Industrial firefighting for on-site responders

Industrial firefighting refers to the reactive measures and actions taken to contain, control and extinguish fires within the premises of manufacturing, engineering and fabrication, collecting, processing, storing, refining and mining organisations. Industry includes any organisation where a group of people come together and utilise machines and equipment to do work, for example at port terminals, airports, freight rail facilities, warehouses and printing presses. Furthermore, premises may include occupancies within industrial parks, factories, collection points, plants which generate electricity or process minerals or chemicals.

The variety, types and size of fire incidents that occur within industry are as varied and complex as the array of industries in existence. Fire suppression actions, especially first line immediate responses, are more often than not performed by employees who volunteer to be trained to an appropriate level and are appointed by the employer to fulfil certain expectations in terms of responding to those fires.

Firefighting in workplaces is part and parcel of managing fire risk. The risk of fire and explosions is common to all industries. There are few incidents which pose a risk to life and the workplace and impact on business continuity as profoundly as fires and explosions do. The risk of fire demands both pro-active and re-active measures to be planned and conducted by trained personnel.

So where does one begin when putting firefighting response strategy together within an industrial setting? It is important to understand that emergency response and more specifically firefighting, fits into a larger strategy of emergency management namely:

1. Risk assessment and vulnerability studies
2. Prevention measures
3. Emergency planning and preparedness
4. Emergency response
5. Recovery and business continuity

It is incumbent on employers to assess risk and put control measures in place to prevent and mitigate the effects of those risks. Fire risk assessment is crucial in high hazard industries and where there is extensive risk of fires, flash fires and explosions. Based upon these risk assessments, a process of prevention measures and activities must be established. Emergency planning and preparedness is key and the size of the organisation as well as the hazards found within the organisation, will determine the complexity of the emergency planning and preparedness strategies.

SANS 1514:2018 Ed 1, Major hazard installation: emergency response planning addresses emergency planning for major hazard installations but may also be seen as a useful guideline for ordinary installations. Response strategies contained in the emergency plan should provide guidance on how fires are tackled safely by containing fire response plans. Response plans may be as uncomplicated as equipping trained and appointed fire fighters to extinguish small fires when it is safe to do so. An EP organogram is used to identify the role players in emergency preparedness and response and would, for example, indicate the number of employees trained and ▸

appointed as basic firefighters (incipient stage firefighters).

Typically, the capabilities of personnel trained in basic firefighting, extend to extinguishing small fires with portable fire extinguishers and small water hand lines (hose reels) without the need to wear special personal protective equipment other than workplace PPE. Firefighters trained to a basic level, would not be expected to venture into smoke filled areas or to crawl in the process of approaching or extinguishing fires.

More advanced, and more formalised firefighting teams are sometimes created to fight larger fires with larger amounts of water, large diameter hose lines and possibly firefighting foam. It is important for risk managers to impose limitations on what on-site firefighters will respond to and how they will respond. The limits to the response of some firefighting teams may be confined to defensive firefighting and the cooling of exposed structures or exterior-only attacks. Specialised PPE may be required to perform these firefighting duties safely.

An organisation that is largely independent of the services of municipal fire brigades is most likely to follow a path of advanced training and providing specialised equipment for its firefighting teams to perform interventions, including interior interventions with recognised firefighting PPE and self-contained breathing apparatus (SCBAs). Such advanced levels of response require well established and well-planned methods of incident management, including incident action plans, procedures and operational guidelines.

Multi-disciplined on-site responders referred to as Emergency Response Teams (ERT's) may be developed as a specialist part of the EP structure to provide the organisation not only with firefighting capabilities, but also rescue, hazardous materials and medical capabilities, at least until off-site responders such as municipal services or specialised hazmat clean up teams are able to assist.

In large organisations, with highly developed strategies, fire risk management standards and directives are often written to form a comprehensive administrative system. These seek to provide more organisation specific policies, structures, procedures and other administrative controls. These standards and directives help to ensure the safety of firefighting personnel and efficiency and effectiveness of emergency response management. In larger, higher risk industries, response plans may become far more complex, involving more stringent selection of firefighting personnel, more specialised training regimes, greater numbers of specialised equipment and a documented administration system holding all of these components together.

