

FIRE AND RESCUE INTERNATIONAL

Integrated fire, rescue, EMS and incident command technology

Volume 6 No 4



EXPERTS WHO EXCEL
in Integrated Fire Management



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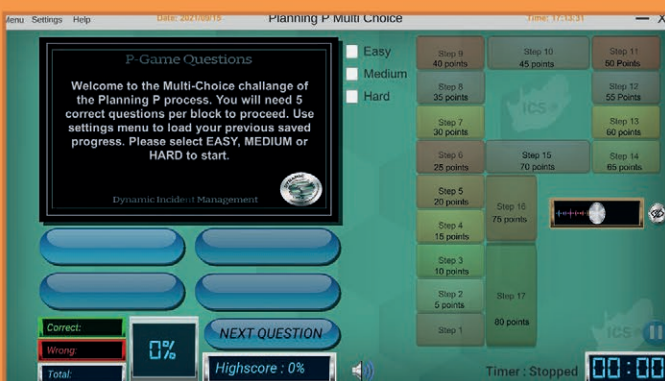
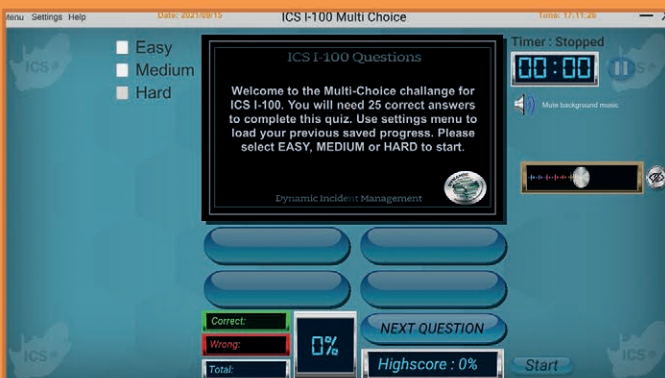
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FIRE AND RESCUE INTERNATIONAL

Integrated fire, rescue, EMS and incident command technology

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Comment

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We are proud to present our 57th edition of **Fire and Rescue International (FRI)**, which provides our emergency services with interesting technical articles and useful and practical information. Enjoy the read!



Lee Raath-Brownie

Cover profile: Integrated fire management and how it assists in effectively fighting fires

Our cover profile features Kishugu's, the implementing agent for the Department of Forestry Fisheries and the Environment's (DFFE's) Working on Fire programme's integrated fire management (IFM) strategies.

Upcoming events

We share several upcoming events such as the JOIFF Africa 2022 Summit, fire safety engineering courses and degrees at Stellenbosch University, the Toughest Firefighter Alive South Africa 2022 and the World Rescue Challenge 2022, which will include two South African assessors.

Equipment

Equipment featured in this edition includes the PyroBlitz ultra high pressure (UHP) fire suppression system from Industrial Fire and Hazard Control, a new aerial platform for Mangaung Metro Municipality Fire and Rescue Service and the new FireDos FZ1000 GEN III foam proportioner for fire trucks from Dosetech.

Training

Our training focus profiles ETS Emergency Training Solutions, the first South African training entity to gain IFSAC accreditation and new products available from SkillsTrain Distribution.

Vehicle extrication

In the vehicle extrication focus, we take a look at the Lukas Jaws of Life® eDrainic® 3.0 extrication tool line available from Hamilton Hydraulics.

Liquefied petroleum gas emergencies

Our main technical article by Colin Deiner unpacks liquefied petroleum gas (LPG) emergencies. Deiner shares the characteristics of LPG, fire fighting operations and responding to leaks without ignition.

Wildfires

US Forest Services' Chief Tim Murphy discusses communication with aircraft in Command Corner, Simon Thomas of the KZNFPFA shares hands-on advice in preparation for the Winter Fire Season, Stihl profiles BR 800 C-E blower. Also in this feature is Nelson Mandela University Veldfire Management students' visit to the Southern Cape Fire Protection Association, Anco Manufacturing's new Ural 4x4 CAFS fire engine and the announcement of the 13th Fire Management Symposium: 23 to 25 November 2022 to be held in George. Tiaan Pool continues his series of articles on firebreaks with this issue featuring fire belt preparation methods.

Emergency Medical Services

In our section on emergency medical services, we share the history of St John's Ambulance Service.

Urban Search and Rescue (USAR)

We look at the recently held Gauteng urban search and rescue (USAR) simulation exercise in Ekurhuleni and the certification of the Urban Search and Rescue South Africa (USAR SA) first K9 Search and Rescue Handler's Team.

A special note of thanks to all our contributors, advertisers and readers for their valued support! Fire and Rescue International is your magazine. Read it, use it and share it!

Lee Raath-Brownie
Publisher





This month's FRI Images winner!

Congratulations to

André Scheepers for his photograph 'Far from home!' taken with a Huawei P20 cell phone.

Well done!

André Scheepers wins this months prize money of R2000!

Photo description:

LEFPA was suppressing the RCL fire with the Black Hawk.



Best rescue, fire or EMS photo wins R2 000!

Fire and Rescue International's (FRI) bi monthly photographic competition is open to all its readers and offers you the opportunity of submitting your digital images of fires, fire fighters, disasters, incidents, emergencies and rescues.

