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IFE NEWS

The Institution Of Fire Engineers (UK) Singapore Branch — The International Organisation For Fire Professionals

Management Council 2016/2018

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2017 FIRE PROTECTION SEMINARS

IFE (Singapore) organised 3 Fire Protection seminars held at Novotel Singapore Clarke Quay from 13 June to 16 June 2017. The speaker was Mr. William E. Koffel who has over 35 years of experience and is active in various code committees such as ICC, NFPA, SFPE and UL.

Mr. William keeping the crowd enticed. His professional sharing brought new insight to the industry

The seminars were both interesting and enriching. Mr. William's presentation kept the audience attentive throughout the seminar. There was also time for the participants to mingle around during lunch and tea breaks

Crowd Mingling Around. It was a good time for new networking and 'catching up' with friends.

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2017 FIRE PROTECTION SEMINARS

Group Photo with Mr. William and Participants

A group photo was taken to commemorate the occasion and everyone enjoyed the sessions as can be seen with their happy faces.

Seminars Full House

The response to participate in the Fire Protection Seminars was overwhelming, everyone was paying attention to what the speaker had to share.

The participants are professionals from the fire industry comprising of architects, engineers, professional engineers and fire safety engineers.

UPCOMING COURSES

Servicing and Maintenance of Fire Extinguishers – 38th Run

Course duration: 24th July to 1st August 2017

Theory Test: 31st July 2017

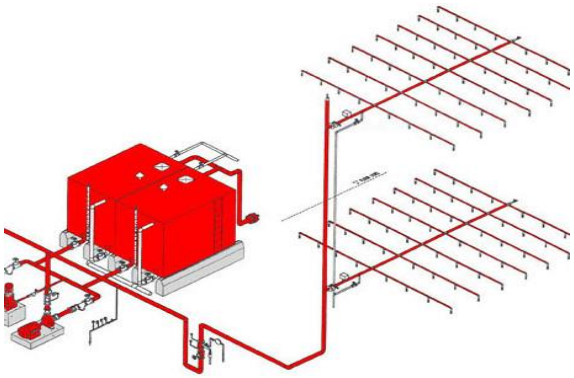
Practical Test: 1st August 2017

Cost: $650.00 per participant

CPD: SCDF FSM – 5 Points

Registration is full.

If interested to register for the next 39th Run, please contact:
IFE Secretariat at ifespore@singnet.com.sg for details



Fire Safety Systems Design Course

Course duration: 28th August to 13th November 2017

Fire Protection Maintenance Course

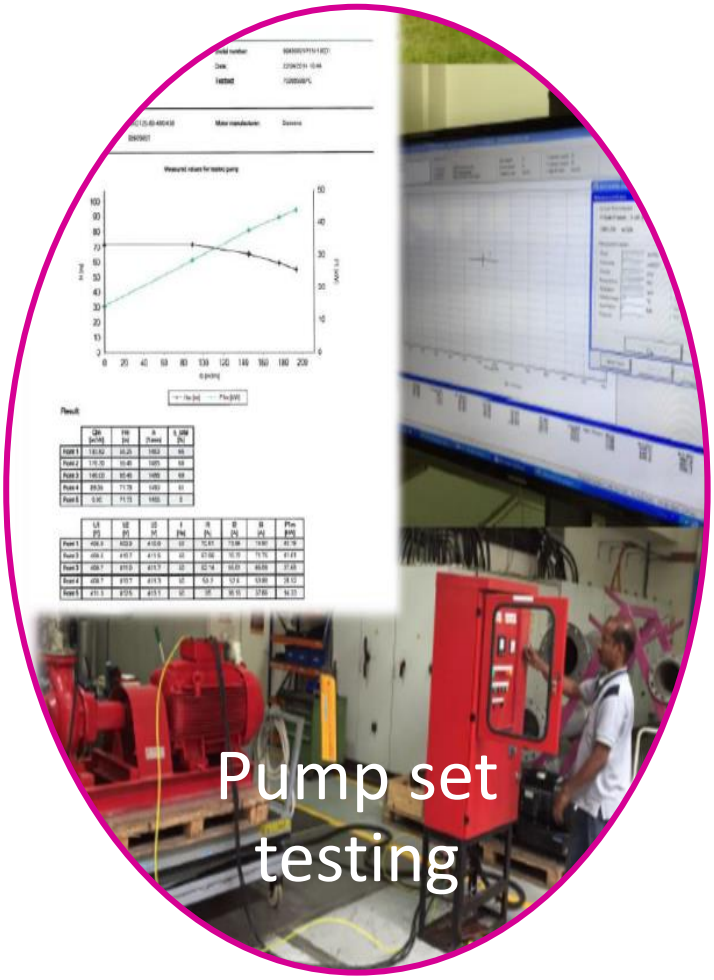
Course duration: Tentatively commencing in early 2018

