municipalities.

The problems of burning tyres

For many years fire safety instructors around the world have used tyres for practical live fire-training exercises. Used tyres are cheap and more often than not free. They are extremely useful for demonstrating the problems that could be encountered in attacking almost any kind of solid fuel fire. But at some point it was realised that it is also the most obnoxious, filthy and potentially harmful fuel that could be used for training.

Another factor that makes these fires difficult to extinguish are the metal fibres and wires embedded in the structure of the tyres to strengthen their resistance to wear. These metal fibres are excellent means of heat retention and transfer. Yet another problem is the nature of the rubber used in making tyres, highly combustible, long burning and a generator of complex smoke and a variety of harmful to very toxic gases.

One of the major consequences of a large tyre fire is the potential damage to the environment. Tyres are normally made of natural rubber which is treated with chemicals and other substances that contribute to the forms and durability



PRE-ORDER FREE COPIES

- The most comprehensive buyer's guides in the world for the passive and active sectors of the fire industry
- In-depth and fully updated data
- Company listings for 30 countries across Europe and 34 nations within Asia and the Middle East
- Distributed to over 6,000 key decision makers

NEW EDITIONS OF FTE & FTA OUT SOON!

Email your postal address to: firetrade@mail.hgluk.net

cfb risk management

We are specialists in Asset Protection.

Risk Assessment and Auditing, Emergency Planning, Fire Engineering and Emergency Response - At CFB Risk Management we tailor our full range of services to meet your site specific risks.

For more information visit www.cfbriskmanagement.com

of the tyres. These natural and often additional synthetic components decompose when exposed to intense heat, generating thick, black smoke containing vast amounts of unburned residues and a wide variety of gases that range from irritating to the skin and respiratory system to extremely toxic. Some of the products of the decomposition of the tyres can cause cancer. Winds may carry smoke clouds over long distances, often many kilometres, cooling and descending to ground level. Also, if rainfall enters into the smoke mass, the solid particles will fall with the rain causing deposits of wet soot that adhere to any and every surface. These solid residues can easily contaminate water supply systems, affecting drinking water not only in the immediate area around the incident site but many kilometres distant as well.

By midday on Saturday the fire was deemed to be under control but was still burning in several places. The colour of the smoke mass was changing from absolute black to dark grey with less apparent density. The emergency category was also lowered and, soon afterwards, residents were informed that they could return to their homes. Early on Sunday morning the situation had improved and the burning area contained, while another part of the tyre mass was unburned due to a firebreak that had been made earlier. According to declarations made by authorities Sunday afternoon, the fire could well be completely extinguished before the end of the week.

As the week progressed, the intensity of the fire was significantly reduced as well as the volume of tyres still burning. By midweek, constant air quality monitoring indicated that the air around the dump was within normal parameters for safe respiration. Nevertheless residents maintained numerous protests regarding the quality of the air during the following days, whilst demanding definitive solutions for the dump and its contents.

This incident brought together several agencies that had to interact in numerous capacities. The incident affected two geopolitical regions, Castilla La Mancha – composed of five provinces – and Madrid, a single province. Of the two fire services, one has many years of experience in a vast array of emergencies and with ample material and human resources while the other is fairly new, not finely organised and with limited resources, including a large number of volunteer firefighters. The forest fire service, a public organisation under the authority of the Castilla La Mancha regional government, also responded. Additional joint working also included:

- Two regional alarm and communications centres with their own protocols and radio frequencies.
- Two separate advanced command posts, fortunately situated almost alongside each another. The Madrid vehicle was used as the intervention management post while the political authorities used the Castilla La Mancha vehicle.
- Two local municipal administrations mixed with two regional administrations.
- Local, provincial and regional ambulance services.
- National police services – handling traffic control, public order and, the overall investigation into the cause(s) of the fire.
- Various regional and national environmental agencies.
- A major national electric power company.
- The AVE high-speed rail line operator.

The complexity of this incident required extreme coordination and cooperation amongst these diverse entities. According to sources, this coordination and cooperation went very well throughout the incident.

Neither fatalities nor major injuries were reported, although it now remains to be seen just what possible long-term effects the persistent presence of potentially toxic residues in the atmosphere may have on residents. As the incident progressed, investigators were given a recording taken by the person who first reported the fire in which three distinct points of origin can be seen, giving more cause to consider that the fire had been intentionally set. Major handicaps in this investigation are the thousands of litres of water and foam that have been projected onto the tyre piles and fires, diluting evidence of possible accelerants that must have been used to start the fire and cause its rapid propagation. One week after the start of the fire, several small spot fires were still active, although there was little or no risk that the fire could regain its initial intensity.

The name in Safety, Rescue and Survival.

Stretchers

Stretcher Kits & Accessories

Evacuation Chairs

Backboards

First Aid

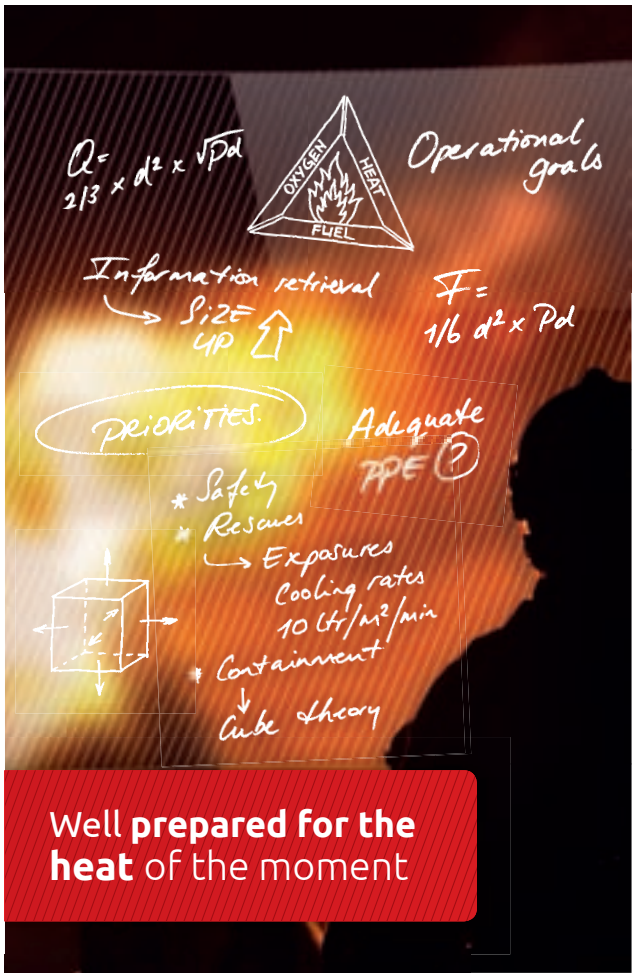
Fire Blankets

3121 Millers Lane
Louisville, KY 40216
Tel: 502-775-8303
Fax: 502-772-0548
Toll Free: 888-458-6546

JUNKIN
SAFETY APPLIANCE COMPANY
www.junkinsafety.com

ABOUT THE AUTHOR

George Potter is a frequent contributor to *IFJ* and *Fire & Rescue* with articles on emergency incidents and similar subjects from Spain where he lives. He is a Spanish certified fire service instructor with more than 30 years of experience in training public fire service firefighters and industrial emergency responders in Spain, Portugal and Algeria. He is a member of the board of governors of the Spanish Firefighters Association, ASELF and a founding member of the Spanish Industrial Firefighters Association, APBE.



Falck Fire Academy:

High value safety solutions and training

On January 11 2016 Falck Risc became the Falck Fire Academy. This new name characterizes the completion of the transition from a Rotterdam, national oriented company to an international knowledge centre for fire safety for the high risk industry and public sector. With our contribution, based on 30 years of experience, emergency response organisations are well prepared to fight incidents in a safe and effective way.

Falck Fire Academy offers:

- full preparedness for your professional emergency response organisation
- high-quality safety solutions and training in the areas of Fire, Diving, Road Traffic Accidents and Hazardous Materials
- a highly advanced training centre in Rotterdam and various permanent and mobile training facilities all over the world
- an Emergency Response Team operating worldwide and available 24/7 for maritime and industrial fire & hazmat incident management

Get prepared!
Visit **falckfireacademy.com**

T +31 (0) 181 376 666
E fireacademy@falck.com

Falck
Fire Academy

Falck Fire Academy is part of the international Falck Group, which is market leader in the field of safety solutions with offices in over 45 countries.

Waste research

Considering the damaging consequences of large-scale fires in waste and recycling sites it is perhaps surprising that little fire science exists regarding them – but this is about to change thanks to a multilateral research programme in the UK.

The UK's waste and recycling industry – which deals with around 200 million tonnes of waste per annum – has undergone a massive transformation over the last few years.

Recycling of household waste (around 26 million tonnes) has gone from around 10% in 2000 to well over 40% today.

There has also been a shift in attitude. Waste is no longer regarded as a problem solved only by disposal, but as a commodity – and one that is supplying the UK with 12% of its renewable electricity. The waste is on the move not only at a national level but also internationally, with over US$8 billion in recovered materials exported per annum.

Notwithstanding the large amount of waste that is being collected, sorted, shifted and recycled every year, the number of fires in waste sites and recycling sites has remained fairly static. Around 300 such incidents take place in the UK every year, costing the Fire Service in the region of US$20 million in firefighting and related activities.

A tipping point that brought waste fires to the nation's consciousness came in 2013 when two significant incidents took place in quick succession. First was a fire that started in mid June 2013 at the Lawrence Recycling site in Kidderminster and which took 80 firefighters to extinguish. A few days later came the largest fire ever tackled by West Midlands FRS, involving thousands of tonnes of paper and plastic stored by Jayplas in Smethwick. At its peak over 200 firefighters – nine of whom were injured – 45 fire engines, three hydraulic platforms and two high-volume pumps were used to tackle a fire that caused around US$10 million of damage.

The ensuing extensive media coverage led to the first serious, multilateral attempt to tackle the issue at a national level.

Shortly after these incidents the UK's Chief Fire Officers Association, Health and Safety Authority and the Environment Agency decided the issue needed to be addressed in partnership with the industry. The Waste Industry Safety and Health (WISH) forum was tasked with disseminating fire prevention awareness and in 2014 it published the freely available practical guidance, Reducing fire risk at waste management sites.

However, the background research carried out by WISH into hard data related to fire prevention and fire behaviour at waste sites revealed some unexpected findings. Chris Jones, chair of WISH, takes up the story: 'We assumed that it was going to be relatively straightforward. We thought that if we went out and carried out a literature search we would find insurance standards related to waste storage and fire-fighting technology and that it would be just a matter of collating it all.

'What we discovered, however, was that all the present guidance in existence on stack sizes, heat, radiation, different types of waste and so on, all originated from a series of papers that appeared simultaneously in the 1970s in Australia, Canada, US and Europe, but which were not based on science. Nobody knew where the information had originated from, only that the same numbers suddenly appeared in different places at the same time.'

This lack of good quality data and science presented a problem not just to the waste industry but also to the emergency responders, who felt that they could not provide authoritative preventative guidance for the sites they were protecting. Mark Andrews, strategic lead on waste and recycling fires for the Chief Fire Officers' Association explains: 'We wanted to be able to go to the industry with authority on storage, stacks sizes and fire breaks. But we didn't want to do that anecdotally but rather based on rigorous scientific data.'

This gaping hole prompted a joint industry/government agency research programme that aimed to provide up-to-date scientific data about the flammable properties of modern waste/recycling materials.

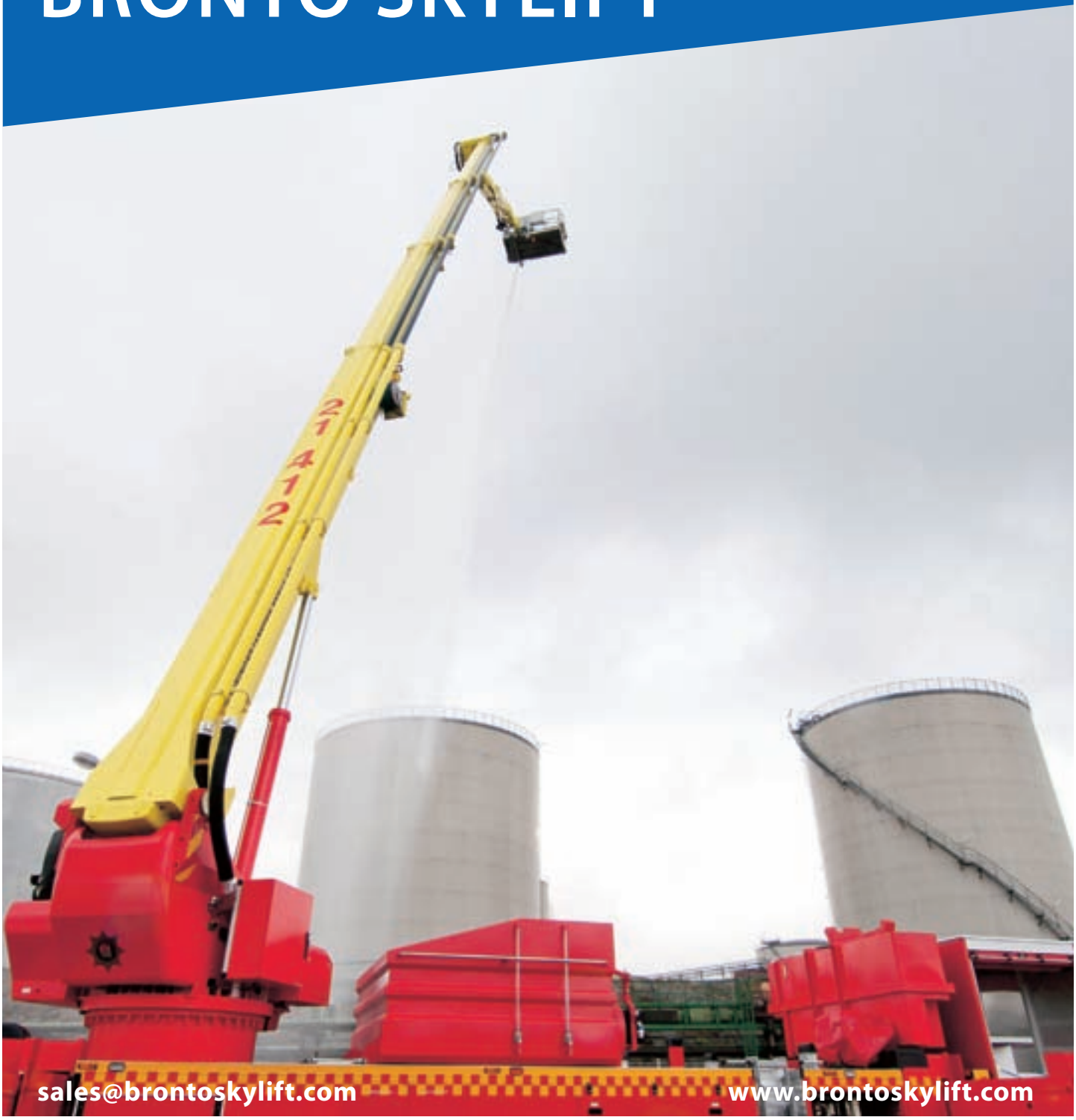
The research, which started at the beginning of this year, was expected to conclude by March but the results so far have been so startling that live fire tests are still ongoing. In fact – to date – more than double the original eight test burns have taken place, and more are in the pipeline.

WISH chairperson Chris Jones cannot yet go into the precise detail of the results but he can reveal some of the outcomes. First has been the revelation that fire doesn't burrow from the outside inwards, as was ascertained whilst trying to create a deep-seated fire: 'We know that these types of fire causes massive problems for the public. When a fire becomes deep seated it becomes problematic, burning for days and difficult to put out. As part of the testing process we burned a load of loose stacks and we found that we couldn't make the fire burrow, even after driving scaffolding poles to provide a pathway into the centre. If you lit it on the outside it stayed on the outside.'