Rules

- All photographs submitted must be high resolution (minimum 1meg) in jpeg format
- Allowed: cropping, curves, levels, colour saturation, contrast, brightness, sharpening but the faithful representation of a natural form, behaviour or phenomenon must be maintained
- Not allowed: cloning, merging/photo stitching, layering of two photos into one final frame, special effects digital filters
- Fire and Rescue International (FRI) reserves the right to publish (printed or digitally) submitted photographs with acknowledgement to the photographer
- Winners will be chosen on the merit of their photograph
- The judge's decision is final and no correspondence will be entered into afterwards

Entries must include:

- Name of photographer
- Contact details (not for publishing)
- Email (not for publishing)
- Name of photograph
- Brief description of photograph including type of incident
- Camera, lens and settings used

All entries must be emailed to:
lee@fireandrescue.co

>> ENTER NOW!

Integrated fire management and how it assists in effectively fighting fires



The challenge of large wildland fires is likely to grow and as such, aerial fire fighting will become an important part of our armoury in combating this challenge

“Climate and environmental changes are causing a global increase in wildfires, some of which have the propensity to become large scale disasters,” says managing director of the Working on Fire programme, Trevor Abrahams. He explains that researchers at the University of Alberta in Canada highlighted that eight of the worst wildfire weather years on record happened in the last decade and that it will only get worse. “The challenge of large wildland fires is likely to grow and as such, aerial fire fighting will become an important part of our armoury in combating this challenge.”

The threat of unwanted wildfires needs to be actively and adequately managed. According to Abrahams, wildfire management is a science and therefore, Kishugu has done extensive work in protecting, preventing and suppressing wildfires based on applied research on all aspects of wildfire.

Kishugu, the implementing agent for the award-winning Department

of Forestry Fisheries and the Environment’s (DFFE’s) Working on Fire programme for the past 18 years, has sufficient knowledge and expertise to effectively fight fires through a concept it has developed, namely integrated fire management (IFM).

IFM is used globally in fire-prone countries to successfully and efficiently fight wildfires. According to Emile Grobbelaar, CEO of Kishugu

Aviation, the key to IFM consists of five Rs: Readiness, Reduction, Response, Recovery and Research.

“80 percent of the focus is placed on the proactive sections, reduction and readiness. Grobbelaar explains it is essential to take preventative measures to counter the start and spread of fires. Readiness speaks to establishing systems and acquiring resources and capacity to mitigate the effects of fire and effectively respond to unwanted wildfires that might occur.”

“IFM incorporates different fire management activities, such as aircraft, vehicles, pilots, fire fighters, incident management teams, equipment and tools, in a strategic framework to reduce the overall impact of unwanted wildfire damage. It also promotes the beneficial use of fire as part of reduction,” he says. “These services are managed through our four subsidiaries, namely, Kishugu Aviation, Kishugu Training, Kishugu Fleet Solutions and Working on Fire on behalf of DFFE.”

“Kishugu provides all aspects of IFM services to all affected sectors such as Government, environmental and military agencies, forestry and agricultural companies to land users,



The threat of unwanted wildfires needs to be actively and adequately managed



WoF fire fighters are stationed at 196 bases across South Africa

NGOs, national and multinational development agencies, industry associations and fire protection associations (FPAs). If the shift to proactive planning isn't done in a structured, collaborative way across the landscape, it will not be effective and will quickly become reactive again. Maintaining an 80 percent proactive focus takes planning, collaboration and dedication with all our partners in the provinces. Fires don't respect cadastral boundaries and IFM shouldn't either," Grobbelaar said.

"Our fire fighters are stationed at 196 bases across South Africa. They receive training on the highest standards and Kishugu Aviation's highly qualified aerial teams work closely with the WoF ground teams to combat wildfires," he added.

"With the Summer Fire Season soon coming to an end in the southern parts of our country, Kishugu sincerely thanks all its partners who assisted in successfully combatting wildfires in this region. During the month of May, we will get ready for the Winter Fire Season in the northern parts of South Africa, which officially starts on 1 June. We wish everyone well for the upcoming fire season as we continue to strive to save lives, property and the environment from wildfires."

"Together with our partners, we have and will continue to successfully implement integrated fire



WoF fire fighters receive training of the highest standard



IFM incorporates different fire management activities ie aircraft, vehicles, pilots, fire fighters, incident management teams, equipment and tools in a strategic framework

management (IFM) across South Africa to reduce the risk of wildfires."

If you are a landowner or fire protection association who would like to book wildland fire fighter

training, get a quote on any of our fleet options (fire fighting trucks) or if you have aerial resource backup in your region, please don't hesitate to contact us on www.kishugu.com for more information. ▲

14 and 15 November 2022 at Emperors' Palace, Johannesburg

Pine Pienaar, International Organisation for Industrial Emergency Services Management. (JOIFF) chairman and retired chief fire officer at Sasol Secunda Emergency Services, would like to extend an invitation for you and your colleagues to attend the JOIFF Africa Regional Meeting at the Emperors Palace, Johannesburg, South Africa.

With the world opening back up after the COVID pandemic, the JOIFF organisation felt that it is important to get back to face-to-face meetings as soon as possible, ensuring the safety of all that attend and for the first regional meeting post COVID, South Africa was the clear and obvious location.

Shared learning is a cornerstone of JOIFF and with the demand for access and the enthusiasm from attendees from previous JOIFF Africa Summits made it a no brainer to come back as soon as we could.

The one and a half day summit is designed to provide a unique shared learning opportunity and to join

with high level international and regional industrial and municipal fire management specialists to listen, discuss and network with the world's and Sub Saharan Africa's foremost experts and specialists on fire hazard management.