The response to emergencies outside the boundaries of the organisation may also be addressed in company standards and procedures. Such documented preparations are crucial when neighbouring communities are a factor. More examples of elements of a good administration system include; a written commitment by management in the form of policies or a firefighting organisational statement. The identification of high-risk fire 'hot spots' as identified in fire risk assessments, pre-incident plans containing strategies and tactics, identification of special hazards, action plans, standard operating procedures (SOPs), suggested operating guidelines (SOGs) and site maps, serve both on-site and off-site responders well, both in terms of preparation and in the course of firefighting operations.

NFPA 600 Standard for Facility Fire Brigades and NFPA 1600 Standard for Crisis and Emergency Management, are valuable guidelines.

Training and education

It is advisable that a training program for fire team members be developed and maintained as part of the organisations administrative systems. Fire team members should receive training to establish minimum levels of proficiency as well as to safely deal with site hazards specifically encountered during firefighting operations.

Most volunteer or outsourced industrial fire teams are well equipped, possess very good plant and premises knowledge, and very often have access to abundant water supplies. These aspects count towards successful responses. Challenges experienced by on-site industrial fire teams may result because they seldom respond to any emergencies, let alone fires. The potential thus for inefficiency and hazardous conditions arising at an incident due to a lack of experience is real, and therefore realistic training and drills, repeated periodically, is essential.

EMERGENCY TRAINING SOLUTIONS

NFPA Programs

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Pictured in this article is Jurassic Park at the premises of ETS Emergency Training Solutions. Jurassic Park, affectionately so named because of the firefighting props (Dinosaurs) within its walls, is a simulated industrial environment which realistically represents various parts of an industrial plant. These include transformer fires, bulk fuel storage fires and boilers and pressure vessels involved in fire. The principles of "surround and drown" fire attack, flame bending and valve isolation attack groups and firefighting with foam can all be addressed in Jurassic Park.

The training is intense and realistic and seeks to maximise the exposure that students get while wearing full PPE in a simulated industrial firefighting interior attack. At the same time, the training aims to minimise the period of time that students are away from their workplace. Jurassic Park drills form part of the outcomes of the one-week Industrial Firefighting Advanced Level where students must work in teams to suppress various fires. We utilise Jurassic Park to meet the outcomes in NFPA 1001 Fire Fighter 1 and 2 successfully.

Drills

The test of an organisation's efficient response to incidents, including firefighting response, is its ability to protect its patrons and employees, its assets, the environment and in some cases, the ever-encroaching surrounding communities. Full and rapid recovery in terms of business continuity is directly related to the organisation's effectiveness of response. Naturally, an organisation cannot wait for a fire incident to take place in order to test the effectiveness of its response and therefore realistic, simulated incident scenarios are posed in order to assess an organisations emergency preparedness. Fire team drills should be conducted periodically to measure the teams' abilities against performance standards. These drill simulations should be representative of the conditions encountered at an actual fire. NFPA 600 recommends that drills be reviewed at least annually in order to establish training needs, equipment needs and the general effectiveness of the firefighting team.

ETS Emergency Training Solutions: The first South African training entity to gain IFSAC accreditation

ETS Emergency Training Solutions is located in the South of Gauteng between Meyerton and Vereeniging in a suburb called Redan. ETS has grown to over 90 personnel and offers at least 74 courses nationally and internationally. The six main offerings at ETS cover various qualifications and short programmes in fire fighting, rescue, hazardous materials, fire safety, first aid and occupational health and safety. These are managed from initial customer contact to certification by a proficient management team.

In terms of international recognition, ETS is proud to be the first South African training entity to gain International Fire Services Accreditation Congress (IFSAC) accreditation for multiple programmes.

"The certification and accreditation of ETS is a validation of our commitment to provide quality services to our clients that will meet and exceed their expectation. We are able to provide services consistently and reliably to national and international standards", said ETS director John Akal.

The IFSAC Quality assurance standards allow ETS to fill a long outstanding gap in the certification of South African fire fighters, who will be able to be certified for the National SAQA registered qualification as well as the associated and aligned NFPA standards.