LISTING OF FIRE PUMPS

CP52 and SS575 have requirements for Fire pump sets to be listed. As the fire pumpsets are essential to the successful fire-fighting operations; listing will provide a level of confidence that the pump sets had undergone testing at factory and will be able to perform the requirements required of it.

Components critical to proper system operation, are required to be listed and SCDF had maintained a list of Regulated Fire Safety Products and Material s which include Fire Pumps.

Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment material, or service meets appropriate designated standards or has been tested and found suitable for a specific purpose.



TECHNICAL VISIT

In order for members to appreciate the testing procedures, IFE has arranged for a technical visit to witness the testing of a complete fire pumpset, i.e. pump, driver and controller.

Look out for the announcement for the technical visit happening in early September on a Saturday morning.

Video Image Detection in Today's World

- Article contributed by Tai Su Jaen, Fike Asia Pacific Sdn Bhd

In this technology advance world, there are many innovations coming up every day. One of the technology advancement is video analytics. Video analytics has been use in many areas without us knowing it like facial recognition, car plate recognition, people counting in retail industry, motion detection and many more. Now, we are using video analytics for flame and smoke detection in the fire protection industry as well as oil mist detection in shipboard engine rooms and process monitoring in manufacturing plants.

Video Image Detection uses analytical algorithms within their processors for smoke and flame detection. The algorithm uses fuzzy logic, neural networks and looking for pixel changes within the field of view.

Video analytics for flame and smoke detection has progress tremendously over the last ten years. This is due to the speed of the technology's progress in other industries such as imagers and processing chips used in high end CCTV security cameras as video image detector components build based on video and computer components from those industries. This article will review the history of the technology's progression and the evolution of the Video Image Detection (VID) industry.

In the 2010 NFPA Suppression and Detection (SUPDET) conference presentation given by Bob Elliott, a senior engineering specialist at FM Global, identified the 4 stages of VID historical development. The four stages are identified as:

Stage 1 – Flame only
Stage 2 – Smoke only
Stage 3 – Combination Flame and Smoke
Stage 4 – Single Package Combination Flame and Smoke

STAGE 1 VID – Flame Only (2000)

It is basically a flame detector but with modification with the use of a black and white capacitive coupled device (CCD) to observe the fire signature instead of the UV or IR spectrum sensors use in optical flame detector (OFD). The video imaging sensor (camera), all electronics and processing or decision making is done internally in a single enclosure. The VID decision making process changes the algorithms to measure the intensity of the light, the shape, the movement, the flicker frequency and the changes of each frame image over time to make the determination if a flame signal is real or not. This is unlike the OFD where it measures a pre-defined amount of energy of a particular wavelength, or multiple wavelengths in order to make the determination as to whether a measured signal is a real fire, or false signature. The VID is using a separate 24VDC input and separate dry contact for alarm, which is just like traditional OFD but with additional video signal. As a result, the first VID flame detectors were readily approvable or certifiable to the existing NFPA 72 and applicable product standards FM3260.