The next surprise has been finding out that, in reality, it is exceedingly difficult to set fire to waste – even plastic, says Jones: 'The idea that a Chinese lantern could start a fire is just unrealistic. And it would take a very motivated arsonist as well – and one with a flamethrower – to set one off. Two firefighters with propane gas torches took 20 minutes to set RDF [refuse-

A bulldozer attempts to control a fire at a waste site: very little fire science exists regarding fire behaviour at these types of facilities. Photo credit: Shutterstock.

FIGHT THE INDUSTRIAL FIRE WITH BRONTO SKYLIFT



sales@brontoskylift.com

www.brontoskylift.com

derived fuel] alight, and when it was alight the flame height was less than 5cm high.'

At the time of going to press the test team was waiting for the weather to change in order to carry out further deep-seated fire tests where the fire is ignited at the centre of the pile. 'But we don't expect any surprises here as the fire engineers say that the fire science around superheated layers is well understood,' says Jones.

In the pursuit of the reason why deep-seated fires start in the first place the group has also carried out a series of tests related to self-heating. In one experiment, dry RDF was placed on a deck and, within three days it had reached 50°C. A similar experiment with wood fines found that the temperature reached 60°C in 48 hours.

Although the findings of the tests are not be available yet, they are nevertheless providing evidence for something that everyone already knew – good management of waste stacks and regular stock rotation are crucial.

'We are learning that we really have to target more effectively the prevention aspect, which is where the collaborative work with the partners such as the Environment Agency and the waste industry through WISH has been particularly useful, enabling us to engage in a prevention strategy to work at storing waste more sensibly,' says Mark Andrews, adding: 'If a site is disorganised and stores its waste in poorly-managed bulk then, when a fire does occur, it is nigh-on impossible to bring it to a conclusion quickly. It nearly always ends in a protracted incident that not only affects responders but also the immediate and wider community depending on where the site is located.'

Fire prevention guidance is a contentious issue for the waste industry at the moment, however. The Environment Agency, which is the regulatory body of waste and recycling sites in the UK, is currently considering the results of a consultation regarding version three of its Fire Prevention Plan, which was first issued in 2013. Required as a condition for securing an Environmental Permit, the FPP is a detailed document and management system used by site operators to effectively manage site fire risk and its impact on the environment. The highly prescriptive document covers a number of factors including the types/quantities of waste stored; site layout; access routes; fire risk assessment; emergency procedures and environmental protection measures. Waste operators can only deviate from it by presenting an alternative prevention plan that must be thoroughly modelled and proved. Confusing the matter further, the requirements listed in the document are not fully aligned with the guidance issued by WISH.

The waste industry has taken issue with a number of points in the Fire Prevention Plan consultation, such as a maximum acceptable burn time of three to four hours until extinguishment.

This figure was arrived at following a consultation with another government organisation, Public Health England, who determined that a person with health problems should not be expected to shelter in their home for longer than this period of time. 'WISH considered this [advice] when we drew up our guidance in 2014, and the number we came up with was 24 hours,' says Jones, 'but with the caveat that, in our view, the fire should be extinguished in the shortest practicable time. We don't think it is practical or reasonable to put out a major waste fire in three to four hours.

'You have to look at the circumstances. It if takes 48 hours to put out a major plant located out of town and it doesn't affect anybody, I think that's probably OK. A fire that lasts two or three hours in a small site in the middle of a residential housing estate might pose a serious problem, so there should be a different standard applied.'

The Environment Agency's one-size-fits-all approach has, understandably, caused problems in an industry that deals with a huge variety of fuels and which, arguably, should not be described as one industry but many.

The processed wood sector, for example, has pointed out that proposed stack sizes of three to five metres, depending on the material, would make it impractical for the country's waste wood supply chain to handle the country's 4.5 million tonnes of annual arisings. It estimates that it would require most sites to increase their footprints by a scale of 10-15 times.

The tyre recycling industry on the other hand, which has – similarly – pointed out that site storage would have to be reduced by a factor of four or more on many of its sites, has stated that the proposed maximum storage duration for combustible waste of six months simply cannot be met.

The results of the consultation, which closed in March this year, are not expected to be published until the completion of the WISH fire tests, which will be considered alongside the consultation responses.

It is unusual that technology is not deemed as a central solution for an industry with a perceived fire problem, given how widely it is used in other sectors dealing with flammable materials. Yet firefighters and industry seem to be in agreement that technology is not the solution. 'Often these sites are outside, away from infrastructure so the installation of traditional measures such as sprinklers is challenging. And considering the types of fires that occur, unless you have a drencher-style equipment it is really difficult to engineer the right level of fire protection for large stacks,' says CFOA's Mark Andrews: 'It really does come down to good housekeeping. If you have an open air site and you stack your waste separately, recognising that some materials are more flammable than others, then the risk is reduced.

'If site operators want to invest in technology, there are various CCTV and flame detector systems that will assist, but I'm mindful of the cost. Our message is if you want to store above a certain height, then you have to invest in more sophisticated fire prevention and protection measures.'

Jones agrees that it's not necessarily about resources, but attitude and education: 'If you pile stuff up you'll have a problem, so it's not about fire-protection systems, it's not about waste, it's about being efficient about putting stuff through. It's no good having all the technology if you are not rotating or storing your materials correctly.'

The consequences of negligent management were sadly highlighted near Madrid recently, where at the time of going to press a major fire was still burning in Europe's largest rubber tyre graveyard, containing around 100,000 tonnes of tyres. And, while the fire in Spain was most likely caused by arson, the fact remains that this illegal site had been known to the authorities for over a decade, highlighting that education and good management oversight is necessary at all levels.

Acceptable stack sizes are a point of contention between the regulator and industry. Photo: Shutterstock.

MSA
The Safety Company

Your Safety is what drives us.
Every Single Day.

Gallet F1XF Helmet

EVOLUTION 6000
Thermal Imaging Camera

ALTAIR 5X and ALTAIR 4X
Multigas Detectors

alphaBELT
Rescue and Holding Belt

SCBA System

For further information
visit **our market page**

MSA • Tel. +49 (0)30 68 86-0 • info.de@MSAsafety.com

*Because every life has a **purpose…***

The long & the short of it

The high volumes of water required for industrial fire fighting have resulted in an increase in demand for 25-30cm-diameter hose – but large-diameter hose comes with its own set of issues, writes Johan Kramer, Hytrans.

These larger diameters are effective because they reduce the loss of pressure as a result of friction that occurs when transporting significant amounts of water over long distances. A 15cm hose will lose 1 bar every 100m when flowing at 5,500 l/m, while a 25cm hose won't lose the same pressure until flowing at 19,000 l/m. So the longer the distance and the smaller the hose diameter the more pumps that are needed to maintain the pressure at the fire-fighting tip.

In an ideal world all the equipment related to large-diameter hose would be standardised and interchangeable but, unfortunately, this is not the case and the market can appear quite confusing.

Let's look at some examples. In the US for instance we find that storz couplings are generally supplied with locks but, across the pond, in Europe they aren't. What's more, the locks on 15cm storz couplings in the US aren't always compatible across manufacturers.

In Europe 20cm storz couplings have been standardised as a result of an agreement by the suppliers – but this does not extend to couplings above 20cm. A similar agreement between AWG and Hytrans covers 25cm and 30cm-diameter multi-lug couplings but does not include storz couplings, which can carry two, three or four lugs, depending on the class of burst pressure.

A key factor in addition to coupling fit is weight. For the fast deployment of large-diameter hose it is important that couplings can withstand ground impact at speed. A low weight on the coupling reduces the force of the impact but it also increases the length of hose that fits inside the hose layer, as a result of the decrease in size of the coupling. The Hytrans 30cm-diameter multi-lug coupling, for example, is half the weight of a storz coupling with four lugs in the same diameter size.

Couplings aside, the primary factor for a water transport system remains the choice of LDH material, with the basic options being rubber or polyurethane. The main difference between these two materials is their heat resistance. PU is not recommended for firefighting because it is unable to withstand the effect of a burning object, as per BS 6391 (*Hot cube test*).

A number of additional factors should be taken into consideration regarding LDH, including working pressure; burst pressure; wear resistance; weight; elongation/expansion ration; and hose recovery.

Currently there is no standard for the burst pressure of large diameter hose above 15cm, so Hytrans uses its own standard which requires a safety factor of 2.5 above the maximum burst pressure.

Hose elongation is a significant factor with LDH because tests have shown that hose with more than 1.5% elongation will move – or even 'jump' – when pressurised. The extra length caused by the elongation seeks to find space on the road, which in turn results in a safety risk for bystanders.

Deploying the large diameter hose is one thing but recovering it after an incident is another matter altogether. Time and manpower may be freely available following an operation but the practicalities of recovering heavy, large-diameter hose are not straightforward. It's hard work, if not impossible, when attempted by hand. This has led to the development of hose-recovery units for hoses between 15-30cm, and for a special project Hytrans has even delivered a unit capable of handling 40cm-diameter hose. The latter was for a special project in Russia and, although we don't expect to deliver other units like that, you never know. A few years ago everybody thought 15cm was large and now we are supplying a lot of 30cm hose. Perhaps in the future 40cm will become the standard.

Hundreds of these recovery units are now in use throughout the world, pulling coupled hose into the hose layer container where the operator guides and lays it ready for the next deployment. A side effect of this easy recovery is that hose laying becomes an integral part of training so that, when the real thing happens, everybody is prepared.

Below: large-diameter hose with more than 1.5% elongation can move and even 'jump' when pressurised. Top: 25cm hose with 25cm multi-lug coupling pressurised at 12 bar.

LARGE-DIAMETER HOSE RECOVERY UNITS AROUND THE WORLD

The use of large-diameter flexible hose has benefited from the development of hose-recovery units and technology has moved to the stage that it is possible to lay large hose at up to 40km per hour and then recover it at 1km per hour – with only three people.

But speed is only half the story. Large hose leads to much less friction loss which means more water can be delivered over longer distances, so there is no need to set up complicated relay pumping systems.

As distance is easier to overcome, quick hose laying and hose recovery increases the number of potential water sources.

The increasing popularity of LDH is being partly driven by the growth in the size of cities and industrial facilities such as warehouses and waste sites, and the equipment has already proved itself in a number of incidents.

During the massive Buncefield Oil Depot fire in the UK 10 years ago 13 Hytrans mobile pump systems were used by the UK fire services after the initial explosions destroyed much of the fixed fire water system. Hose laying and recovery played a key role. Firefighters brought with them 33km of 15cm-diameter flexible hose, which was laid in one hour, connecting a distant lake to the fire. The 33km of hose was recovered afterwards in only eight hours.

The Fire & Rescue Service of New South Wales, Australia recently took their bulk water transfer system (pictured right) to the Capital Territory Fire & Rescue Service in Canberra to demonstrate its capability.

The simple demonstration by the peaceful shores of Lake Burley Griffin saw a team of three first deploy about 400m of large diameter hose, which connected the water supply to the ACT appliance, supplying ample water.

The recovery stage was dreaded by the 30+ bystanders who awaited the call for volunteers. After a very short introductory overview with a volunteer from ACT Fire & Rescue, the 400m of 15cm hose was recovered in just 14 minutes.

Another fan of the LDH recovery system is the Country Fire Authority's Scoresby team near Melbourne, an early adopter of the technology. CFA Scoresby has now trained many firefighters and has become highly effective in the fast laying and recovery of large-diameter hose.

Justin Bear *is general manager of Bluemont, Australia, which represents Hytrans in Australia, New Zealand and the Pacific Islands.*

In perfect proportion

The main oil import terminal of an island country in the Indian Ocean is just one of the latest destinations for a unique foam proportioner that requires no external power to operate, writes Jose Sanchez de Muniain.

At the end of last year Galana Raffinerie et Terminal took delivery of a foam proportioner that will be used to protect its jet fuel storage facilities. The recently modernised GRT in Toamasina Port, east Madagascar covers 45 hectares of land and contains 22 storage tanks that supply a number of countries in the Indian Ocean and east and southern Africa.

The 12,000 lpm proportioner, which was built by Swedish company Firemiks, is equipped with a bronze motor that can feed two 6,000 lpm monitors with 3% AFFF.

Similar proportioners were also recently delivered to the Port of Koper in Slovenia for the protection of its Jet A1 storage facilities. For this project, Croatian engineering company Arming installed three bronze 4,000 lpm proportioners on three foam trailers in order to create a semi-fixed fire-fighting system. Firemiks sales director Per Aredal explains more: 'This delivery was a feel-good story for me because we supplied a water-driven proportioner to Arming during my father's time in the company in 1995 and this proportioner is still in use. We lost touch with Arming for a few years when we set up the new company, but they found us again through publicity in trade magazines. Whilst we were out of touch other proportioners had been installed but we found out that these proved complex, heavy and so noisy that it was impossible to have a conversation next to them.'

These deliveries followed hot on the heels of another recent success at the opposite end of the globe. For some time the Jomala volunteer fire department on the Åland Islands in the Baltic Sea had been searching for a foam proportioner with some very particular requirements.

The foam proportioner needed to be suitable for mounting on a 35-tonne water tender with a 24-tonne multi-lift system, two 200-litre foam concentrate tanks, and a 15,000-litre water tank.

The water tender, which was designed in-house as a feeding unit to assist the local airport as well as for large-scale fires in the island, also carries an open pool on the roof of the tank to enable the storage of an additional 7,000 litres of water. 'Jomala had quite unique requirements with the huge open-topped water tank on the truck, and they wanted to be able to choose two different foam solutions and at three different concentrations,' commented Aredal.

The solution came in the form of a remote-controlled foam proportioner configured to proportion concentrate at 0.33%, 0.66% and 1% rates, and which can simultaneously supply a fixed water monitor flowing at 1,300 lpm as well as two hand-held nozzles flowing at 200 lpm.

'We discussed how to install the proportioner and I went over to test it with them. They were very pleased that they could also use the system at a low proportioning rate for wetting agents,' says Aredal: 'It was a great pleasure to see the result.'

Significant benefits of the Firemiks proportioners include their simplicity and low operating noise. They require no supplemental energy and use the pressure from the water to mix and discharge the foam/water mixture. And because the force of the water motor drives the foam pump, the dosing rate adjusts automatically to the amount of water going into the proportioner. The more water that goes in, the faster the drive coupling rotates and the more concentrate is pumped through to mix with the water. 'People like that it is water-driven and easy to handle. The industrial sector doesn't like bladder tanks because they have too many problems and because it is often very expensive to replace the bladder inside the tank. In fact, sometimes it could be cheaper to buy a new Firemiks unit than repair the bladder tank,' concludes Aredal.

Top: Jomala volunteer fire brigade has taken delivery of a water tender with a remote-controlled proportioner that can proportion at three different rates. Below: trailer with 2,500-litre stainless-steel tank and Firemiks 4,000 lpm proportioner – one of three such trailers engineered by Arming for Koper Port in Slovenia.

Introducing the most advanced PPV in the industry

VALOR

reliability
trusted motors / engines

durability
aluminum blade / full roll cage

versatility
easily attach duct / 5-Point Tilt

productivity
maximum output / easy transport

does your ppv have valor?

#wehavevalor

SUPERVAC

SUPERVAC.COM ‹› INFO@SUPERVAC.COM

AFOA annual conference

Second part of *Industrial Fire Journal*'s coverage of the Airport Fire Officers Association's annual conference that took place at the Hilton Hotel, London Gatwick in January. Report by Ann-Marie Knegt.