Commitment to quality and safety

ETS hold ISO 9001:2015 and ISO 45001:2018 certifications which demonstrates its commitment to the company's conduct in quality and safety administration.

The training centre has its origins way back in the 1980s when a portion of the old Klip Power Station's grounds were set aside for firefighting training and after extensive modernisation the training centre was officially inaugurated in 1990 by Eskom, the original owner.

The training centre was designed by forward-thinking individuals primarily to serve the interests of Eskom and satisfy the organisation's need to provide purpose-built facilities with realistic simulation areas to train its firefighters and rescue personnel. The design emphasis was on high-risk industrial occupancies, which included power plant hazards. This laid the foundation for expansion and the addition of improved simulation structures that apply not only to industrial fire fighters, but also to municipal and aircraft fire fighters. The early NFPA 1402 and 1403 influences can clearly be seen in the design of the training centre.

ETS is a registered Skills Development Provider and has a number of local accreditations, being registered with:
1. Primary Sector Education and Training Authority (SETA): Local Government SETA (LG SETA) LGRSv-EMsSR101117
a. Qualification ID 57803: Further Education and Training Certificate: Fire and Rescue Operations
b. Qualification ID 64390: National Certificate: Emergency Services Supervision: Fire and Rescue Operations
2. Quality Council for Trades and Occupation (QCTO) Assessment Centre QCTO/OQAC/17/00070 Occupational Certificate:
a. Fire fighter SAQA ID 98991 NQF Level 4; Credits 149
3. Safety Health and Quality Practitioner SAQA ID 99714; Level 5; Credits 256
4. Department of Labour CI 663 for first aid
5. Resuscitation Council of South Africa
a. Cardiopulmonary Resuscitation (CPR) for family and friends
b. AHA courses
c. Basic Life Support for Healthcare Providers

Conducting courses in the abovementioned fields is achieved by a team of experienced instructors, assessors and moderators ensuring quality training and assessment to the point of certification, not only in South Africa but throughout the continent of Africa and the Middle East.

The typical profile of the trainees ranges between:
- Employees seeking to fulfil their legal appointment obligations in the pursuit of compliance
- Private students seeking to make themselves more appealing in the job market
- On-site responders assisting organisations in emergency and crisis management
- Professional full time emergency services personnel in the municipal and metropolitan environment.

ETS commitment to B-BBEE
ETS is a Level 1 B-BBEE contributor and they assist many black individuals and businesses each year to overcome the legacies of the past. Being a Level 1 contributor means that client companies can claim 135 percent of their spend towards their own BEE scorecard.

Proud history

Thousands of students have received training not only at the training centre in Redan when it was affectionately known as KLIP but more recently in the past 18 years while under private ownership.

"Students do not only learn valuable life skills but they are also enabled to meet job performance requirements either as volunteers, on-site responders or full-time emergency services personnel. At ETS we provide an experience over and above the training component that results in team building, self-discovery, mind-broadening and healthy doses of adrenalin in many cases. At the turn of the century the training centre was the biggest facility of its kind in South Africa. (Mooivaal Media Pg 18 1999/2000 edition)", said ETS director, Dirk Moller.

Learnerships

"ETS is committed to facilitating learnerships and subsequent assistance to successful graduates in obtaining employment. We believe in the principle of newly qualified individuals having a reasonable expectation of finding employment when their studies are complete and so we constantly consult with employers. The learnerships are fully accredited with the Quality Council for Trades and Occupations and the LG SETA. ETS can assist organisations who are committed to supporting learnerships financially and we invite such organisations to discuss the various learnership opportunities and workplace experience exposure", added Moller.

ETS is staying relevant by continuously introducing self-study programmes, supported by instructors and an online preparation system. The online/self-study option is aimed at employed emergency response practitioners with workplace experience. Candidates have the opportunity to prepare and study at their own pace and select a date for assessment. IFSAC certification follows a process of in-person theoretical and skills assessments thereafter.

Provision of trained and managed emergency response teams
ETS also provides the services of qualified and experienced on-site emergency responders. "Our emergency response teams have worked at various sites in KZN, Mpumalanga and Gauteng, into Africa as far as Mauritania." said John Akal, "Clients should contact us if they require assistance integrating training programmes into their emergency planning and preparedness strategy."