Come along to watch presentations and participate in panel Q&As from world leading international and regional speakers from organisations such as United Nations, oil majors, regional politics, academic and technical specialists who will provide a unique opportunity for the attendees to learn, network and participate in the unique conference.

We are expecting 150+ senior fire hazard management specialists to attend this unique JOIFF Africa Summit 2022, including members of the South Africa Petrochemical Chiefs Committee making JOIFF Africa a unique networking and shared learning event.

The delegate package includes:

- Pre conference drinks, evening reception networking event

- Delegate pass for one and a half day summit
- All refreshments and snacks during summit breaks including buffet lunches
- Discounted accommodation rates at venue hotel (whilst rooms still available)
- Individual annual JOIFF Membership (subject to approval)
- This JOIFF Africa 2022 Regional Summit entry is free for JOIFF members and specially invited VIP persons.
- Entry fee for Non-JOIFF members will be ZAR1 950-00.

Please note that available delegate places are limited and early registration is recommended.

To register and for further information please visit:

[JOIFF Africa Summit 2022 Registration and Information](#)

If you would like further details on how you can sponsor or exhibit at this ground-breaking summit, please contact Paul Budgen, event director, at **Email:** pb@edicogroup.net or **Tel:** +(0) 44 77 88 281357

JOIFF Africa 2022 Summit Premier Partner announcement

The organisers of The JOIFF Africa Regional Summit are delighted to announce the continued partnership of Advanced FST as the Partner Sponsor for The JOIFF Africa Summit 2022 event. A JOIFF spokesperson said, "It is great news that Advanced FST has continued to be the JOIFF Africa summit partner. The JOIFF Africa Summit provides a unique platform for the high hazard industry to get together to discuss the industry issues and latest thinking. It's always a pleasure working with Advanced team, knowing that the JOIFF Summit

brings real value to our partners, sponsors and delegates who join with us to make this a fantastic event."

About Advanced Fire Suppression Technologies

Advanced Fire Suppression Technologies was founded on 1 March 2000 by Barries Barnard, with the vision of employing people who wanted to work rather than being necessity driven in line with the company's nature of being entrepreneurial and has been inspired by the prospects of a new democratic South Africa and the

emerging opportunities from the BEE policy. The company began dealing solely in the fire protection line of business and secured the official sole distributorship of Tyco International safety products in Southern Africa.

Advanced FST boasts a customer base in excess of 1 150, operating across 15 branches and established distribution networks within South Africa as well as in Sub Saharan and West Africa. Our customers with maintenance contracts enjoy a 24/7 on site service offering. 🔥



JOIFF AFRICA SUMMIT 2022

Emperor's Palace,
Johannesburg

14TH & 15TH NOVEMBER
2022



JOIFF in association with ADVANCED F.S.T are pleased to announce The JOIFF Africa Summit 2022 will take place on November 14th & 15th 2022 at the Emperor's Palace Resort - Johannesburg - South Africa.

World Class Presentations, Unique Face To Face Networking
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Case Studies
Technical Presentations
Suppliers Presentations & Supplier Exhibition

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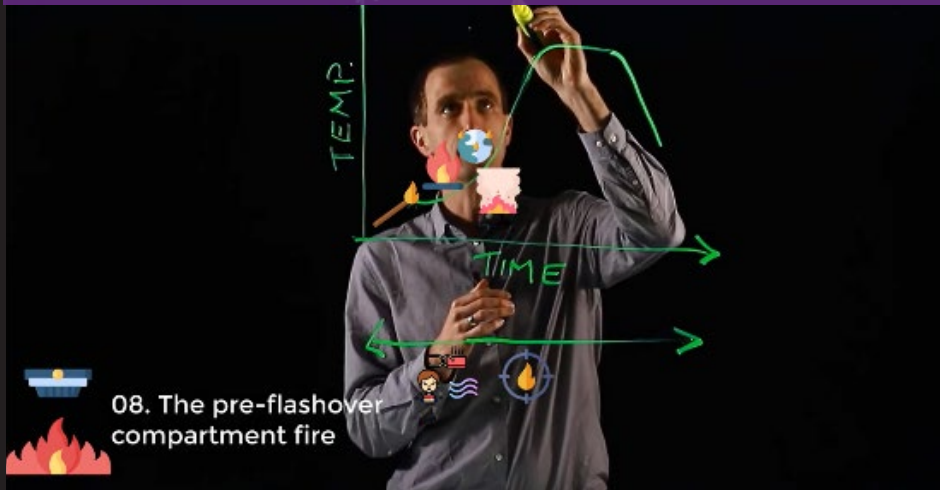
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For Further Information On Sponsorship & Exhibition Packages at The JOIFF Africa Summit 2022
Please Contact Event Director Paul Budgen
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Email: pbudgen@edicogroup.net

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Stellenbosch University launches fire safety engineering courses and degrees

Figure 1: Teaching during a past online course on fire dynamics



In South Africa almost every construction project requires a fire safety engineer. However, there are few tertiary institutions providing fire engineering training for professional design engineers

in Africa. The consultants and practitioners developing fire safety engineering (FSE) solutions often are structural, mechanical or electrical engineers with limited university fire safety training. There is a need for

formal training that can enhance the knowledge and expertise in local FSE.