The Shoreham Air Show crash disaster

When the vintage Hawker Hunter crashed at the Shoreham Air Show on 22 August 2015, Rory Barraclough, Duty Officer at West Sussex FRS, was one of the first responders. Amid scenes of human tragedy and lost lives, he learned one thing: as a professional firefighter, trust your training and your instinct.

In a sombre presentation that never lost sight of the fact that lives were lost in the disaster, Rory explained how, when faced with the physical shock of body parts strewn across a major roadway, vehicles on fire and no crashed aircraft to be seen, he was able to function as a firefighter as well as being a human being.

Shoreham Airfield is the oldest airport in the UK and the oldest commercial airport in the world, yet it has only had a tarmac runway since 1981. It is a Category 2 airfield with an average of 150 takeoffs and landings a day, a high number due to its extensive use for pilot training.

The air show is an annual event and in 2015 it attracted some 30,000 viewers on site. There were three fire appliances: the airport's own fire engine; a private contractor with a fire engine and a 4x4; and a fire appliance from Worthing Fire Station, which was positioned at the A27 access road. Rory Barraclough was a key member of the Emergency Planning Group, consisting of the emergency services and the Coastguard, amongst others, which had met three times before the event.

Access to the event was restricted to a slip road off the A27, while the only other road had a low bridge preventing many vehicles from reaching the airfield. The site was divided into the airside (manned by the airfield's own fire appliance and crew) and landside, where the private contractor had ready access to any incidents – of which there had been several historically.

'I was walking away from the communications centre to introduce myself, as Duty Officer, to the private fire contractor handling the landside sector when I felt the crowd hush and all sound died. I then heard the crash and turned round. I just ran back to my car,' he said.

When Barraclough arrived at the crash scene on the A27 there were bodies and body parts, burning cars and other wrecked vehicles, but no aircraft. The plane had carried on through the embankment and ended up in a field.

Barraclough explained that at first sight nothing seemed to add up. There were no casualties as such, just body parts and people, unharmed but walking round in a daze. It was emotionally very difficult and challenging to move around for all the firefighters and emergency personnel at the scene 'I was determined not to get drawn into the operational details. I spoke to the emergency services and we very quickly set up a multi-agency major incident.'

Barraclough's presentation ended with two lists covering what went well and what he learned.

What went well was that the training and experience of the professionals clicked into gear quickly and effectively. The pilot was extracted and put on a stretcher, despite the strong smell of air engine fuel, which was burning elsewhere on the site. Rescuers, while risk-aware, had still ventured into the hazardous area to extract the pilot.

Emergency service attendance was very fast, and the Joint Major Incident declaration was achieved with no time lost. There had been just one saveable life, the pilot's.

On a personal level, Barraclough benefitted from knowing the people involved so that they could work as a team. He was also aware of the event plan because he had been involved in drawing it up and, working together, the teams achieved a unified command.

What Barraclough learned was that even detailed pre-planning will not cover all scenarios, and on site communications will always be difficult. Social media will have the events on film and online even while the incident is still ongoing. Getting to the scene quickly is great, but the speed involved hinders planning and clear thinking. On site at Shoreham there was no overview and, in the early stages, shock at the scene unfolding affected decision-making.

For his conclusion Barraclough paused, allowed his audience to breathe, and on screen his final words flashed up: 'Trust your training and instinct.'

Dealing with the Ebola crisis at Ghana Kokota National Airport

'Fear, paranoia and panic were just some of the emotions that airport staff had to deal with when the deadly Ebola virus arrived in West Africa,' said Charles Hanson Adu, Director of Airport Operations, Kokota National Airport Ghana.

In a hard-hitting, passionate address punctuated with humour, Charles Adu hammered home the message that emergencies of all kinds, especially those that frighten people away because of paranoia, as was the case with Ebola, were also the responsibility of airport first responders. 'Ebola was a global problem. It affected everybody and it was very scary.' He framed the problem in the context of air travel, whose scope he said is sometimes underrated but nontheless handles an average of 18 million people worldwide every day.

The biggest fear was what would happen if the airport were shut down.

If a country's main airport is closed the effect is that the economy will shut down as well.

Kotoka International Airport is the main airport in Ghana, with flights to West African nations being its largest market after Europe. Controlling air travel may be easier than at land borders, but it still posed unique problems. 'How do we ensure that all the people using the airport are safe, healthy and screened? It's absolutely impossible to check that every person is Ebola-free.' An additional problem was that some of the symptoms of the Ebola virus are similar to common illnesses such as malaria and typhoid.

CAPSCA, the Collaborative Agreement for the Prevention and Management of Public Health Events in Civil Aviation, gives general guidelines to all international airports on the management of public health emergency. 'In looking after an infected passenger they must be taken off the aircraft and held securely in an isolated area within the terminal. The question is, are airport terminals designed for that?

'The knee jerk reaction you have with an aircraft that has a passenger with Ebola is to park it as far away as possible from the terminal, but the rules state that it shouldn't be too far from the terminal because of the logistics of getting everything from the terminal. At Kotoka International Airport, we built a special, separate unit just to house and treat any affected patient.'

Fortunately, a full-scale public health emergency exercise had been held a couple of months prior to the outbreak of Ebola, which had a good effect on the preparedness of the airport. 'It concentrated the minds of everyone involved on every aspect of handling the Ebola emergencies and put the seriousness of the situation they were in at the highest priority,' said Hanson Adu.

Post-traumatic stress disorder

Following a successful career in the Royal Navy, Angela Lewis co-founded Personnel Support Aviation, a company that provides human factors training, post incident support, as well as resilience, stress management and wellbeing training. With a background in dealing with stress-related incidents, Lewis is now committed to highlighting the help that firefighters need in their everyday working lives. 'Firefighters and first responders have the most stressful jobs. Aircraft and airport incidents especially have the potential for disastrous effects on pilots and cabin crew as well as the first responders and firefighters attending.

'Handling these incidents, with hundreds of possible casualties that we are responsible for, will lead to psychological problems, or what we term as post-traumatic stress disorder. We have to acknowledge that some people will have problems, while some will not,' she said.

The key solution is peer support and getting people to talk to each other, but the true post incident support mechanism starts long before the incident actually happens. It involves understanding and knowledge, teaching the skills to provide support and awareness. One of the problems of the industry is that everyone involved is operating at the top of their game and under great pressure. It doesn't take much additional pressure to tip us over and we can end up doing a poor job.'

Lewis explained that there was a legal requirement for all in the industry to consider the mental and physical health of every firefighter who, as well as being practically and morally right, also means protecting the most valuable asset.

The powerful presentation ended on a warning note. The fire-fighting industry remained a strong, macho environment populated by 'alphas': 'We are talking about people who don't need any of this sort of nonsense.

'But where we have alphas, we have stigmas and there's quite a lot of them around,' Angela said, adding that the only way forward was for managers to take control and insert pressure and stress management on the agenda at every meeting.

Flying high

The first ten recruits of a new apprenticeship scheme in high-hazard safety management have graduated from their initial training with flying colours.

The ten apprentices will now be placed within Ineos Nitriles' site at Seal Sands in Cleveland, northeast UK where they will join an on-site protection team whilst working towards an NVQ qualification through the Hartlepool College of Further Education.

The scheme was introduced by CFB Risk Management, the first community-interest company of its kind to be set up in the UK by a fire authority, which provides risk management services to the high-hazard private sector.

Aged between 19 and 27, the apprentices come from across Tees Valley and were selected from more than 100 applicants. Their families and senior Cleveland Fire Brigade management heard them praised highly at a graduation ceremony to mark the end of the initial training of the 18-month-long apprenticeship.

Ian Hayton, managing director at CFB Risk Management said: 'Our commercial success over the last four years has enabled us to provide this opportunity for ten young people from across the local community. We now have one of the largest workforces in the UK with the skills and competence to work in high-hazard situations, helping industries to protect their personnel and assets and avoid costly disruption to production.'

Course manager Davey Veitch added: 'I am very proud of all of them and couldn't have asked for any more as they all gave 150% throughout the course. They have shown a high level of maturity, commitment and effort and earned themselves the respect of everyone who came into contact with them at the training centre.

'It has been a great start to our new apprenticeship scheme and bodes well for the future as it is vital we maintain the highest level of skill in our workforce.'

The apprentices had been previously employed in jobs ranging from tailoring, joinery and pathology to customer

The ten trail-blazing apprentices graduating from the first part of their training with (from left) Barry Waller, Davey Veitch and Ian Hayton of CFB Risk Management.

Master's degree in fire safety en

The latest higher education institution offering a master's degree in fire safety engineering is Stord/Haugesund University College, situated on the west coast of Norway between Bergen and Stavanger. It has now become only one of eight institutions in the world to offer such a programme.

Although the course was only launched last year the subject matter is not a new venture, as over the last 20 years over 500 fire safety engineers have completed their education in Stord/Haugesund.

According to Assistant Professor Einar Kolstad the primary objective of this master's program is to provide industry and society with highly qualified candidates who, through in-depth knowledge in the field, can contribute to a more fire-safe society. 'One of the most important aspects in this context are the measures that reduce risks related to major accidents. The master's program is organized in close contact with industry partners focusing particularly on fire technical issues.'

The master's program – which is also available for part-time students - is a challenging higher degree study consisting of 120 European Credit Transfer and Accumulation System credits distributed over two years (for full time students). Building upon the three-year Fire Safety Engineering Bachelor's programme, it covers subjects including barriers to prevent ignition and fire; understanding of different scenarios for fire and smoke development; fire modelling; fire-safety design; risk assessments; human behaviour in evacuation; communication and accident investigation.

'The Master's program in Fire Safety is a professional course that will make the graduates able to solve sophisticated and complex fire safety-related tasks within industry, public administration, fire service, consultancy, and insurance,' said Kolstad, adding: 'Graduates are subsequently qualified for research and development and it also forms the basis for doctoral studies.'

Left to right: professor Torgrim Log and associate professor Bjarne Christian Hagen are part of Stord/Haugesund University College's fire safety teaching staff. Photo: Terje Rudi.

Construction of a new US$60 million training facility for the UK's Civil Nuclear Constabulary begins in the north of England

The training facility will be built on a 57,000m^2 site close to Sellafield nuclear fuel reprocessing plant near the village of Seascale in Cumbria, northwest England, around 120km north of Manchester.

The centre will consist of a four-storey hub with classrooms, operational stores and offices, alongside communal use areas. Two connected buildings will house live fire training arenas.

The new accredited training facility will be owned and developed by the Nuclear Decommissioning Authority and leased to the CNC.

The 1,500-strong CNC is the armed law enforcement organisation in charge of protecting civil nuclear sites and nuclear materials in England, Scotland and Wales. It is tasked with deterring the theft or sabotage of nuclear material whether static or in transit.

Morgan Sindall has been appointed to construct the facility with Deloitte Real Estate providing project management and cost consultancy support.

Construction and fit out is due to be completed early December 2017, with the facility operational by January 2018.

CNC Assistant Chief Constable Chris Armitt said: 'The new training facilities represent an important and necessary step forward for the CNC, ensuring we continue to effectively deliver our mission of maintaining public safety and protecting civil nuclear sites. It will allow us to continue to meet the most stringent armed policing standards set by the College of Policing and UK Government regulatory standards for the protection of nuclear

services and lifeguard roles whilst others recently graduated from university.

Richard Smedley, aged 22 from Sedgefield, said: 'I have really enjoyed the initial training and am looking forward to being on-site at Ineos Nitriles. This apprenticeship is a fantastic opportunity to acquire the skills I need for a very worthwhile career. Having already had some experience as a retained firefighter I knew it was something I really wanted to do and was delighted to win a place when there was so much competition.'

gineering

JOIFF

ISTC

Platinum Sponsor

JOIFF INTERNATIONAL FIRE & EXPLOSION HAZARD MANAGEMENT CONFERENCE MALTA 2016

Fire & Explosion Hazard Management – Are You Prepared?

Corinthia Hotel, St. George's Bay, Malta. November 3rd & 4th 2016

The conference is designed to provide High Risk Fire & Explosion Hazard Management specialists from around the world the opportunity to listen, discuss and network with the world's foremost experts and specialist speakers on F.E.H.M. Pre Preparedness.

To find out more about the JOIFF International Fire & Explosion Hazard Management Conference Malta 2016 and to reserve your place at this ground breaking event please visit the conference website www.2016-joiff-fehm-conference.com/ or call the Conference team on + 44 (0) 1305 858281.

KEYNOTE SPEAKERS:

Vanessa L Allen Sutherland - Chairperson & Member of U.S. Chemical Safety Board

Mu Shanjun - Vice President of SINOPEC Research Institute of Safety Engineering

Zhang Guangwen - Senior Engineer of SINOPEC Research Institute of Safety Engineering

WHO SHOULD ATTEND	Fire Engineers	Fire Safety Consultants / Analysts
Fire Risk Consultants / Analysts	Occupational Safety Managers	Process Safety Managers
Safety & HSE Managers	Emergency Services Personnel	HSEQ Managers
Risk Managers	Emergency Response Personnel	Security Managers
Operations Managers	Industrial Safety Managers	Inspection and Training Managers

LOCATION & VENUE

5* Corinthia Hotel, St Georges Bay, Malta.

Delegate Preferential Package includes - Preferential Hotel Rates, Welcome Drinks Reception, Breakfast, Morning Refreshments, Buffet Lunch, Afternoon Refreshments during the 2 day Conference, World Class Speakers, Live Demonstrations, Exhibition and Supplier Presentations, Unique Networking Opportunities.

PLATINUM SPONSOR

SPONSORS

fomtec SOLBERG MSA tyco Fire Protection Products

A clear warning

Awareness of the potential link between fire fighting and cancer is putting the spotlight on PPE cleaning and maintenance, writes David Matthews, chair of BSI, CEN and ISO committees for firefighters' PPE.

There is a rising awareness of the risks posed by fire incident contaminants that are on – or in – the fabric of firefighters' clothing.

Exposures of fire fighters during training exercises by Dr Brian E McCarry, McMaster University, is the latest in a number of studies regarding potential contaminants and the health hazards to firefighters. It is the clearest demonstration to date of the need to ensure firefighters are not exposed to such contaminants, which then find their way onto the skin or are absorbed into the bloodstream.

During the course of the study firefighters had their samples checked before and after incidents, and the results showed clear spikes of identified carcinogenic substances in the urine. These contaminants are finding their way onto the skin around the neck, lower calf and groin areas and the results clearly highlight the importance of the compatibility of all elements of the PPE worn. This has to be addressed by those responsible for procuring PPE for firefighters and their employers, who should ensure that the appropriate tests are made to protect against these hazards prior to procurement.

The CEN TC 162 Heat and Flame Protective Clothing Committee, which is responsible for the European standards EN469:2005 (clothing), EN 13911:2004 (fire hoods) and prEN 16689 (technical rescue), has considered the potential links to certain types of cancer and has already issued common-sense guidance on the hazards to firefighters associated with fire incidents.

In addition to this, a second pamphlet containing the safety protocols that should be adopted by firefighters during and after fire incidents was approved during the latest meeting of this committee, which took place in Helsinki 17-19 May 2016.

Other associated work is taking place. A project group led by Vera de Glas of clothing manufacturer Sioen is reviewing the chemical treatments used to provide the liquid repellency on firefighter garments. The EU Commission is restricting the use of certain chemicals identified under the REACH Directive, and C8 fluoro-chemicals are to be banned. There is a possibility of C6 chemicals being heavily restricted, which has major implications for fibre and garment manufacturers as well as fire services, in terms of the potential lifetime of garments, logistics and finances.