STAGE 2 VID – Smoke Only (2002)

This stage is where the smoke detection principle VID is coming in. These systems are server based in that they receive analog video through a BNC camera connection and then process the video feeds on the server. This provides an alarm in the form of dry contacts located on the server. These systems generally handle 4 to 8 cameras at a time. This is more to "software" based detection. The software add-on that would work with existing equipment raises many issues with respect to product certification and installation standards, for example NFPA 72 – The National Fire Alarm Code. These issues include compatibility, environmental suitability, primary and secondary power supply requirements, overall equipment reliability and supervision of the sensors (cameras) and circuits related to the functioning of the "detection or protection system". So in this scenario, it has to be tested as "systems" or packages that include dedicated computers and software with specific cameras with separate but well defined primary and secondary power sources. The benefit is that the detectors can identify smoke in large volume spaces (even if stratification took place), provide video for situational awareness, and provide large coverage areas with minimal and easily accessible camera locations. However, these systems also have several drawbacks. The combination of the server and cameras makes for a bulky, power hungry detector. A typical camera consumes 5 Watts of power, while the servers can consume another 200 W. This requires tremendous amounts of battery power to provide an uninterrupted power supply (UPS). Each camera also needs a dedicated continuous Siamese coax and power line between the detector and the server, increasing installation costs.

STAGE 3 VID – Combination Flame and Smoke (2005)

Stage 3 saw the introduction of server based flame and smoke detection system, it comes in a package with hardware and software just like in Stage 2 except with better detection algorithms. With the NFPA revision cycle for the 2007 NFPA 72 code came around, it was advantageous to provide guidance in the code for future installations. The code insured a minimum set of requirements be fulfilled. One such requirement is that only listed systems be installed. At the time only Factory Mutual approved video image detection systems by using modified ANSI 268 and FM 3260 standards. NFPA 72 also required an uninterrupted power supply. For the server based systems of the time, this required a large amount of batteries to meet the necessary 24 hours of power required by NFPA. Communication integrity was required, so the systems had to monitor their camera feeds for interruption and ensure an alarm signal reached the monitoring point. NFPA also requires these systems use a performance-based design. Because of the wide range of performance, architecture, and lighting requirements between each system they will most likely remain performance based within the code.

STAGE 4 VID - Single Package Combination Flame and Smoke (2008)

In this stage, we can see tremendous improvement on VID as now it combines both flame and smoke detection under one enclosure – totally integrated package. All this was made possible with the advancement of technology and more advance IP based camera system. The camera now is power up by 24VDC and provides dry contact for alarm/supervision to the FACP. With this, the NFPA code mandated UPS only has to ensure the cameras (~5 W) stay active rather than the cameras and servers (~200 W) for 24 hours.

CURRENT STAGE VID

Again, VID technology keep improving after Stage 4, currently VID systems that are being installed to code take advantage of the new IP camera system flexibility. The cameras are placed in fixed positions and attached to a 24 VDC power supply. This can come from the Fire Alarm Control Panel (FACP) or a listed power supply. The cameras are then monitored by the FACP using dry contacts attached to an addressable module that indicate when the camera is in a trouble or alarm

condition. In addition, the cameras are attached to the Local Area Network (LAN) using the RJ45 jack. This can be attached to a Power Over Ethernet (POE) network switch to provide a redundant power source. IP video and alarm information is then transferred over the LAN to a server for recording purposes. This allows the user, whether it is the building manager, owner, distributor, AHJ or fire personnel, access to the archived video and alarms. User interfaces usually allow easy access to this information as well as floor plans with camera locations, and live video. In certain situations, AHJs can approve the replacement of a traditional code mandated alarm system with a VID system. However, there are also some challenges; lighting has been an important issue over the life span of video image smoke detection systems. It must have the necessary illumination needed to see a smoldering smoke source. Since flaming fires produce light, additional illumination does not need to be supplied for flame detection to occur. However, all video image smoke detection systems need some form of illumination to function correctly, it is like how air aspiration systems require a fan to pull the smoke back to the detector. VID systems will give fault if the light level gets to low, or if the camera is covered, dirty or out of focus. These conditions need to be supervised. Proper illumination is also mentioned in NFPA 101 Life Safety Code, it describes emergency lighting levels for safe egress in case of loss power during evacuation. The code states that:

Section 7.9.2 Emergency illumination shall be provided for a minimum of 11/2 hours in the event of failure of normal lighting. Emergency lighting facilities shall be arranged to provide initial illumination that is not less than an average of 1 ft-candle (10.8 lux) and, at any point, not less than 0.1 ft candle (1.1 lux), measured along the path of egress at floor level. Illumination levels shall be permitted to decline to not less than an average of 0.6 ft-candle (6.5 lux) and, at any point, not less than 0.06 ft-candle (0.65 lux) at the end of 11/2 hours. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

CURRENT APPROVAL STANDARD

So far, FM Approvals for Video Image Detectors are currently listed under the category(s) of: Initiating Devices – Flame Activated or Initiating Devices – Smoke Activated. Combination types are listed under both categories. VID's that operate on a flame detection principle comply with Standard FM 3260 Radiant Energy-Sensing Fire Detectors for Automatic Fire Alarm Signaling FM Approvals already started with a new standard for VID effective 2013, FM 3232 Video Image Fire Detectors for Automatic Fire Alarm Signaling. For UL, it only tested on smoke detection under UL 268B Video Image Smoke Detectors. UL 268B is actually derived from UL 268. The reason is that in UL 268, which has been used to test beam, spot and air aspiration system, requiring detection within a predefined obscuration limit. The conventional technologies being tested relied on the smoke reaching the sensor, therefore an obscuration measurement can be made at the location of the detector or sampling port to ensure detection within the bounding limits. Video "sees" the smoke – in many instances before it has reaches the obscuration measuring point in the UL268 room. In other words, tying the pass/fail criteria to a point measurement was inappropriate for the 3 dimensional VID detectors. UL has since created UL268B which uses the same test sources and room dimensions but removes the criteria that ties obscuration to the detection, and instead uses a time to detection.

SUMMARY

As technologies continue to evolve, VID technologies also continue to evolve. From the very first VID until now, there has been tremendous improvement. VID has all the features of a conventional detection plus other features that is not on conventional detection like remote viewing, email notification, zoning which is a powerful features that user can select a particular area inside the camera Field Of View (FOV) to detect alarm or to block it. Furthermore, conventional detection need the products of combustion reach the detectors, but this can be issue when dealing with factors such as height, air velocity, transport delay and stratification. With VID, it does not require smoke to travel to the sensor, it can detect anywhere within the given field of view, which means it is not limited by the factors of distance and area as are standard detectors. So for high ceiling area, VID can provide very early detection compare to standard detectors. Most importantly, VID is able to fill in the technology gap not able to achieve with conventional detection.

VID technology will continue to improve and enhance, it is necessary that the fire codes, listing agencies, and customers accept and define the use of new fire equipment and technologies in order to support the changing fire industry.

References

(1) Video Image Detection No Longer a Supplemental System – Bob Elliott - SUPDET 2010

(2) The Advance of Video Image Detection – James Lynch – Asia Pacific Fire Journal

(3) NFPA 72 National Fire Protection Association, The National Fire Alarm Code (2013 ed)

(4) NFPA 101 National Fire Protection Association, Life Safety Code (2009 ed)

(5) FM 3260 Radiant Energy-Sensing Fire Detectors for Automatic Fire Alarm Signaling (2000 ed)

(6) FM 3230 Smoke Actuated Detectors for Automatic Fire Alarm Signaling (2010 ed)

(7) FM 3232 Video Image Fire Detectors for Automatic Fire Alarm Signaling (2011 ed)

(8) UL 268B Video Image Smoke Detectors (2009 ed)

(9) Video Expands Limits of Fire Detection – Shane Clary – Security Sales & Integration Magazine, Dec 2011

FSSD CIRCULAR

The following circular was received from SCDF:

Our Ref: CD/FSSD/12/02/03/01

Date: 24th July 2017

Dear Sir/Mdm,

IMPLEMENTATION OF SS 550:2009 AMENDMENT 2 – CODE OF PRACTICE FOR INSTALLATION, OPERATION AND MAINTENANCE OF ELECTRIC PASSENGER AND GOODS LIFTS

The SS 550:2009 Amendment 2 – Code of Practice for Installation, Operation and Maintenance of Electric Passenger and Goods Lifts was officially launched by SPRING on 25 April 2017. The Amendment 2 harmonizes the requirements on emergency operations for lifts with the Code of Practice for Fire Precautions in Buildings to provide consistency to the building industry.