In 2017 masters (MEng) and doctorate (PhD) degrees in fire safety were started at Stellenbosch University, hosted by the Department of Civil Engineering. Students from many engineering backgrounds (electrical, civil, mechanical, mechatronic, process and industrial) have now been involved in the programs. This exciting step hopes to upskill our continent and make the built environment a safer place.

For the last five years the Fire Engineering Research Unit at Stellenbosch University (FireSUN) has also been short courses in fire safety engineering through making masters level courses available to the general public, as both face-to-face and online course (eg as shown in Figure 1). The next short course "Fundamentals of Fire Safety Engineering" will take place in Cape Town from 15 to 19 August. The intensive seminar has been designed for engineers, built environment and fire safety professionals on the fundamentals of fire safety. It is based on a new masters level course. The five-day CPD course content is specifically designed to cover a variety of topics relevant for fire safety design that cover the core competencies indicated by the Society of Fire Protection Engineers (SFPE), as shown in Figure 2. The content is accessible to practitioners from a variety of backgrounds, providing an understanding of fire safety principles, demonstrations and a visit to a fire testing laboratory. International experts Dr Noah Ryder (USA) and John Ivison (Canada) will be teaching much of the course, along with Prof Richard Walls, Dr Natalia Flores-Quiroz and Dr Antonio Cicione from South Africa.

Specific topics covered include:

- Introduction to fire safety
- Material characteristics in fire
- Passive protection
- Fire detection and

Figure 3: World's largest largest informal settlement fire experiment (Photo credit: David Rush)



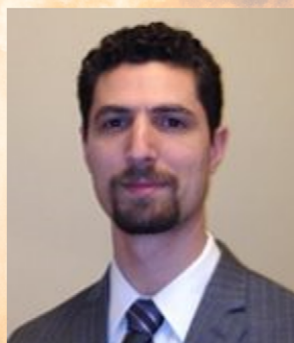
Figure 4: Furnace testing of ecobricks to understand what fire resistance can be achieved

FUNDAMENTALS OF FIRE SAFETY ENGINEERING

5 DAY INTENSIVE DESIGN COURSE

Specific topics covered include:

- Intro to fire safety
- Material characteristics
- Passive protection
- Fire detection and communication systems
- Smoke management
- Suppression systems
- Evacuation and human behaviour in fire
- Hazard and risk analysis
- Performance-based design (rational design)
- Fire lab visits
- Workshops



Dr Noah Ryder
(USA)



John Ivison
(Canada)

with Prof Richard Walls, Dr Natalia Flores-Quiroz & Dr Antonio Cicione



Stellenbosch

UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

CPD course (5 credits):
15 Aug – 19 Aug 2022

RI3500 / RI4500
EARLY BIRD

University Course:
15 Aug– 18 Nov 2022

RI6500

Brochure: bit.ly/3LL55XM
For more info: civilcourses@sun.ac.za



Video overview
of course:
bit.ly/3F0FN6s

Toughest Firefighter Alive South Africa 2022

The seventh official 'Toughest Firefighter Alive South Africa (TFA-SA)' Open challenge will be held at De Bakke Beach in Mossel Bay, South Africa, on 16 and 17 September 2022. The video, <https://youtu.be/xCC0ssbh3x4>, shares a special message from the Executive Mayor of Mossel Bay, Alderman Dirk Kotzé, to all Toughest Firefighter Alive South Africa 2022 participants. The TFA-SA event is based on the international event and has become South Africa's premier fire fighter fitness challenge with the best competitors chosen to represent South Africa internationally. The TFA-SA competition allows fire fighters to compete on a national platform and measure their skills and expertise against the best in South Africa. The entry fees are R150 for individuals and R550 for teams.

Individual categories

- Individual Age Categories (as on day of TFA competition)
- Men's Individual Open (18-29 years)
- Men's Individual Senior (A) (30-34 years)
- Men's Individual Senior (B) (35-39 years)
- Men's Individual Master (A) (40-44 years)
- Men's Individual Master (B) (45-49 years)
- Men's Individual Grand Master (A) (50 years and over)
- Women Individual Open (18-29 years)
- Women Individual Senior (A) (30-34 years)
- Women Individual Senior (B) (35-39 years)
- Women Individual Master (40 years and over)

Relay team categories (fastest time wins)

- Male Open
- Female Open
- Male over 40

Relay event: individuals from different regions are allowed to enter as a team.

For the relay male over 40 event, all the team members have to be over 40 years.

To partake in the competition the following is required:

- Completed registration forms
- Indemnity forms
- Driver's license or ID
- Proof of payment of Registration fee

Download the stage descriptions, registration information and application form.

Please contact event coordinator and Toughest Firefighter Alive South Africa head, Mark Smith

Cell: 071 676 4272

Email: TFA@fireandrescue.co or mark.smith@capetown.gov.za.

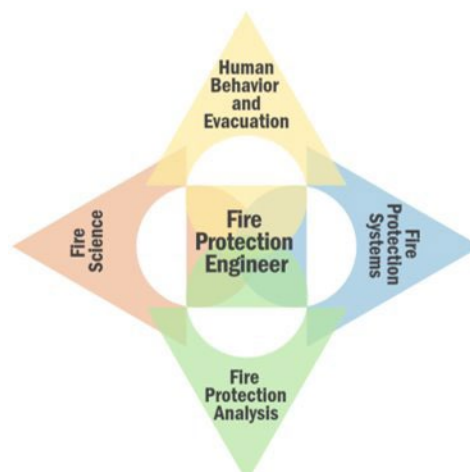
Fire and Rescue International is proud to be media partner once again of the Toughest Firefighter Alive South Africa. 