As auditor of the NFPA 1851 standard on care and maintenance of firefighting clothing, I have found that maintenance practices vary wildly around the world. Long gone are the days of firefighters scrubbing their fire kit with a yard broom (I hope), but it is not unusual to find evidence that fire kit is being professionally cleaned only once a year – even when there is a managed care contract in place.

A number of initiatives are, however, gathering momentum around Europe regarding the cleaning of protective clothing. In some Scandinavian countries fire services have adopted a procedure where firefighters disrobe at the fire site following an incident, place the contaminated fire kit in special bags, put on lightweight coveralls and then return to the station to shower.

There are significant financial as well as logistical implications to laundering kit after each incident because manufacturers are required to indicate the expected life of their garments. This life is defined by the number of washes that the piece of clothing undergoes – and once it reaches that number, it is considered for replacement.

In the UK a national project is currently considering some appropriate national guidance relating to the cleaning, maintenance and wearer-inspections of fire-fighting PPE. This is being led by the newly appointed Chief Fire Officers Association lead on health and safety, CFO Chris Davies of Mid and West Wales FRS. Brian Hansford, Garry Brown (Chief Fire and Rescue Advisors Unit, Home Office), Gareth Hughes (Mid and West Wales FRS), Brett Egan (Kent FRS) as collaborative procurement lead, and I make up the rest of the team.

What is becoming very clear is that there is a need for fire services to introduce and/or monitor checks and inspections of fire kit to ensure that it is maintained in a correct manner, even where there are contracts in place with a third party. The introduction of a new EU SUCAM technical report on the selection, use, care and maintenance of firefighters' protective garments is imminent, and will go a long way in providing a way forward. And while the committee I chair on fire-fighting clothing will continue to address all of these issues, the technical committees responsible for other firefighters' PPE, such as helmets, footwear and chemical protective clothing – will also need to take on board the ensuing advice.

David Matthews is chair of BSI Protective Clothing; CEN TC 162 WG2 Heat and Flame Protective Clothing CEN Joint Working Group Firefighters PPE; and ISO SC 14 Firefighters PPE.

NEW FIRE ATTACK GLOVES UNVEILED AT FDIC

A new range of fire gloves has been launched that features curved seams that copy the natural curve of fingers at rest. The Fire Attack range was unveiled by Cestusline during the FDIC in Indianapolis.

The gloves feature seams curved at 30-35 degrees to help reduce hand fatigue, which the company says is often an underlying contributor to loss of grip.

Instead of using leather the gloves feature a silicon surface that aims to improve grip in wet or dry conditions.

Knuckle protection has been beefed up with compression-resistant while the fingers are protected with mini 'impact shields' to reduce the severity of avoidable injuries. The vertical segmentation of these shields allows the fingers to maintain their full range of motion without losing protection when flexed.

Additional thought has been given to the real-life situations firefighters face, such as low-light, smoke-filled environments that offer limited visibility. To counter this, reflective strips on the fingers accentuate hand awareness.

The fast-donning of gloves is something firefighters need so an extra-large pull-on loop allows the wearer to quickly put gloves on. And as tugging on the cuffs often leads to a sloppy-fit that allows debris entry, inner elastic has been used instead to prevent any material from entering the glove.

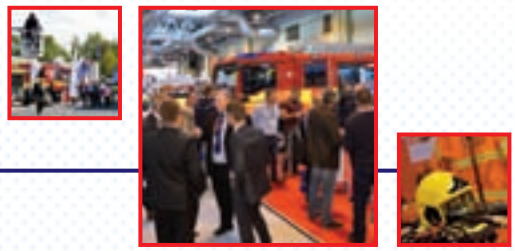
Traditionally, fire gloves have been constructed with leather on the outside and with Kevlar on the inside, where the innermost Kevlar layer kept hands protected as a last line of defence. The Fire Attack glove's outermost shell is however made of a flexible, Nomex-like, flame-resistant, rip-stop material called Vulcan X which dries faster than leather while maintaining its shape.

The gloves have been tested to NFPA 1971 standards with UL and with a TPP that exceeds the standard's minimum level. They are also currently being tested to EN 659: 2003 and A1: 2008 for Europe and Australia.

22 September 2016 | www.emergencyuk.com | Hall 5 | NEC | Birmingham | 21-22 September 2016 | www.emergencyuk.com | Hall 5 | NEC | Birmingham | 21-22 September 2016 | www.emergencyuk.com | Hall 5 | NEC | Birmingha

THE EMERGENCY SERVICES SHOW
HALL 5 | NEC | BIRMINGHAM | 21-22 SEPTEMBER 2016

Bringing the **Emergency Services together** to **improve public safety**



A unique event for everyone who works in the emergency services

- **Network** with like-minded emergency staff
- Source new kit and **save money**
- **Meet** the **market leaders** in emergency services products
- Get updated on **collaboration** and **multi-agency** plans
- See the **newest products** on the market
- Gain **CPD points** from our **free** College of Paramedics **workshops**
- Learn from past emergency situations at the **free seminars**
- Get up to speed on UAV technology in the **Drone Zone**
- Watch **live water rescue** demo's

For more information visit www.emergencyuk.com.

ESS - the only show for the entire spectrum of the **Emergency Services**

www.emergencyuk.com

Show supporters and sponsors include
EMERGENCY SERVICES TIMES · JESIP · College of Paramedics · ResilienceDirect

Toxic betrayal

Firefighters training at Australia's Fiskville CFA Training College are entitled to redress after being exposed to chemicals that can cause cancer, a Victorian parliamentary committee has found. Report by Lotte Debell.

The committee, which was set up in 2014 to look into claims of contamination at the site, also found that members at all levels of the Country Fire Authority's executive management had some degree of knowledge of the contamination and repeatedly failed to deal with the risk it posed to those living, working and training at Fiskville.

'Instead of ensuring the safety of the people who protect us, some CFA senior management and board members allowed firefighters and their families to be exposed to toxic chemicals with known links to cancer and other illnesses,' said committee chair Bronwyn Halfpenny, MP, in her foreword to the inquiry's final report.

The final report was published in May 2016 and contains 125 findings and 31 recommendations. It is the result of an in-depth inquiry covering everything from the history of the site, the contamination and how it occurred, to the organisation of the CFA and its approach to health and safety, the role of past and present CFA executive management, the regulation of Fiskville by Worksafe and other regulatory agencies, the consequences of the contamination for human health, remediation and justice for the victims.

The Fiskville site was set up in 1972 to coordinate the training of Victorian firefighters on a state-wide basis and became the CFA's principal training centre. It is described as the 'spiritual home' of the CFA and the report acknowledges the emotional attachment of many CFA members to the facility. It is this attachment, says the committee, which has contributed to the anger and sense of betrayal felt by those connected to Fiskville over the CFA's handling of the issue.

As part of the inquiry, the committee found that the contamination at the site took place over two 'distinct but related eras'. The first relates to the chemicals that were stored, burned and buried at the site – many of these unknown as a result of poor record keeping – leading to the contamination and the exposure of those working and training there, and the second to the contamination of the water used in fire-fighting training.

Committee Chair Bronwyn Halfpenny and committee member Tim Richardson.

The dominant contaminants at Fiskville have been identified as PFCs (perfluorinated chemicals), mainly PFOS (perfluorooctane sulfonate) and PFOA (perfluorooctanoic acid) contained in fire-fighting foams. The report states that firefighters and others working at Fiskville were subject to a 'multiplier effect' because of the mix of chemicals they were exposed to, resulting in a more dangerous effect than each chemical individually. The impact of these exposures is catalogued in the report in the form of an examination of the health effects of chemical exposure, health studies related to Fiskville, and witness testimony.

A study by Cancer Council Victoria analysed the cancer risk of 599 men who worked and trained at Fiskville and identified 61 with cancer and four with secondary cancer. The most common cancers were prostate and melanoma.

A second study from Monash University commissioned by the CFA investigated the risk of cancer and mortality for individuals who lived and worked at Fiskville, focusing on 606 people. The study found that those in the high risk group had double the risk of cancer, with high incidence of melanoma and testicular cancer, while those in the medium risk group showed an excess of brain tumours.

The inquiry received submissions and heard statements from over 500 witnesses, many of whom were suffering from illnesses they feared may have been caused by contamination at Fiskville. These witness testimonies, such as the one from Colin Cobb who was a senior instructor at Fiskville from 1984-87, present a tragic litany of illnesses, mainly cancers, in people who worked at, lived near or attended school at Fiskville. Another witness spoke of a number of birth defects suffered by members of his recruit course who trained at the facility. There was also evidence from former students at the Fiskville school, local residents, contractors and others affected by unsafe practices at the site.

While acknowledging that the link between hazardous materials and diseases is difficult to prove, committee chair Bronwyn Halfpenny MP said in her foreword that the committee heard extensive evidence highlighting the link between the two and that the report 'validates the testimony' of the witnesses.

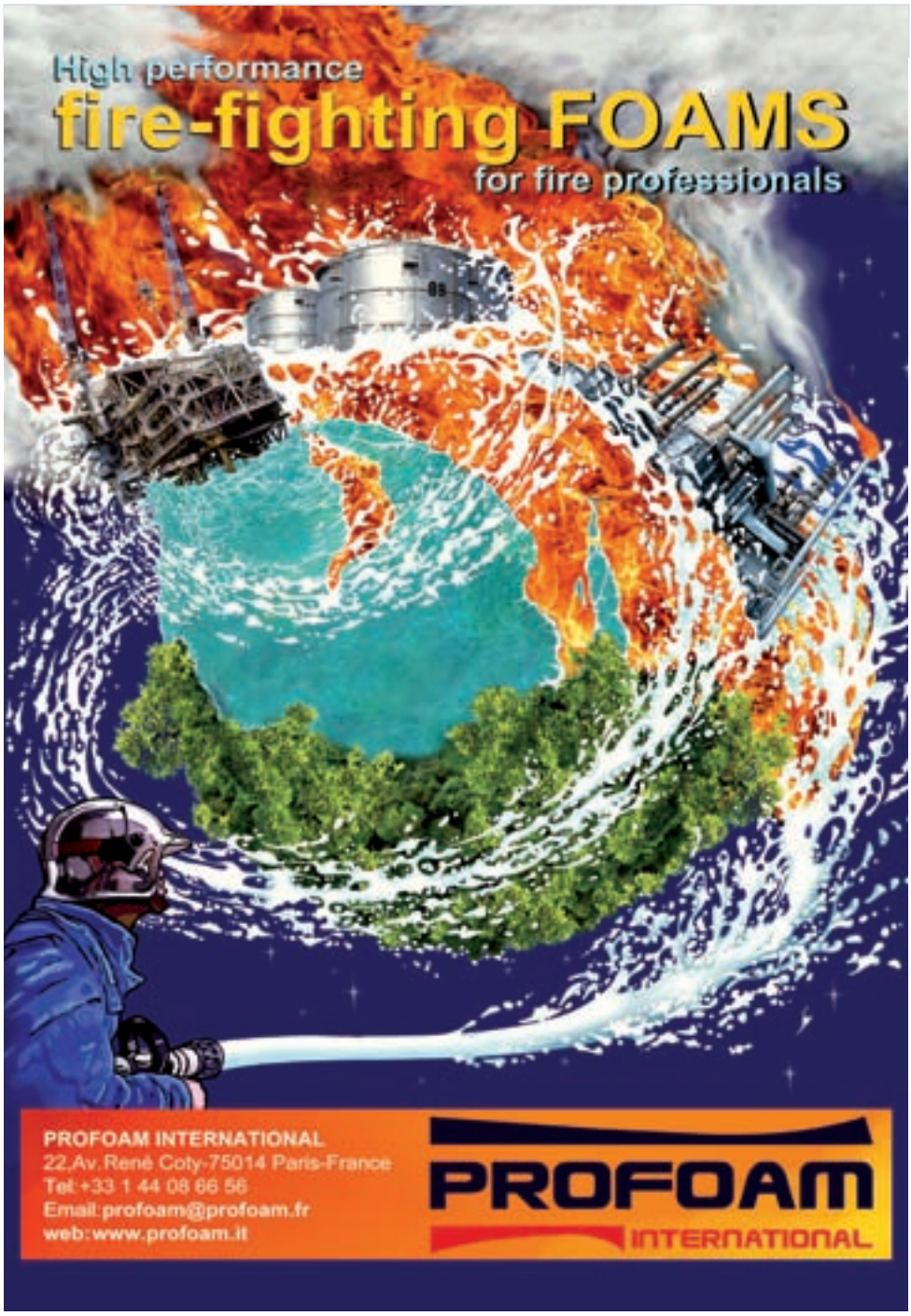
'To the question: ''Could unsafe practices at Fiskville have caused my illness?'' – the answer is, in all likelihood, yes,' she stated. 'To the question: ''Did CFA management and Board members know that practices at Fiskville were unsafe or contravened standards and safety regulations?'' – the answer is yes, some did.'

On this point the report is particularly damning. The

contaminations claims first came to public attention with the publication of an article in the *Herald Sun* in December 2011 in which former Fiskville instructor and later CFA chief officer Brian Potter spoke of his concerns about the chemicals he and others had been exposed to, and his own illnesses which he feared were a result of this exposure. Despite former CFA staff and management stating that they were unaware of health and safety concerns at Fiskville, the committee found evidence that knowledge of the contamination of the site existed within the CFA executive management and at board level before this article was published.

For example, the report states that the board was made aware of contamination of PFCs at the site in 2010 by Air Services Australia and did not investigate, and that it was aware 'from 2009 at the latest' that contaminants in Dam 1 were an ongoing potential health threat.

Furthermore, the report states that CFA senior management repeatedly avoided taking responsibility for water quality at Fiskville, ignored the concerns of the United Firefighters Union about possible contamination and failed to implement recommendations of external reviews in the area of occupational health and safety. The committee went on to say that the CFA also failed in its responsibility to provide sufficient information about the contamination to those affected, and this failure heightened the anxiety of staff, trainees and the local community about the issue. The CFA was not alone in failing the Fiskville firefighters and local community, however. The report also criticised Victoria's occupational health and safety regulator Worksafe for being 'entirely reactive' in the performance of its regulatory role at Fiskville.



In particular, the inquiry found that Worksafe inspectors failed to address many of the occupational health and safety issues that were examined during the inquiry, despite 117 visits to the site between 1991 and 2011, and that it failed to adequately respond to two requests by the United Firefighters Union to investigate concerns at Fiskville. In the first instance, the watchdog did not carry out any independent tests when asked to investigate water quality, and in the second, took an unacceptable length of time to respond to a possible breach of the Occupational Health and Safety Act 2004.

Moorabool Shire Council and the Environmental Protection Agency Victoria also come in for criticism, with the report saying of the EPA that it failed in its statutory role at Fiskville by allowing the CFA to contaminate the site 'to such an extent that it has been closed down and is now the subject of complex and very expensive remediation'.

In addition to the failings of the CFA and others, the late delivery of the report is also addressed. Its publication was delayed twice, attributed to the unnecessary delay in obtaining documents from all departments, particularly the CFA. The Victorian Government Solicitor's Office was 'obstructive and uncooperative in the document recovery process', taking too long to release documents, making unnecessary redactions and 'swamping' the committee with paperwork. This frustrated the committee to such an extent that it tabled a 'Special Report on the production of documents' in November 2015. The report also makes a number recommendations covering the entire scope of the inquiry, including that EPA Victoria conduct regular environmental testing of fire-fighting training facilities in Victoria and that the Victorian Government audit CFA occupational health policies. A number of recommendations centre around the need for greater knowledge of the behaviour and effects of PFCs and better monitoring of levels in firefighters.

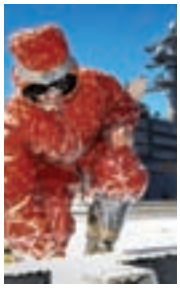
Finally, the committee recommends a dedicated redress scheme for those affected by Fiskville that is developed in consultation with victims, has a low evidentiary requirement and a range of redress options that take into account the differing needs of individuals.