2. Please be informed that the updated standard shall be applicable to all building plans that are submitted to SCDF for approval from 1 Dec 2017 onwards.

3. Please convey the contents of this circular to members of your Board/ Institution/ Association. This circular is also available in CORENET-e-Info: http://www.corenet.gov.sg/einfo. For any clarification, please contact MAJ Bryan Ng Chee Heng at DID: 68481443 or Email: bryan_ng@scdf.gov.sg.

Yours faithfully

(transmitted via email)

MAJ Tan Chung Yee
Fire Safety & Shelter Department
for Commissioner
Singapore Civil Defence Force

UPCOMING CONFERENCE

Day 1: FiSAC Workshop

15 November 2017 (Wednesday): 0900 hours - 1730 hours

Venue: PARKROYAL at Beach Road, Grand Ballroom

Days 2 and 3: FiSAC Conference

16 November 2017 (Thursday): 0900 hours – 1620 hours

17 November 2017 (Friday): 1700 hours – 1700 hours

Venue: PARKROYAL at Beach Road, Grand Ballroom

A further discount off the early-bird registration fees is provided for IFE local council members as follows:

a) $750/- delegate for Conference (GST applicable);
b) $550/- delegate for Workshop (GST applicable); and
c) $1,250/- delegate for both Conference and Workshop (GST applicable)

For more details, please refer to IFE website: www.ife.org.sg

Joint Organizers:

National Fire And Civil Emergency Preparedness Council
NFEC

CIVIL SINGAPORE DEFENCE

Strategic Partner

IFE EST 1978

For more information, please contact FiSAC Secretariat at info@fisac.com.sg

FIRE NEWS QUIZ 11 – RESULT

There were no correct entries for the last quiz so the prize will be snow-balled to the next quiz.

The answer to the last quiz is as follows:

Question:

The photo on the left shows an exit door leading to safe exterior space. Is there any violation to fire safety that can be spotted in the photo? Please answer: Yes or No. If yes, please identify and describe the violation?

Answer:

Yes, there is a violation to fire safety. Provision of locking device with padlock to the exit door is a violation to the fire safety. During an emergency, occupants may be trapped within the building or may not be able to exit from the building within a short period of time.

FIRE NEWS QUIZ 12

WIN a NTUC Shopping Voucher of $140 by answering the following question correctly.

Fire Hydrant

The above picture shows a person carrying out fire hydrant test. Please provide answers to the following 2 questions:

(a) Which local (Singapore standards) code of practice is the fire hydrant test governed by?

(b) Assuming the hydrant is direct feed from PUB (Mains). What is the minimum volumetric flow rate and running pressure required to be achieved?

Please send your answer, together with your name, membership number, contact number and email address by 31 August 2017, to ifespore@singnet.com.sg, with the subject heading as" IFE Contest". If we receive correct answers from a few participants, the winner will be selected by means of balloting by the Council.

Write to us and Win! Got an interesting article to share? Please send your article to the Secretariat at ifespore@singnet.com.sg. If your article get to be published, you will win a NTUC $140 shopping voucher. Please include your full name, membership grade and contact details.

Let's celebrate...

IFE wishes all members and their families

Happy National Day 2017

#OneNationTogether

And wishing all muslims Selamat Hari Raya Haji

The IFE offers:

- Professional status for its members
- Enhance career prospects
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- Impartial, friendly advice on how to become an Engineering Technician, Incorporated Engineer or Chartered Engineer.