- communication systems
- Smoke management
- Suppression system
- Evacuation and human behaviour in fire
- Hazard and risk analysis
- Performance-based design (rational design)

For more information about the course visit <https://bit.ly/3LL55XM>

The research topics at FireSUN are very diverse, including topics such as characterization of different materials and systems in fire, CFD modelling, risk assessment and code development. One of the focus areas of FireSUN has been fire safety in low-income settlements, which has included conducting the world's largest informal settlement fire experiment as shown in Figure 3. Recently the team has also been working on understanding and

reconstructing fires in refugee camps in Bangladesh. With regards to buildings, research is being conducted to understand mass timber structures, shipping container structures, and structures that incorporate waste materials. The latter has been done by conducting experiments to study fire behaviour and structural performance under fire conditions, models and simulations. Figure 4 shows results



from the testing of ecobrick walls in fire, carried out by a masters student, Zara Sander. The team's research has also focused on assessing risks that specifically affect South Africa such as the analysis of the plastic recycling industry, African grains and seeds and the wildland urban interface.

Despite being decades behind countries such as the USA or the UK in terms of fire safety, South Africa is moving forward towards developing greater technical expertise in the fire safety field. To date the programme has had 12 PhD and 21 MEng students involved in the programmes, along with hundreds of engineers through the short courses offered. Students from Zambia, Kenya, Nigeria, India, Chile, Russia and Ethiopia have been trained through the work which is leading to increasing fire safety knowledge throughout the developing world. 

**OPEN
CHALLENGE
MOSSEL BAY**

**16-17
SEPTEMBER** 2022

SOUTH AFRICA'S TOUGHEST FIREFIGHTER ALIVE



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FOR EXCELLENCE

**TOUGHEST
FIREFIGHTER ALIVE**



Mossel Bay
MUNICIPALITY

**FIRE AND
RESCUE
INTERNATIONAL**

Contact Mark Smith Email: TFA@fireandrescue.co Cell: 071 676 4272

PyroUHP... the future of fire fighting in Africa!



This PyroUHP is fitted with a PyroBlitz and a PyroLance system

Impala Plats, under the direction of Chief van Heerden, has taken delivery of their PyroUHP system mounted on a refurbished Land Cruiser that was standing idle on the mine. This PyroUHP is fitted with a PyroBlitz and a PyroLance system.

The PyroBlitz is ideal, at 75l/min@100 bar, for wildland, fast attack and first response vehicles. The system breaks down the standard water droplet to 64 micro droplets. This creates 12 times the surface area, which in turn captures more heat energy from the fire. This results in more than 90 percent of the applied water being used effectively as compared to the traditional fire fighting methodology where 80 to 90 percent of the water goes straight through the fire and lands up on the floor.

The smaller droplets allow for a longer 'hand-time' therefore being suspended in the upper thermal layers for extended periods of time. This has a dramatic effect on the most dangerous parts of the fire and increases fire fighter safety. These droplets are also drawn into

the flow path of the fire and create an additional layer of efficacy during the fire fighting operations.

The fact that the PyroBlitz technology ensures more effective use of the water, up to 90 percent effective usage, allows the fire department to carry less water, reduce the size of the response vehicles and therefore respond faster.

Additional to the quicker response is the fact that the PyroBlitz hose

reel/s carry up to 60m lengths of hose reducing deployment time.

For more information on the PyroUHP system and what makes it unique in the market, please reach out to Industrial Fire and Hazard Control, the official agents for PyroUHP in Africa:

Trevor Fiford

Email: trevor@industrialfire.co.za

Cell: +27 (0)82 651 2580



PyroBlitz technology ensures more effective use of the water, up to 90 percent

Industrial Fire & Hazard Control brings you
PyroUHP ... *the future of fire fighting in Africa!*

FASTER, SAFER AND MORE EFFECTIVE



PyroBlitz Ultra High Pressure (UHP) Fire Suppression Systems

75 l/min skids for Wildland, Fast Attack or First Response Vehicles

MORE EFFECTIVE.

Ultra High Pressure (UHP) breaks down a standard water pressure droplet to 64 micro droplets using a pressure of up to 100 bar. This creates 12 times the surface area to capture more heat energy. Resulting in 90% of the water used efficiently to put out the fire. Conventional droplets are too large to be effective, only the very outside layer is effective, up to 85-90% of the water goes right through the fire and ends up as run off. Take out far more fire with far less water!

SAFER.

Smaller, lighter droplets have better 'hang-time'. Droplets will suspend longer in the upper thermal layers, reducing heat in the most dangerous part of the fire. These droplets are light enough to be drawn into the flow path of the fire sending suppression to where it is needed most. These micro droplets will get into every

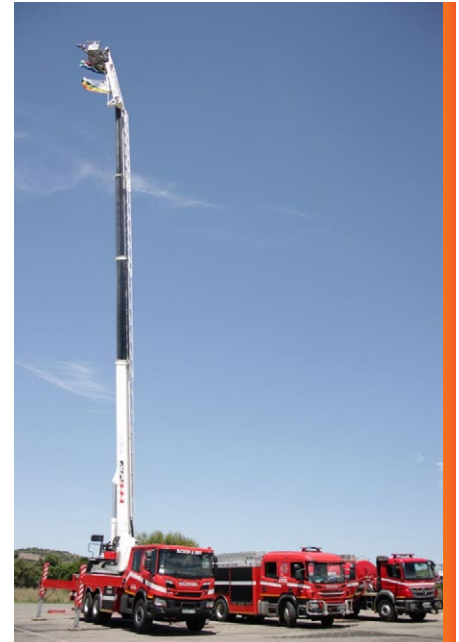
FASTER.