Download the full report at: www.parliament.vic.gov.au/enrrdc.

Transition achieved

New milspec foams provide superior performance with reduced environmental risk, writes Tom Cortina.

Tom Cortina is executive director of the Fire Fighting Foam Coalition.



Sailors observe the AFFF system flow in the hangar bay of USS Makin Island during an AFFF operating system test. Photo: Mass Communication Specialist 3rd Class Nick Cerilli, US Navy.

Over the past few months new AFFF agents from multiple manufacturers containing only short-chain fluorotelomer-based surfactants have passed the US military specification (Mil-F-24385F), one of the world's most challenging foam standards, and have been listed on the US military's qualified products database.

Short-chain fluorotelomer-based surfactants that contain six carbons or less (C6) are approved for use by environmental authorities worldwide as alternatives to longer-chain fluorosurfactants (C8 and above) because they are much lower in toxicity and do not bioaccumulate based on current regulatory criteria.

While these new military specification (milspec) listings are an extremely positive development that validates our predictions that the transition to short-chains would be smooth, they are not at all surprising.

The use of short-chain (C6) fluorosurfactants in fire-fighting foams is not new. They have been a key component of some fluorotelomer-based AFFF agents since the 1970s. In fact, milspec AFFF agents containing greater than 95% short-chain fluorosurfactants that have been on the market for more than 30 years are the primary foam agents used for the last decade by US, Australian and some European armed services. As such there was never any real doubt that foams containing only short-chain fluorosurfactants could meet the most difficult fire protection challenges.

Milspec is one of the most rigorous and respected standards for fire-fighting foams in the world. It is more difficult to meet than other standards such as EN and UL, and there are many foam products that meet the requirements of those standards but do not meet the requirements of the milspec. Unlike the ICAO foam standards that are based on the results of a single fire test, the milspec requires foam to pass multiple fire tests using both fresh and salt water. Included in those fire tests is the requirement to pass one of the tests at half strength to account for potential problems with the operation of proportioning equipment in the field. No other foam standard includes this rigorous half-strength requirement. A more complete list of milspec requirements is presented here:

- Fire performance on 2.6m^2 and 4.6m^2 unleaded gasoline pool fires using both fresh and salt water
- As part of the fire performance testing foam agents must extinguish the 2.6m^2 fire at half-strength and at five times strength
- Foam quality, film formation and sealibility tests
- Dry chemical compatibility
- Compatibility after aging with all other QPD-listed products and prior QPD products still in use in significant quantities determined by multiple qualification tests and mixtures including 2.6m^2 fires using both fresh and salt water
- Conformance to chemical and physical tests, including refractive index and fluorine content
- Corrosivity on multiple alloys (pH, total halides, general and localised corrosion)
- Environmental impact as determined by biodegradability factors, specifically, chemical oxygen demand, biological oxygen demand, and aquatic toxicity

An important component of the milspec that needs to be stressed is the requirement that all listed foams must be compatible for use in the same equipment at the same time. Along with performance, this compatibility requirement is one of the key issues that led the Federal Aviation Administration to require in 2006 that all airports in the US must use milspec AFFF agents for aircraft rescue and fire fighting. Compatibility with the other concentrates allows mutual aid and re-supply from many sources in times of emergency or competitive bids, ensures performance, prevents foam mixing and storage issues and avoids potential equipment problems.

In recent years some airports in Europe and Australia have begun using fluorine-free foams for ARFF based on their having passed the ICAO standard. The airport firefighters using these foams and the passengers flying into these airports should be aware that fluorine-free foams are not currently able to pass the milspec and would not be allowed for use in US airports. In addition the ICAO standard does not include the secondary critical requirements of the milspec such as compatibility. Fluorine-free foams currently on the market are not only incompatible with AFFFs, but also with other fluorine-free agents.

Recent testing by the Naval Research Labs presented at an American Chemical Society Conference in San Diego showed AFFF agents extinguishing gasoline fires in less than half the time it took fluorine-free foams to extinguish the same fires. NRL includes the development of aqueous film-forming foam under their greatest accomplishments – 90 Years of Innovation – as 'one of the most far-reaching benefits to worldwide aviation safety.'

There is currently a misconception that foams containing only short-chain fluorosurfactants require significantly more fluorosurfactant to achieve the same level of performance as a previous formulation with some long-chain content.

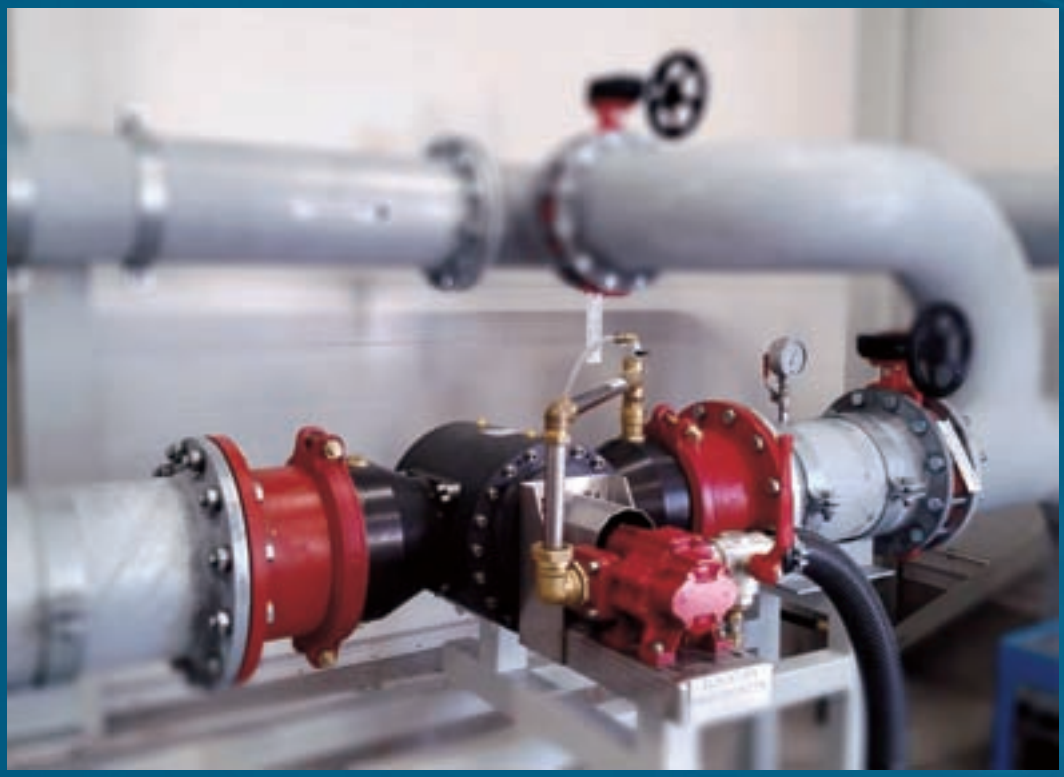
This misconception appears to be based on public statements from one manufacturer that it required 40% more fluorosurfactant to reformulate some of their products. It is our understanding that most of the new short-chain AFFF agents that have passed the milspec have a fluorine content of around 1%. This is well within the historical range for fluorotelomer-based AFFF agents on the QPD and significantly lower than the PFOS-based products that were on the list prior to 2002.

Although each foam formulation is unique and the exact amount of fluorosurfactant needed to achieve a specific performance level will vary with each formulation depending on the skill of the formulator, there is nothing inherent in the use of short-chain fluorosurfactants that would require significantly more to be used to achieve the required performance level.

Concluding, the environmental impact of fire-fighting foams has been drastically reduced over the last decade with the elimination of PFOS foams, an increased focus on minimising foam discharges, and the transition to short-chain C6 fluorotelomer-based surfactants. The recent listing on the milspec QPD of multiple new AFFF agents containing only short-chain fluorosurfactants is an important sign that this transition has been successfully achieved. This will ensure that safe and effective AFFF agents that meet all environmental requirements will continue to be available well into the future.

FIREMIKS®

THE SWEDISH ORIGINAL



SIMPLICITY

The user-friendly dosing system for fire-fighting.
-Easy to install, use, maintain and test!

FIREMIKS® is a mechanical dosing system used for fire fighting. The circulation of the water solely drives the motor - no other additional energy is required!

FIREMIKS is the efficient proportioning system where cost and environmental concerns are paramount.

Firemiks AB - P.O. Box 8155 - SE-104 20 STOCKHOLM, Sweden - www.firemiks.com - info@firemiks.com - Tel: +46-8-551 196 10

Opportunity of a lifetime

Industrial and public safety practitioners from Hong Kong, France, Slovakia, Falkland Islands and Greece came together in April for practical fire-fighting foam training.

The week-long course at the Jovellanos Centre in Asturias, Spain followed the successful Fire-Fighting Foam School organised by Angus Fire in 2015.

The addition of new foam school partner CFB Risk Management meant that the foam-training programme could this year be enhanced with emergency planning and risk management content. The attendees – where were mainly personnel from the municipal and petrochem sectors – also received 30 CPD points awarded by the Institute of Fire Engineers.

According to Dave Russell from Angus Fire, the course programme maintained a good balance of practical fire-ground training and classroom work, which included a number of case studies.

The practical programme encompassed a variety of supervised fire scenarios with hydrocarbon and solvent fuels including tank firefighting, pressurised flange fire, bund fire, tank rim-seal fire and LNG fire demonstrations. These were undertaken under the command and control of CFB Risk Management.

The theoretical programme covered emergency planning and hazard identification, testing foam in the field, emergency response planning, environmental considerations and tank fire-fighting tactics.

The primary aims of the course were firmly centred on the practical aspects of dealing with challenging incidents, including understanding of fire-fighting foams, application methods and techniques; how to use the equipment used to tackle flammable liquid fires; how to identify hazards and ensure measures are put in place to mitigate and reduce risks to emergency responders, the facility and the public; and meeting the practical challenges of emergency planning and the extinguishment of large, full-scale flammable liquid fires.

Instructors included recognised industry experts such as Gary Cawley and Gary Douthwaite from CFB RM, Martin Hough, Nigel Joslin and David Plant from Angus Fire, with overall chair responsibilities carried out by Ron Parry.

'By the end of the course participants had increased their knowledge and understanding of the pressures that fire-fighting professionals face in large-scale emergencies,' said Dave Russell, adding: 'The course enabled them to develop a wider perspective of engineered systems, fixed foam equipment and the methods used to tackle a petrochemical, oil or gas incidents. It included the implementation of a wide raging emergency action plan to reduce the impact of the event on the business and stakeholders. '

The exhausting daily programme was complemented by social events in the evenings for both delegates and instructors.

The course has received some very positive feedback. Steven Flint from Kent FRS said that the school was 'outstanding' with 'world-class facilities' while Sion Slaymaker from Mid and West Wales described the event as 'one of the best I've been to in my 18 years in the FRS'. Steve Burwell, Kent FRS, said it was 'the opportunity of a lifetime'.

A video of the training is available on Youtube – search for 'Angus Fire'.

LASTFIRE expands

International oil safety research group LASTFIRE opens its membership to emergency responders and suppliers.

LASTFFIRE (Large Atmospheric Storage Tank Fires) consists of a group of international oil companies that review and develop best practice in fire and explosion hazard management of storage tanks. It has become recognised as the leading industrial authority on this subject.

LASTFIRE membership had previously only been open to companies operating storage tanks and, while specialist suppliers of equipment and services had been invited to give technical presentations at regular meetings, they could not formally contribute to the group.

However, having recognised the knowledge and experience available in specialist suppliers and responders, LASTFIRE has opened associate membership to other relevant organisations. Although associate members have no voting rights they are be able to run technical webinars for group members as well as attend the regular meetings, contribute to research work and receive project deliverables prior to general publication.

LASTFIRE project coordinator Niall Ramsden commented: 'LASTFIRE is determined to remain non-commercial but recognises that input from specialist suppliers of services and equipment can enhance knowledge. 'The group is keen to expand membership and so widen the networking and research aspects of their work.'

The Rotterdam Europoort-based Unified Fire Brigade, which is the specialist industrial response wing of Rotterdam Fire Brigade, and foam manufacturer Solberg have become the first organisations of their kind to become associate members.

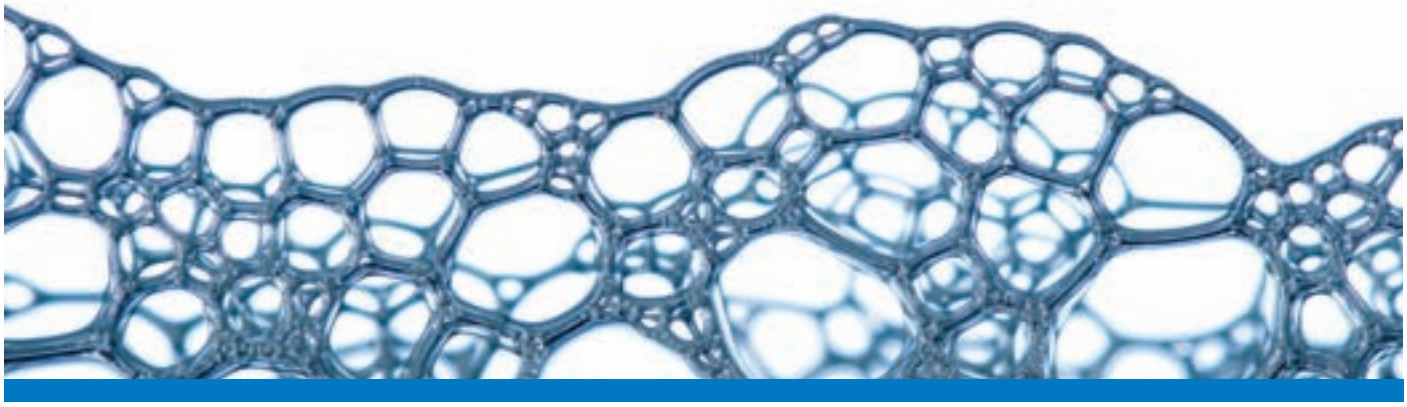
Among the group's previous achievements are the development of statistical databases and related best practice guidance as well as research work on boil-overs, vapour suppression and construction of internal floating roofs.

According to Niall Ramsden, current projects under consideration include developing best-practice guidance on bund fire fighting – an issue that is increasingly important as regulators make greater demands on tank operators – and LPG incident response. 'The objective is always to provide practical guidance allowing safe, cost-effective risk reduction.'

The latest tank storage operator to become a full member of LASTFIRE group is Reliance, the leading Indian conglomerate working in the oil, gas and petrochemical storage and refining sectors.

Interested in joining? Contact Niall Ramsden: info@lastfire.org

ANGUS FIRE



INTEGRITY
ANGUS FOAMS

C6 & FF Foam Concentrates

Protecting what matters

To receive your 2016 brochure, email general.enquiries@angusuk.co.uk

www.angusfire.co.uk

C8-free world

A world free of C8 and fluoro-compounds is not unattainable, writes Alberto Menéndez of Auxquimia.

We are facing challenging times in fire fighting. The traditional tools that protect both us and our assets are being closely evaluated and some of them are being ruled out in order to keep our world healthy for the future.

As regards foam concentrates, manufacturers are striving to develop products with the maximum performance but without the most effective ingredient required to achieve it, fluoro-compounds.

Following environmental concerns, Auxquimia began manufacturing all its AFFFs with mostly C6 fluoro-chemicals back in the 1980s and we finally eliminated all C8 chemistry in 2014.

We are producing high-performance foam without the use of C8 chemistry to the point that, in 2015, our US branch even qualified our C6 formulation for a 3% AFFF that met US military specification MIL-F-24385, which is currently listed in the QPL Directory as Phos-Chek 3% AFFF MS. This was the first C6 fluorochemical foam to be listed in the QPL in accordance with the US Environmental Protection Agency's Stewardship Programme – no small achievement considering this certification is the most demanding in the world for AFFFs. Few manufacturers are capable of meeting it or, indeed, have met it.

Passing MIL-F-24385 is a long and expensive process that encompasses a number of stringent extinguishing tests as well evaluation of the physical properties of the foam, not to mention the inspection of the manufacturer's facilities. There are no different levels of classification either – the foam either passes or it doesn't.

Auxquimia also offers a wide range of C6 foam that meet the strictest, non-military standards. The range at 1x1% for example includes a Newtonian solution that is LASTFIRE certified; UL listed; and EN 1568-compliant – and which is ideal for tough hydrocarbon and polar solvent fires.

However, our research and development has not just been focussed on C6. In fact, Auxquimia began developing fluorine-free foam back in the 1990s.

Our range of fluorine-free foam has been evolving through the years to cover most industrial and civil applications. In 2011 it achieved a rating of 1B in Heptane and 1A on Acetone according to EN-1568: 2008, in 2012 it received LASTFIRE certification and in 2014 it was given UL listing.

In 2015 Unipol-FF 3/6 achieved UL 162 listing (*Standard for foam equipment and liquid concentrates*) with polar solvents, an extraordinary achievement given that all other fluorine-free foams have only been listed with hydrocarbon fuels.

Furthermore, sprinkler tests based on the same protocol have also been carried out with the challenging polar solvents acetone, ethanol and isopropyl alcohol, and the results have again showed very good extinguishing times.

Our foams are under constant development and we have set ourselves some further challenges for the future. One of the primary limitations of fluorine-free foam is that it does not film-form like AFFF, which lessens its extinguishing efficacy. Another limitation is that it doesn't have the same performance as AFFF when running through non-aspirated equipment, as would be the case in an incident requiring a long throw. When challenges such as these are met, fluorine-free foams will get that much closer to substituting AFFF in all kinds of operations.

Another challenge is increasing the performance of fluorine-free foam and polar solvents. Currently a good AFFF-AR will work well with nearly any type of polar solvent, but fluorine-free foams behave differently depending on the type of solvent.

Lastly, we'll be focussing on making fluorine-free foam concentrate less viscous to the point that it can be used with polar solvents at 3% or – why not – even 1%.

The challenges we face may be constantly evolving, but so are our capabilities to meet them.

MAKING THE GRADE

New foam concentrates gain US military specification listing.

The Arctic 3% and 6% AFFF foam concentrates from Solberg have achieved US military certification MIL-F-24385F.

All AFFF used by the US military must meet the requirements set forth in MIL-F-24385F, which is under the control of the Naval Sea Systems Command. The Naval Research Laboratory is the designated institution for certification evaluation for the Department of Defence AFFF Qualifying Products List.

Solberg's PFOA and PFOS-free synthetic Arctic foam concentrates are designed to extinguish class B fuel fires using fresh, salt or brackish water.

The Arctic 3% AFFF is also certified for use in commercial land and offshore applications where the use of MIL-SPEC-certified concentrate is required. These include aircraft rescue and fire-fighting services at airports, aircraft hangars and heliports.

In May 2012 Arctic foam concentrates became C6 fluorochemical-based, making Solberg – a division of Amerex Corporation – the first foam manufacturer in the US to offer commercially available foam concentrates that are compliant to the 2015 US EPA PFOA Product Stewardship Programme. The Arctic 3% MIL-SPEC AFFF is also Underwriters Laboratories-listed in accordance with UL 162.

Mitch Hubert, Solberg's vice president global product development, commented: 'After months of development work and hundreds of fire tests we have come up with product formulations that are superior in every aspect of performance and have the added value of being UL listed to the stringent requirements of sprinkler applications.

'Formulating a product with the range of performance found in our 3% and 6% MIL-SPEC AFFF concentrates is elegant chemistry at its best.'

Your complete fire solution

FIRE & RESCUE

The ONLY publication SOLELY aimed at the municipal fire industry. The quarterly publication provides a global platform for readers to exchange views and working practices and provides updates of latest products within the fire sector.

Why advertise in Fire & Rescue?

- You can ensure your products/services reach 8,250 decision-makers within the municipal fire industry
- You will be promoting your products services to senior fire service and rescue personnel, including chief fire officers, assistant chief fire officers, training officers and SAR leaders worldwide

INDUSTRIAL FIRE JOURNAL

The ONLY publication to be circulated to the industrial high risk active and passive fire industry worldwide. Established for 25 years, IFJ is the market-leading publication for the industry.

Why advertise in Industrial Fire Journal?

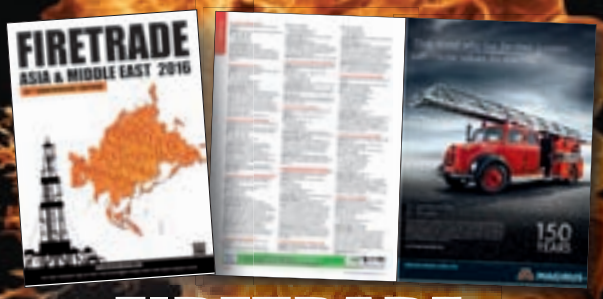
- You will be ensuring that your products/services are promoted to decision-makers within the high risk active and passive fire industry
- Your organisation will be placed in front of chief fire safety officers, senior fire safety personnel, general managers, engineers and architects amongst many others

FIRETRADE EUROPE

The ONLY print directory to be circulated to both the municipal and industrial fire markets in Europe, and linked to a supporting website and CD ROM, meets all needs for the active and passive fire industry.

Why advertise in Fire Trade Europe?

- The comprehensive buyers' guide covers both the passive and active sectors of the fire industry and provides you with a very cost-effective way reaching the European fire market
- You can advertise your products and services for 12 months to 30 European nations for a one-time cost



FIRETRADE ASIA & MIDDLE EAST

A unique guide, which includes comprehensive, accurate and up-to-date listings of agents, dealers and distributors covering more than 38 countries.

Why advertise in Fire Trade Asia & Middle East?

- Your advert is an extremely cost effective way to increase your agent/dealer network, within these Asian & Middle Eastern countries, as well as attracting sales and business enquiries
- Distributed directly to 6,200 key decision makers throughout Asia and the Middle East with additional directories and CD ROMs available at targeted international fire exhibitions throughout the year

hemmingfire

www.firetradeasia.com • www.hemmingfire.com • www.firetradeeurope.com

To find out about all opportunities in any of these products please call +44 (0) 20 7973 4666 or email k.francis@hgluk.com

Advanced in Cambridge

A new US$30 million, state-of-the-art data and high-performance computing centre at the University of Cambridge is being protected by extinguishing control panels supplied by intelligent fire system manufacturer Advanced Electronics.

The energy-efficient West Cambridge Data Centre was officially opened by University Chancellor Lord Sainsbury in March and comprises four halls covering around 2,200m^2 where the data relating to some world-leading research is being processed.

The University of Cambridge has one of the largest research and development budgets in the UK education sector, devoting 40% of its US$2,000 million annual revenue to funding advances in the fields of astronomy, genomics, medicine, physics and other fields.

Rather than attempting to refurbish its existing diverse data storage infrastructures, the University and Cambridge formed a partnership to invest US$30 million in a bespoke world-class facility to support business operations, teaching and learning, and research communities.

Initially, the West Cambridge Data Centre will serve the current and future needs of the University Information Services (UIS) and the institutions for whom it manages IT infrastructure, the high-performance computing service supporting the University's research activities, and the administrative needs of Cambridge Assessment, which manages the University's three examination boards. Cambridge University Press are also planning to share the Cambridge Assessment Data Hall.

The new two-storey 2,200m^2 steel and block facility houses four data halls that are designed for the different IT density requirements of its key stakeholders. There are currently 60 racks across three halls: Hall 1 accommodates the High Performance Computing Service's high density IT load of up to 900kW; Hall 2 provides 201kW for Cambridge Assessment's needs, and Hall 3, 240kW for UIS' servers.

Hall 4 remains deliberately unallocated and has not been fully fitted out in order to allow the University to install another 40-50 racks as future demand increases.

The Cambridge High Energy Physics Group is part of the international alliance that created the CERN Large Hadron Collider in Switzerland. Scientists and students are currently involved in a number of projects involving the LHC, including research into how matter and antimatter were produced in the Big Bang.

The purpose-built unit comprises a dedicated build room for engineering work, an operations room, security office and meeting room space. As well as a hoist for unloading deliveries and a large service elevator designed to accommodate even the largest pieces of kit, the new building features an argonite gas fire-suppression system controlled by panels supplied by manufacturer Advanced Electronics.

Described by its manufacturer as ultra dependable, the Exgo extinguishant-release system has been configured and installed by Advanced Fire Solutions. The suppression control system installed in the building comprises four Exgo panels with mode select key switch assemblies.

Advanced Fire Solutions' managing director Jonathan Bacon said that system reassurance and long-term reliability were critical drivers for the selection of Exgo, adding: 'We have an established partnership with Advanced and we knew that the equipment would be of the highest quality. The system also offers the flexibility and expandability to meet all future requirements.'

The Exgo system is suitable for almost all single-flooding area applications and includes a range of control options and devices. It is approved to EN 54 (*Fire detection and fire alarm systems*) part 2 (*Control and indicating equipment*), part 4 (*Power supply equipment*) and part 13 (*Compatibility assessment of system components*) as well as EN 12094-1 (*Fixed fire-fighting systems: components for gas extinguishing systems – requirements and test methods for electrical automatic control and delay devices*).

According to Advanced Electronics, the Exgo was among the first systems to combine in a single solution the standards mentioned above along with EN 12094 part 3, *Fixed fire-fighting systems – components for gas extinguishing systems, requirements and test methods for manual triggering and stop devices*, which was achieved through the use of an integrated manual release on the front of the panel.

Exgo has been developed specifically for sensitive and strategic assets such as server rooms, historic and cultural attractions and control rooms. It has been installed in high-profile buildings across the globe, including the Magna Carta vault at Lincoln Castle, UK; the National Library in Romania as well as strategic oil pipelines in Sudan.

The Exgo is proving popular because it can be integrated into any third-party fire system as well as Advanced's own Axis and Mxpro fire panels. 'The West Cambridge Data Centre is a strategically vital part of the University of Cambridge's infrastructure and essential to its operations and those of its many international stakeholders. We are delighted to be part of it,' concluded sales manager Robin Kemp, Advanced Electronics.

ExGo

Reliably Advanced Extinguishing Control

Wether you're protecting data from the biggest science project in the world, irreplaceable documents like the Magna Carta or 1000s of miles of oil pipeline, ExGo is the safe choice.

ExGo is Advanced's rock-solid gas release panel. Combining performance with ease-of-use it is compatible with solenoid and metron valves and comes with a full range of accessories and options.

To book a demo or for more info visit advancedco.com

Tel: +44 (0)1670 707 111 **Fax:** +44 (0)1670 707 222
Email: sales@advancedco.com **Web:** www.advancedco.com

Advanced
The Standard in Fire Systems

Prevent data centre fires

Climate control technology can be used to great effectiveness for the total prevention of fires in data centres – and an international standard is just around the corner, writes Geir Jensen.

Fire-preventative indoor climate (FPIC) – also known as oxygen-reduced air, fire inert air or hypoxic air – is widely recognised as the ultimate way to mitigate fire because it completely rules out any down time instead of just reducing it.

FPIC systems work by reducing and then permanently maintaining the oxygen concentration of a room at around 15%, a level at which fire cannot ignite or burn but one at which it is safe for humans to breathe.

Staff can work in an FPIC-protected space without having to wear any protective gear and, in the case that smoke is detected from a faulty component, the problem can be fixed without any risk of fire escalation. With a traditional system, of course, an evacuation would be required due to the effects of the extinguishing system.

But if FPIC systems are so good, why don't we see them protecting all ICT and control rooms as well as data centres? What are the limitations and who are the users of this technology?

A moderate progress in data protection applications may appear puzzling, especially because virtually all the eye-opening benefits that were claimed by manufacturers of these systems ten years ago have now been fully verified.

The main answer is that FPIC is a solution best suited to larger spaces because the lower volume within small data rooms translates into a relatively high cost per m³ of FPIC – then again, it is found in smaller spaces too, but these tend to be high-risk, highly critical mission or communications-type environments. Secondly, some countries are simply waiting for international standards to catch up.

To those unacquainted with the technology it can at first seem counter-intuitive that valuable data assets are best FPIC-protected when they are in a large hall rather than in a small, dedicated space. This is because small rooms have more joints, cracks, air ducts and openings per square meter than larger rooms, which in turn creates an air mixture that is more sensitive to changes than would be the case in a large space. Because the majority of the air within a large space is not in contact with the interior surfaces of walls and ceilings, it leaks less. In fact, even with the system turned off, it would take hours or days for ignition to be possible in a large space.

For this reason FPIC systems can be found in major facilities such as the Forsmark nuclear power plant in Sweden, Nytt Østfoldsykehus hospital in Norway, as well as Greenfield and Green Mountain data centres in Norway. And the technology is gathering momentum. FPIC manufacturer Opsys is currently in the last stages of installing its systems in Qatar Petroleum's data centre in Doha and the Ras Al-Khaimah Data Centre in the UAE.

High reliability is a main characteristic of FPIC systems. The system works in a passive, fully automated mode where oxygen levels are constantly being monitored by a number of quality, off-the-shelf sensors within each room. And because FPIC prevents any ignition for hours or days after being turned off, in a sense it is always 'on'. Staff can fix failures during these extended hold periods whilst ensuring there is no substantial loss of oxygen-reduced air by simply keeping doors shut.

Like any other technology there are disadvantages, however, and these revolve around high power consumption costs as a result of air leakage. Once a room has been made sufficiently airtight, however, this problem vanishes into thin air (literally).

Another disadvantage – in this case non-technical and non-economic – is that FPIC is perceived as posing a health risk to personnel. This perception – quite common with new technology – has nevertheless been disapproved. The latest research demonstrates that the effects to the human body by FPIC are identical to flying on a commercial aircraft cabin or to living in a high-altitude location such as Mexico City – or even skiing in a mountain resort. In fact, this technology is often used for the training of athletes as well as for patient recuperation after illness or surgery.

For the purposes of facility protection, FPIC systems offer three modes of operation: extinguishing; ignition prevention; and combustion retardant. While it can be used for extinguishing, by far the most common application is ignition-prevention mode.

FPIC combustion-retardant mode is an exciting possibility for the future. It consists of a climate with a higher oxygen concentration than in ignition-prevention mode, and one that consumes less energy whilst requiring fewer access instructions. This retardant mode allows very limited ignition to occur – think prolonged kindling or smouldering – and even then only to the point where the fire will consume in one hour what would have been consumed in a couple of minutes in normal air. Retardant mode requires verification to identify its suitability on a case-by-case basis, but its performance is impressive, limiting fire damage below – or up to – the damage that may have been caused prior to complete extinguishment by a gaseous system.

As alluded to already, although some national FPIC standards do exist, for example in Russia, China, Austria, Germany and the UK, waiting remains the most realistic option for most countries until the imminent CEN standard is published, followed by the ISO.

Fire protection by a 24/7 indoor climate that prevents fire and allows normal occupation seemed fanciful in the 1990s. Gary Kotliar first scientifically explained the concept in 2001, which resulted in accurate and safe system designs that have proved the technology in practice. FPIC fulfils the expectations of reliably preventing ignition whilst allowing extended occupation without protective gear.