More efficient use of the water allows a fire department to be effective with far less water enabling them to reduce the size of the vehicle needed. A smaller vehicle is far more mobile and can get to the fire much quicker. These vehicles can also get closer to the fire itself. The PyroBlitz system has 60m of charged line, further reducing the deployment time needed at the fire scene. With fires burning 8 times faster these days it is even more critical to get on the scene and flowing water faster.



For a demonstration of the **PyroUHP** system in action or to enjoy an action packed presentation detailing this significant technology, call Trevor on 082 651 2580 or email info@industrialfire.co.za

Mangaung Metro Municipality Fire and Rescue reaches new heights



Divisional officer, Braam van Zyl, said that they had a need for an apparatus such as this, as more people are living in the CBD than ever before. "This is a unique vehicle for a unique purpose. It is for high-rise buildings like in the CBD, where more people are starting to move to. The new aerial platform is not for everyday use but for special cases and when it is used, it plays a pivotal role."

The aerial platform allows them to fight fires on a direct level, as well as to combat fires in lower buildings from above.

A water canon in the cage allows the truck to deliver 3 200 litres of water per minute. The platform is also equipped to carry a weight of 500kg, which equals seven adults, in case of a rescue operation being executed from high structures. It also includes a number of advanced technology features, including safety sensors.

The aerial platform was on show for the public at the Safer Festive Season initiative held at the Shell Ultra City Pit Stop on the N1.

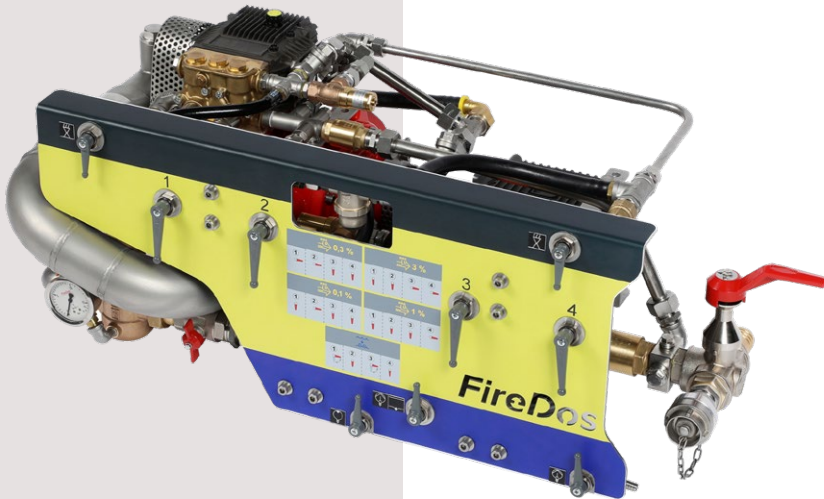
Photos: Pierce van Heerden ▲

The Mangaung Metro Municipality's Fire and Rescue Service boasts an all-new Cela 444e aerial platform built by Marcé on a Scania chassis that will not only help the department save lives but will also put it in an advanced position, using the latest technology.

Although the truck has been in operation for quite some time, it

was shown to the media and the public for the first time during a festive season safety campaign. The new state-of-the-art aerial platform reaches a height of 44 metres or 14 storeys, which will enable the department to fight fires in the metro, especially in the central business district (CBD), which is known for its high buildings.

New FireDos FZ1000 GEN III foam proportioner for fire trucks available from Dosetech



FireDos GmbH has introduced its new FZ1000 GEN III foam proportioner for fire trucks. With the new FZ1000, the next evolutionary stage of proportioning systems is making its way into fire trucks. More compact, safer, more functional, the new FZ1000 GEN III features numerous improvements that make the generation of fire fighting foam in fire trucks more efficient and convenient.

Due to the purely mechanical operating principle, the drive takes

place without external energy, and is independent of the on-board power supply. The water motor and proportioning pump ensure that the extinguishing water's pressure and delivery rate have no effect on the accuracy of the proportioning. The selected proportioning rate is precisely maintained under all operating conditions. The length and layout of the extinguishing water lines also have no effect.

Fluorine-free and/or alcohol-resistant foam agents can be

very viscous. The new vehicle unit is also suitable for foam agents with medium viscosity, as the proportioning pump of the FireDos FZ1000 has been specially designed for this purpose. In addition, no flushing process is necessary. Foam or wetting agent remains in the sturdy proportioning pump. And: The new FZ1000 is suitable for all types of discharge devices.

Advantages

Suitable for pulsating/intermittent operation: The proportioning rate stays constant also when the extinguishing water is discharged in pulsating or intermittent mode.

Purely mechanical, independent of on-board power supply: Driven solely by the flow of extinguishing water. No electricity is required, which means no additional load to the truck's power supply.

Production of wetting agent and foam below 100 l/min: The foam agent is injected precisely already at a low extinguishing water flow rate, guaranteeing effective fire fighting. ▶



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



Realistic simulations offered at ETS

Jahnell Rangwato (quality assurance), Natasha Eberwein (finance and human resources), Pinkie Matjeke (sales and marketing) Pieter Dreyer (facilities) and Percy Motsepe (SHEQ).