The Cap 9 fire prevention system is designed and manufactured in Dubai by Opsys. The oxygen-reduced air system is currently being installed in Qatar Petroleum's data centre in Doha and the Ras Al-Khaimah Data Centre in the UAE.

Geir Jensen is technical director of fire safety at independent engineering firm Cowi.

CLEAN DATA

The owner of a newly opened data centre near Montpellier, France reveals why he decided a clean agent was the most suitable solution for his facility. Gaëlle Carcaly reports.

HDC34 is the name of a new data centre that opened last summer in Saint Aunes, a village situated in the Languedoc-Roussillon region of southern France.

Built in partnership with IBM and Prosodie, HD34 is at its present size a modest 100m² space that can accommodate 30 racks at 3.5kW each, aimed at specialising in data storage for small and medium sized companies in the neighbouring region. A second IT room forecast to double the available capacity is planned by the founder of the enterprise, Luc Vidal, for whom safety was a critical consideration in the initial design.

In addition to the electrical supply, the cooling system and the physical security of the premises (access control and CCTV), fire protection was a priority, which is why a number of companies were consulted before a selection was finally made in the form of a very early detection system; a fully automatic extinguishing system; and clean agent Novec 1230

'We studied three solutions: water mist, inert gas and Novec 1230 fluid,' says Luc Vidal, explaining that water mist was initially eliminated for cost reasons. In comparing the remaining two solutions a number of factors were considered. First was human safety. He noted that the extinguishing concentration of Novec 1230 was 5.3% of the room volume, which provided an 88% margin of safety when calculated against its No Observed Adverse Effect Limit (NOAEL is the internationally established limit for the various extinguishing agents) of 10%. This compared favourably against a 7% margin of safety for inert gas, which typically has a design concentration of 40% and a NOAEL of 43%. This is because inert gas reduces oxygen levels within the protected enclosure to a level below which combustion cannot be sustained. 'On the other hand, if an operator remains in the room for longer than the timeout delay of 30 seconds, the air remains safe with Novec 1230,' explains Julie Boizot, 3M application engineer and Novec expert.

A second advantage of a clean agent system over an inert gas system is its low space requirement. Inert gas systems introduce large quantities of gas in a room – about 40% of the room volume – compared to 5.3% of the room's volume with Novec 1230. For Vidal's data centre, this meant a requirement for only six Novec 1230 cylinders as opposed to 18 cylinders of inert gas, and only one vent to absorb the overpressure.

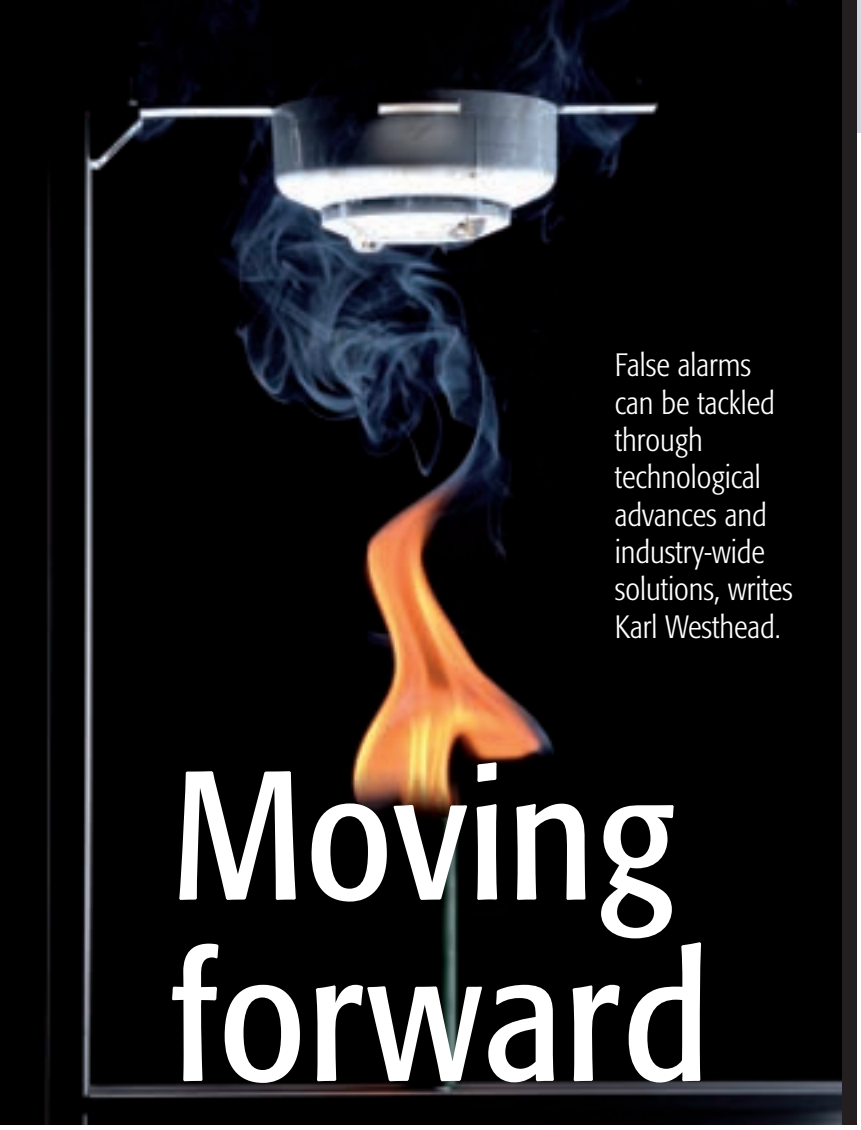
Other benefits of Novec 1230 is that it is a non-conductive, non-corrosive fluid that evaporates without leaving a residue, thus leaving electronic equipment undamaged.

To further protect the equipment from any risk of damage after an incident, the fluid has been combined with the Sinorix silent nozzles. Siemens specially designed these silent nozzles to discharge at below 100 decibels following research by the French association of fixed fire extinguishing nozzles (GIFEX), which showed that decibels in the 110dB level can damage some hard drives.

To cap it all, Novec 1230 has global warming potential below CO_2 and decomposes in less than five days in the atmosphere. This makes the fluid exempt from the current F-Gas regulations that impose bans and quotas for fluorinated greenhouse gases and, moreover, it is backed by a warranty from 3M: 'We implemented a 20-year Blue Sky warranty where, if the Novec 1230 fluid becomes affected by this or any other regulation, 3M will refund the cost of the Novec fluid,' says Julie Boizot.

For Luc Vidal the cost of the detection and extinguishing systems represented around 8% of the technical costs of his data centre, a low price to pay for the future safety of his facility and his clients' businesses.

Article first published in *Face au Risque* magazine.



False alarms can be tackled through technological advances and industry-wide solutions, writes Karl Westhead.

Moving forward

If there's one issue that is always front of mind and top of the agenda for fire sector professionals it's false alarms and how, as an industry, we can tackle this dangerous, costly and inconvenient problem.

Latest figures from BRE show a recorded 293,100 false alarm incidents in 2013-14, resulting in estimated losses of around US$1.5 billion a year – largely due to disruption and loss of productivity for businesses. London Fire Brigade Assistant Commissioner Neil Orbell said that attending false alarms placed a significant drain on valuable public resources and reduced the LFB's capacity to respond to real emergency incidents. In an attempt to contain false alarms the LFB introduced in 2014 a cost-recovery fee for attending more than nine false alarm incidents in commercial premises in any 12-month rolling period. As of January 2016, around US$800,000 had been recovered through the scheme.

Karl Westhead is technical director at Apollo Fire Detectors

As a company Apollo believes that innovative technology is the best solution to false alarms, using it to 'design out' the variety of issues that can cause them. Of course, there'll always be contributing factors that will never be eradicated by any manufacturer, such as malicious manual call point activations, but there are certainly recurring causes that can be addressed.

The Soteria range has been specifically designed to minimise false alarms.

An example of this design focus can be seen in the development of the recent Soteria product range, which uses new optical sensing technology to detect smoke particles entering its chambers. A new cone-shaped sensing chamber allows light from the LED to be entirely absorbed, thus reducing reflections within the chamber. In addition, the smoke entry process has been enhanced through a serpentine smoke entry path that provides a wide degree of separation of smoke from dust and steam.

A number of other technical developments have been integrated, such as the use of an advanced technology chip sensor that significantly improves the detection of smoke and enhances the reliability of the detection process.

Furthermore, a sleek, low profile means that less dust penetrates the outer casing and, whilst recognising that dust will accumulate over long periods of time, the detectors have been designed to be less sensitive to dust.

Finally, a fine mesh barrier keeps out insects but if one is small enough to enter, careful design of the optical chamber minimises any opportunity of interrupting the operation of the smoke detector.

While the design and manufacture of reliable, effective and innovative fire detection devices is critical to reducing false alarms, there are additional measures that the industry could consider.

The introduction of a European lifespan product standard for fire detection devices would be a positive move by the industry, and it's one that some countries have already embraced.

In 2012, the Spanish Government declared that the life of fire detectors would be limited to 10 years, a move influenced by a revision of standard UNE 23007-14: 2009, whilst German legislation DIN 147675 (section 11.5.3) calls for the replacement every eight years of addressable detectors installed since 2006.

In its report, *Causes of false fire alarms in buildings*, BRE found that wear and tear over a number of years can affect the sensitivity of a device. In fact, age was identified as the third most common cause for the study's false alarms, a concern when detectors currently in operation could be 15 to 20 years old.

While many of these old detectors may perform very satisfactorily, there is no guarantee that they will. Harmonised lifespan legislation would provide peace of mind for installers, manufacturers and end-users alike.

Another issue which has a considerable effect on false alarms is that of installation and maintenance. A detector can be of the highest possible quality but, if it is badly fitted or poorly maintained, the possibility of false alarms will be increased. The introduction of mandatory training certification across the European fire detection industry would be advantageous in countering this. Some test bodies and trade associations such as the BAFE, LPCB and FIA offer third-party certification schemes and training courses for the design, installation, commissioning and maintenance of fire systems, but this should be taken further and a compulsory standard established. For example the refrigeration, stationary air conditioning and heat pumps sector has successfully adopted this practice across Europe. Technicians handling systems containing a fluorinated greenhouse gas are required by law to comply with stringent training and certification, as are their

Innovation, integrity and trust.

Innovation through experience
is at the forefront of what we do.

With over 35 years global fire detection experience in the design and manufacture of innovative fire detection devices, Apollo Fire Detectors are committed to producing trusted and reliable products.

Products are designed, built and tested to the highest British and international standards so you can rely upon Apollo fire detection products ***to protect lives and property worldwide.***

Visit us on stand G100
FIREX International,
ExCel London, 21-23 June

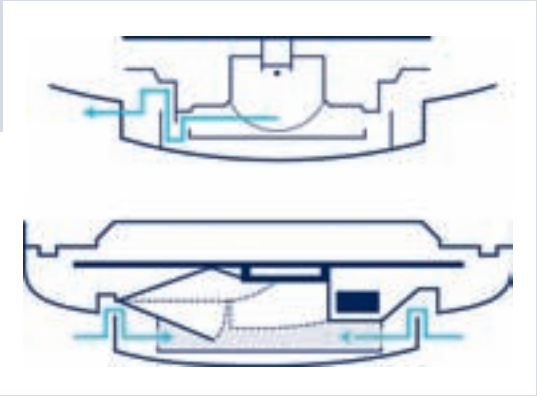
www.apollo-fire.co.uk

apollo

employers.

Introducing similar measures within the fire detection industry would ensure that the rigorous design, testing and ongoing quality checks undertaken by reputable fire detection manufacturers would be matched by superior fitting and maintenance.

To tackle false alarms we also need to deal with issues of counterfeiting. Although the reported cases of imitation devices are thankfully rare in western Europe, the fire detection industry has observed an increasing trend in certain international markets. The potential dangers of using these inferior life-preserving devices should not be underestimated – the fitting of counterfeit detectors could contribute to false alarms and, in the worst case, potentially present a threat to life. Counterfeiting also has a negative impact on the brand and the competitiveness of those manufacturers delivering safe, rigorously tested and innovative fire detection systems.



The serpentine air-flow path is designed to divide the smoke from the dust.

The fire detector itself is a highly complex and technologically advanced device, designed to fit in perfectly into an overall fire system. Bringing a detector to the market is a lengthy and costly exercise involving different phases of software and hardware development, validation testing and approvals before manufacturing and selling can get underway. In addition, continuing to supply a device is a complex and costly exercise, requiring ongoing approvals, end-of-line testing and regular conformance audits, all of which ensure that there are no deviations in performance relative to the approved standards.

It is not acceptable that a few companies choose to circumvent these processes by copying other manufacturers' products. Imitation devices may to the untrained eye look identical to the original, but their use carries the risk of non-activation and presents the danger of compromising a fire detection system due to non-compatibility issues.

To address this problem, trade associations and regulatory bodies must consider the adoption of a common approach throughout the world to safeguard industry and markets against counterfeiting.

We will never totally eradicate false alarms but what we can do as an industry is combine the latest in technological advances with calls for the introduction of standards, legislation and best practice in those areas which can make a difference. It is clear that reducing false alarms will contribute to optimising precious emergency services' resources as well as avoiding cost and inconvenience to businesses and the public. Their reduction will also foster greater confidence in the fire detection industry as a whole – no bad thing for all of us.

Aspirating Smoke Detection

NOW AVAILABLE FROM PATOL

Patol has extended its offering with the new, highly sensitive, active system - Securiton aspirating smoke detection. Featuring robust, reliable detectors - ASD 535, 531 and 532 - the system also boasts an extensive range of accessories.

It is suitable for even the most challenging of environments - dusty, steamy and dirty conditions making no difference to ASD 535. Even the finest dust particles are suppressed, allowing the system to detect the smallest glowing or smouldering fires.

Where quiet sensitivity meets genuine reliability

- **Split-second, highly sensitive reaction to incipient fires**
- **Extremely fast transmission of alarm and alarm response**
- **Scalable, cost-effective monitoring of areas from small, single premises up to large facilities of 5,760m²**
- **Three models of detector - all robust and with long service life:**
  - **ASD 535 (one or two-channel) for large-scale areas - up to 300 metres of sampling pipe and 120 sampling points and can connect to each sensor**
  - **ASD 531 (one-channel) - effective monitoring of smaller areas**
  - **ASD 532 (one-channel with smoke-level indicator) - compact solution for small to medium-sized applications**
- **Simple handling**

tel: **+44 (0)1189 701 701**
visit: **www.patol.co.uk**
email: **info@patol.uk.com**

AUTHORISED SECURITON BUSINESS PARTNER

FIREX International
FIRE PREVENTION, DETECTION & PROTECTION
21-23 JUNE 2016 EXCEL LONDON UK
Visit us at Stand C125

Ideal for warehouses, museums, IT and data centres, laboratories, clean rooms, telecom centres, cold stores etc.

PATOL
FIRE DETECTION SOLUTIONS

Flexible aspirations

During Firex 2015 came the announcement that Patol had been appointed as the official UK distributor for Securiton's range of aspirating smoke detection technology and, during this year's show, two new detectors will be unveiled.

Aspirating smoke detection (ASD) technology uses scattered light technology to detect even the slightest increase in smoke concentration and is suitable for a wide range of applications including warehouses, cold stores, IT and data centres, laboratories, museums and telecommunication facilities.

The first innovation to be unveiled by Patol at Firex is the ASD 531, a single-channel detector designed for monitoring smaller premises. It offers a quick commissioning process because its configuration is carried out directly from the device rather than a PC.

Second is the ASD 532 – also a one-channel detector – which features a smoke-level indicator. This model is a compact solution for small to medium-sized applications and it can accommodate a sampling tube length of up to 120m whilst working reliably at temperatures ranging from -20°C to 60°C. Its compact design makes it suitable for applications where space is at a premium such as lift shafts, IT racks and prison cells.

The new additions join the existing ASD 535 version aimed at large-scale areas of up to 5,760m^2 and with up to 300m of sampling pipe.

The detector features one of the most powerful fans available on the market and is ideal for use in harsh environments including deep-freeze or explosion-hazards areas as well as rooms with high volumes of contamination. Multiple ASD 535 detectors can be networked through the use of a master module, allowing 240 sensors to be connected to a single network.

Sales director for Patol Kelvin Miller commented: 'Since taking on responsibility for the Securiras range in the UK, we have seen a lot of interest from installers of fire detection systems and end users who recognise the specific advantages that aspirating smoke detection can offer. Cold stores have proved a particularly successful market, with an installation for Northern Ireland-based Lynas Foodservice being a prime example of how, through the addition of heated air sampling points, we were able to overcome the challenges posed by the low temperatures.

'The addition of these two new compact detectors gives us the opportunity to provide cost effective, highly sensitive detection of incipient fires for small to medium sized facilities.'

During Firex Patol will also be showcasing its range of linear heat detection cables, including new additions introduced to detect fire at a broader range of temperatures.

You can see these latest innovations on stand C125 during Firex International at Excel, London, 21-23 June 2016.

talentum®

Flame detection across the spectrum

Talentum Dual & Triple IR Flame Detectors

- **Detects any flame, any fuel**
  Talentum IR units detect flames from all fuels, including hydrogen gas.
- **Reliable in difficult, dirty environments**
  Talentum IR can see straight through dust and smoke, including on the unit itself.
- **Optical technology can work through glass**
  Unlike other flame detectors, Talentum IR units can be safely installed behind glass, making it significantly more flexible.

ffe

T +44 (0) 1462 444 740
E sales@ffeuk.com
W www.ffeuk.com

0594

Proactive false alarm reduction

Several precautionary steps can be implemented to prevent false fire alarms before they occur and, while routine testing and maintenance to call points is a 'must' to ensure their proper operation, it is not the only proactive approach, writes Michala Ford, STI Europe.

To protect fire alarm call points against accidental or malicious activation – and where accidental activation is a concern – clear, tough polycarbonate covers can easily retrofit over existing call points and provide immediate protection.

Where malicious activation is likely, covers with an optional, localised alarm can be installed over a call point. The local alarm sounds when the cover opens, drawing instant attention to the area without hindering legitimate use in an emergency. In the case of an attempted malicious activation, the perpetrator will most likely be taken by surprise and run away or be apprehended before the main fire alarm sounds.

Accidental false fire alarms such as those caused by impact of a call point hit by a ball in a sports hall or heavy equipment within a warehouse can easily be prevented by the installation of call-point covers. These provide a level of weather protection that is ideal for extreme environments such as wash-down areas and saline atmospheres.

The latest call point protector from Safety Technology even comes as standard with a unique substance embedded in the frame which glows in the dark. The Glow Guide pigment of the Euro Stopper will release light for up to eight hours in darkness and recharges in only 30 minutes when exposure to natural or artificial light.

The glowing pigment is not the only unique feature of the Euro Stopper. The polycarbonate cover comes in a self-assembly kit offering flexibility to suit the application. Available with a red or green housing, the range covers flush and surface-mount applications with the option of sounder or non-sounder versions. In addition, the kits are supplied with multiple language labels and with enough space for dual language operating instructions. Five alternative colours are available to suit a wider range of applications.

FIRE AND INTRUDER ALARM

Passive infrared sensors (PIR) have been added to a range of fire alarm call points, smoke detectors, heat detectors and first-aid call points to automatically send an alert to off-site personnel whenever an intruder is detected. The option is available within the Cygnus wireless alarm system modules supplied by Bull Products for use on construction sites. Should an intrusion be detected by the activated PIR sensor, the Cygnus GSM control panel sends an SMS text alert as well as cause the local alarm to sound.

The CE-marked Cygnus wireless alarm system is designed for use in dense concrete and steel buildings and is capable of linking together 480 units in 15 zones around construction sites, with each zone having a capacity of 32 units. When any fire alarm call point or detector raises an alarm, it activates all other devices around the entire construction site. Similarly when a first aid alert is raised, each first aid device will beep intermittently every 8 seconds, and a message is sent to the control panel to alert the first aider. It can also trigger a paging system or can send a text if required.

The system operates on a Category 1 radio frequency and open-air tests have shown the Cygnus system's range can exceed 1.5km.

Courtesy of Piho Engineering

Toxic Gas!
H_2S or Ammonia

•

Detect it quickly and safely with

SafEye™

Quasar 950/960
Open Path Gas Detector

HEADQUARTERS NJ (USA): +1 (973) 239-8398
HOUSTON OFFICE: +1 (832) 321-5229
EUROPE: +44 (141) 578-0693
spectrex@spectrex.net | www.spectrex.net

SPECTREX INC.

Research possibilities

The International Water Mist Association is to begin the next stage of a research project that aims to achieve easier acceptance of water mist technology for the primary protection of particular applications such as buildings.

According to the IWMA, the project will focus on developing existing water-mist fire protocols such as CEN 14972 (*Fixed fire-fighting systems – water-mist systems*) as well as compiling a guide of water-mist systems for applications such as heritage buildings, cable tunnels and data centres that are acceptable to the wider fire industry.

As well as water-mist system manufacturers the project is expected to involve authorities having jurisdiction, approval/certification bodies and insurance companies.

The project is part two of a substantial research programme whose first step in 2014 consisted of comparing all existing test protocols, procedures and corresponding pass/fail criteria related to the protection of buildings with thermally-activated automatic water-mist nozzles.

Water-mist technology is currently experiencing an upward surge in confidence and interest following increasing recognition of its performance capabilities as well as a number of high-profile installations, explained IWMA general manager Bettina McDowell, who added: 'Those from outside the water-mist community are more interested in the technology than ever before. The fact that the water-mist session during FSI 2016 in Munich was held in the largest hall with an audience three times the size than during FSI 2014 in London shows just how much interest it has gained over the last few years.'

In the course of the development of the scope of step two of the project, IWMA members voted to focus on existing applications rather than applications for which there were currently no approvals. Another research option involving the agreement of a common standard by all approval/certification bodies was also discarded.

Details of the research will be clarified following a two-day conference in Hamburg (date to be announced shortly) when independent institutes will submit their bids to carry out the research. 'We really want the project and the process to continue now,' concluded IWMA president Ragnar Wighus.

Further details will be announced during the 16th International Water Mist Conference taking place 21-22 September 2016 in Vienna, Austria. The early-bird period ends 1 August. For more information visit www.iwma.net.

ELECTRIC PUMP UNIT DISPENSES WITH EXCESS WATER

An electric pump unit that provides the exact amount of water required by a high-pressure water mist system and therefore does not require excess water management is now available.

The Hi-Fog electric pump unit unveiled by Marioff uses a digital control system that continuously measures the pressure in a high-pressure water-mist system. In the event of the activation of one or more water-mist nozzles, the pump unit control system calculates exactly how much pressure and flow is required and activates the required number of fire pumps.

'Traditionally, electric pump units for high-pressure water mist systems, once activated, run at full speed providing full pressure and full flow. This is the case even when, in reality, there are only or two sprinklers discharging and less pumping capacity is needed. The new unit uses a frequency converter that controls the pressure and flow required, so no excess water is produced,' explained Joachim Gabrán, marketing and business development director, Marioff. The result is that there is no need to design a system with an additional water breakwater tank or drain that can deal with excess water created by a pump unit running at full flow for a small number of nozzles.

The unit also dispenses with the additional jockey pump that typically is required to maintain a standby pressure of 25 bar throughout the pipe network of a high-pressure water-mist system.

The control system and frequency converter has enabled Marioff to engineer its pump unit into a simple modular pump skid and separate control cabinet. The modular nature allows the system to be easily configured to any available space as well as any pressure or flow. 'Basically, you add more pumping capacity by adding more modules. The modular nature of the design has been optimised for the space footprint on vessels and buildings, but we've also designed the unit from the point of view of serviceability, so that an engineer has access to all parts of the unit when he's standing next to it,' said Gabrán.

'A multi-language digital display unit on the cabinet enables access to all control parameters and event logs, as well as providing the real-time status of the pump unit and the water-mist system. 'You could say we are moving from the analogue to the digital world, meaning we have PCB-based, programmable control logic taking care of the closed loop pressure control while monitoring the entire suppression system,' explained Gabrán. 'In practice this means that a service engineer can get a clear understanding of the spare parts or tool kit needed by just looking at the events log and diagnostics.' Although only launched last month (May), a number of units are already planned for new projects and eventually the pump will become Marioff's standard electric pump unit for high-pressure water-mist systems, replacing the existing product line.

Simple Installation.
Easy Maintenance.
Pure Performance.

The Tyco DPV-1 Dry Pipe Valve is engineered for dry pipe sprinkler systems in unheated warehouses, parking garages, loading docks, stadiums and other areas exposed to freezing temperatures.

The DPV-1's pre-trimmed, pre-tested plug-and-play convenience is designed to reduce labor. The unique external reset can help make testing and maintenance easier. The simple, compact form factor, single clapper and 250 psi rating deliver pure performance for a full range of applications.

For more information, contact your Tyco representative or visit www.Tyco-Fire.com or Email: firevalves@tyco-bspd.com

Safer. Smarter. Tyco.

tyco
Fire Protection Products

Copyright © 2016 Tyco Fire Products LP. All rights reserved

RYDE WITH WATER MIST

An experienced fire engineer and entrepreneur is looking to commercialise the power of low-pressure water-mist technology through the use of clever design and high quality, third party-accredited components.

The new extinguisher is the brainchild of Frank Ryde, member of the International Water Mist Association, founder and CEO of Alpha Fire Services, Sri Lanka, founder/shareholding director and retired CEO of Alpha Fire Services of Bahrain and Qatar.

Ryde has invented a water-mist extinguisher that is pressurised at only 100 bar, which means that the cylinder is comparatively thin and less costly. The cylinder has been tested and approved by Apragaz Belgium, TUV Germany and MPA Dresden Germany.

The remaining components comprise a rotor, tubes and nozzle that together can produce over 22 billion droplets from a litre of water. Ryde explained how it works. 'The cylinder or the tank housing maintains the contents of the extinguisher at pressure actuation. When the valve is released by manual action, the water and compressed gas travels towards the rotor via a black tube, controlled by a nozzle assembly. The rotor then starts to rotate, mixing the water and gas which travels via a white tube to the nozzle. Due to the collision of water streams, the water leaves the nozzle at high kinetic energy generating an ultra-fine mist made of water droplets as small as 25 microns in diameter.'

Ryde is convinced that the benefits of low-pressure

water-mist extinguishers are glaringly obvious: 'Everywhere in the world you have to use one water and one CO_2 extinguisher, or one CO_2 and one powder or foam. So you pay for two extinguishers at the beginning, and then subsequently you pay for their refilling. That requires a lot of chemicals – even if they are unused they still have to be topped up. Tonnes of CO_2, foam and powder are being dumped continuously in the process of testing, servicing and filling. All that could be done and dusted where one cylinder does the whole job,' he said.

The Frank Water Mist has recently received approvals in Sri Lanka for liquid, gas, electrical and cooking fires. 'What we are looking for then is investment to gain LPCB, Australian, UL and Canadian approvals. I want to take it to the world,' said Ryde.

To get in touch with Frank Ryde email the editor, j.sanchez@hgluk.com.

Operational reassurance

The new direct-acting solenoid valve recently introduced by TLX Technologies for clean agent and gaseous extinguishing systems was one of the highlights of the NFPA Conference and Expo.

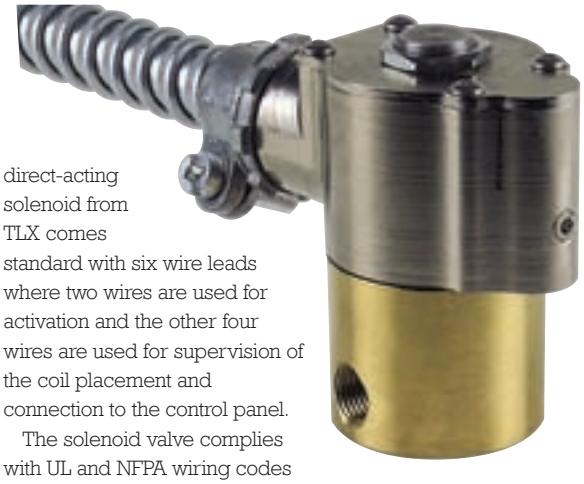
The patent-pending design is an NFPA-compliant solution for the solenoid valve component on the pressure vessels of clean agent and gaseous fire suppression systems. In contrast with existing technology, the new component allows the standard removal of the coil for testing but with an additional integrated supervision feature that indicates whether the solenoid has been properly re-installed.

This technology is crucial because in 2010 the NFPA Technical Committee on Gaseous Fire Extinguishing Systems determined that a system was necessary to determine the presence of electrical actuators on agent storage container discharge valves and selector valves.

The electric actuator, which sits on top of the clean agent cylinder, is vital for the discharge of the clean agent and without it there wouldn't be a discharge of extinguishing material.

It is not uncommon for one or several of the electric actuators to remain unattached after testing work has been completed. This leaves the clean agent system inoperable and – more importantly – with no indication that it is impaired.

As a result, NFPA 2001 Section 4.3.4.1 requires that electric actuators on agent storage container discharge valves and selector valves be supervised in place as of 1 January 2016. This means that their removal must cause an audible and visible indication at the system releasing control panel. This



direct-acting solenoid from TLX comes standard with six wire leads where two wires are used for activation and the other four wires are used for supervision of the coil placement and connection to the control panel.

The solenoid valve complies with UL and NFPA wiring codes because the factory-installed wiring has been routed through external metal housing. This housing allows the field selection of flexible metal conduits and conduit connectors that are required for all UL-certified fire suppression systems.

Meeting the requirements of NFPA 2001 *Standard on clean agent fire extinguishing systems* (section 4.3.4.1) and UL 864 *Standard for control units and accessories for fire alarm systems*, the supervised direct-acting solenoid allows for user configurability and fully-engaged installation detection. In addition, it can also be modified to operate at various working pressures as needed.

TLX Technologies of Pewaukee, Wisconsin has been developing custom actuators and valves for 15 years.

THE MOST EXPERIENCED MANUFACTURER OF SPECIAL HAZARD FIRE PROTECTION SOLUTIONS

Our team of specialists provides support to our global distribution network.

CLEAN AGENT FIRE EXTINGUISHING SYSTEMS

3M™ NOVEC™ 1230 FIRE PROTECTION FLUID

LOW & HIGH PRESSURE CO2 • ENGINEERED DRY CHEMICAL

FOAM • AIR SAMPLING • ALARM AND DETECTION

JANUS FIRE SYSTEMS®

Providing the Most Efficient Package For Clean Agent Delivery Systems.

FM APPROVED UL LISTED

+1 219-663-1600 www.janusfiresystems.com

Portable FOL-DA-TANK

ONE SUPERIOR SOURCE

FOR ALL YOUR PORTABLE WATER SYSTEM NEEDS

INTRODUCING

THE **NEW**, PATENT PENDING

SINGLE LANE *MAX* TANK

MAX CAPACITY FOR SINGLE LANE TANK SHUTTLE OPERATIONS ON NARROW ROADS

The SINGLE LANE *MAX* gives you 2.5 Xs capacity of a standard tank without obstructing water tender traffic!

Call **TODAY** to see how the **SINGLE LANE *MAX* TANK** can help YOUR department!