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 15 programmes, with a further five programmes pending the current scope extension submission. “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

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 65 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 comprising Shaneilyn Ellen (training),

▶ **Purely mechanical, independent of on-board power supply**

The purely mechanical product concept of the proportioners allows an absolutely trouble-free mobile operation. It is totally independent of any on-board power supply and also if installed in a roll-off container or trailer-mounted, no external power supply is needed to run the equipment. What’s more, stepless adjustment of the proportioning rate is possible.

Always ready to run

When seconds matter in a rescue operation, the equipment has to work smoothly. After one-time

venting of the proportioning pump, the mobile FireDos proportioners are ready to go and the set proportioning rate is always available, without any limitations of flow rates or pressure changes.

Numerous types and equipment versions

No fire rescue operation is like the other. The mobile FireDos proportioners adapt to the site conditions ideally: numerous types and equipment options are available.

For all foam agent types

The proportioners are designed to

handle all types of foam agents, also for the production of wetting agent.

Compatible with all nozzle types

For maximum flexibility during operation, the proportioners are compatible with all nozzles or discharge devices.

Easy operation

FireDos proportioners are developed specially for fire brigades. We care about what matters: safety and ease of use. Operating the equipment intuitively is no problem also in stressful situations.

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Blast from the past, deep-lifting operations from years gone by



Pomp and ceremony from competitions in years gone by

for fire fighting 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 fire fighters 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

- Qualification ID 57803: Further Education and Training Certificate: Fire and Rescue Operations
- 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:

- Fire fighter SAQA ID 98991 NQF Level 4; Credits 149
- Safety Health and Quality Practitioner SAQA ID 99714; Level 5; Credits 256

3. Education, Training and Development Practices SETA Programme Approval

- Assessor training
- Facilitator training
- Moderator training

4. Department of Labour CI 663

- First Aid Level 1
- First Aid Level 2
- First Aid Level 3

► qualification as well as the associated and aligned NFPA standards.

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

5. Resuscitation Council of South Africa
- Cardiopulmonary Resuscitation (CPR) for family and friends
 - AHA courses
 - Basic Life Support for Healthcare Providers

6. Department of Transport Education and Training Authority Approval No: PrDP(D) 2012/88

7. Transport Education Training Authority (TETA) Accreditation No: TETA12-228

- Dangerous Goods
- Safety
- First Aid
- Basic Fire Fighting

8. Construction Education and Training Authority (CETA) Accreditation No: 5R55079

- Basic FAS/Working at Heights
- FAS/Working at Heights Rescue

9. Fibre Processing and Manufacturing (FP&M) SETA FPM17/PRPACC-125

- Qualification 50225 General Education and Training Certificate: General Forestry

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 from those seeking to fulfil



Modern training techniques prioritise personal protective equipment

their legal appointment obligations in the pursuit of compliance, to private students seeking to make themselves more appealing in the job market, to on-site responders assisting organisations in emergency and crisis management and to professional full time emergency services personnel in the municipal and metropolitan environment.

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.

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.

“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. ▶



AHA Basic Life Support for healthcare providers

SkillsTrain Distribution expands its offering

SkillsTrain Distribution is a specialised niche market importer and distributor for global publishers and digital platforms. The company has its own e-learning platform run by Dave Augustyn and has put most higher educational platforms in place for various varsities and colleges.

SkillsTrain Distribution was founded by Linda Botha who has been in the importing and distribution arena for many years. She is an entrepreneur and member of the Women President's Organisation who has been nominated against some of the top women in business at the Women in Business Awards and National Business Award she has recently over the past two years won three international awards.

Botha's focus is drive and passion for education and assisting learners,

colleges and private institutions in being the best that they can be and assisting all to achieve the success and excellence in all fields. She is passionate about the fire and EMS services ensuring her market is made aware of the latest products and training opportunities to learn and grow whether it be an E-pub, print book, digital contract or life-saving products.

The Flaim training unit is cutting edge technology and allows students through the real life experience of virtual reality to learn through all the simulations the actual skills required, so when it comes to a real life emergency they are prepared and the clean green mission value statement is what the Flaim Trainer and the Portable Virtual Reality Training units are all about.

Flaim Trainer was developed by Professor James Mullins a Deakin



SkillsTrain Distribution founder Linda Botha

University professor and is backed by Darley USA. "We currently have over 40 real life scenarios on each of the units from aviation, mining, high-rise, size-up, incident command, domestic as in kitchen fires to maritime and constantly adding to the list", said Botha.

"We can structure an enterprise licence of accredited courses to these specialised sectors. Another example is that of the agri-sector

▶ 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.

ETS also provides the services of qualified and experienced on-site emergency responders. "Our emergency response teams have worked at various sites in 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."

ETS also looks forward to hosting the fourth Industrial Emergency Response Team Competition on the 27 October 2022. Not only will the challenging competition events culminate in some great prizes and trophies being won, but each and every competitor will receive recognition for having participated in realistic simulated emergency drills, which is at least an annual requirement for response teams.



ETS provides the services of trained and experienced emergency response personnel

focusing on climate change, soil erosion etc. Adding to our list of partners is that of Bizzco for supply chain management courses, locally and internationally accredited as well as short courses that are now all available on the SkillsTrain platform,” said Botha.

“SkillsTrain’s specialised services are delivered to various industry specialised sectors and focuses on Southern Africa and across our borders. We meet the specialised needs of higher education, whether it be an EMS college, mining, manufacturing, defence or maritime, aviation or retail, we have the solution for you”, she added.

“SkillsTrain is constantly looking at new solutions to benefit you the client saving you time resources and helping you with your bottom line. SkillsTrain is a flexible company that works to keep its clients happy and supported. As SkillsTrain moves forwards, our strategy will be to run more webinars informative with expert panels delivering question and answer sessions to all and in the process assisting people in life saving situations to hopefully have received the tips they needs and call centre numbers on hand.”

“We are very excited about the future and what 2022/2023 will bring. The company is currently in communication with a large medical company Kiara Medhealth that has been appointed to take two new medical products to market. The one is a Vortron disposable ventilator called the Go2vent, which is aimed at rural areas and communities in need with doctors and nurses on call, this disposable



ventilator will definitely assist in saving many lives.

Skillstrain will look at assisting in reaching the right companies in sub Saharan Africa. We have recently collaborated with a company and will be offering on-line EMR courses with for CPD points for completion.

Additionally, we are constantly looking at more partners to add specialised value to the EMS and fire training market and the company is in negotiation with a medical company for simulations in the medical training field, which will be a good fit with the Flaim Virtual Reality Training Unit.” ▲



The Vortron disposable ventilator, the Go2vent

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World Rescue Challenge 2022

Click for more info
www.wrc2022.lu



Since 1999, the World Rescue Organisation is conducting its annual World Rescue Challenge, to enable teams to enhance skills and compete by performing under realistic conditions and measured against recognised global standards. "Our aim is to bring together rescue and emergency workers from all over the world to share, to learn and to exchange information to develop their skills in effective post-crash intervention and the development of combined rescue and medical care."

The members of the World Rescue Organisation are committed to spread the rescue challenge concept and global rescue standards and to provide sustainable training for rescue services and personnel in developed, transitional and developing countries with the goal of the host country becoming self-sufficient in post-crash response, rescue from vehicles and pre-hospital care.

The World Rescue Organisation is a partner of the United Nations

Road Safety Collaboration and its member organisations represent the five continents of the world. "We are dedicated to the goals of the Decade of Action for Road Safety by contributing to improve the post-crash response and thus to help to save lives!"

2022 World Rescue Challenge (WRC) and Annual General Meeting, which this year takes place in Luxembourg from 7 to 11 September 2022.

About Luxembourg

The Grand Duchy of Luxembourg is in the west of central Europe and with its 2 586km² it is one of the smallest countries in Europe. Luxembourg has a population of around 640 000 residents with 170 different nationalities. Apart from the population, every day more than 180 000 cross-border commuters travel to Luxembourg to work. Luxembourg belongs to the European Union, so its currency is the Euro (€). The languages mostly spoken in Luxembourg are Luxembourgish, English, French and

German. Luxembourg is also known for its financial marketplace and lots of banks. The country has to offer a lot of tourist attractions and a nice nature to tourists.

Nice to know

Luxembourg is the first country where all the public transport across the whole country is completely free.

The World Rescue Challenge (WRC)

The WRC is a unique event, which sees international teams and assessors from such countries as Australia, New Zealand, USA, Ireland, Canada, Africa, Spain, Luxemburg, United Kingdom, Paraguay, Brazil, Taiwan and many more, come together to promote and share skills and experience in the vehicle rescue and casualty care.

Experience has shown that such participation and interaction has greatly assisted with the development of vehicle rescue and casualty care skills within the broader organisation/service from where the teams are based.

Two South African assessors appointed

Nomination to assess at the World Rescue Challenge 2022 in Luxembourg City, Luxembourg, has been successful for Julius Fleischman and Jannie Bronkhorst representing the South African Medical Rescue Organisation (SAMRO). Both have been deemed competent and are registered as such to assess under the auspices of the World Rescue Organisation in the disciplines of medical, trauma and extrication at regional, national and internal level.

Julius A Fleischman World Rescue Challenge assessor is with the Free State Department of Health and has longstanding involvement and experience in international events:

- World Rescue Extrication Challenge (2004) in England
- Extrication Challenge (2005) in America (Miami) during August 2005 – September 2005.
- World Rescue Challenge 2006 Cape Town, South Africa Lead Assessor ▶



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Lukas Jaws of Life® eDraulic® 3.0 extrication tool line



With the Lukas Jaws of Life® eDraulic 3.0®, LUKAS Hydraulik GmbH took its fastest and most powerful battery-powered extrication tools and made them faster, operational in

both fresh and salt water. And now, it also features the smartest through a smart dashboard display, which provides operators with real-time feedback on tool status. "Lukas is continually evolving the Jaws of

Life extrication tools to make first responders' jobs safer, easier and more efficient and eDraulic 3.0 takes tool innovation to a whole new level," said Jim Hamilton of Hamilton Hydraulics in South Africa.

- ▶ • World Rescue Extrication Challenge (2010) in Cork, Republic of Ireland
- Shadow and Trainee challenge at the 2011 Australasian and World Rescue Challenges, New Zealand Wellington
- Qualified as assessor at 2011 New Zealand Wellington for future World Rescue Challenges
- Assessor 2012 World Rescue Challenges London
- Assessor 2013 World Rescue Challenges USA
- Assessor 2014 World Rescue Challenges London
- Assessor 2015 World Rescue Challenges Portugal
- Assessor 2016 World Rescue Challenges Brazil

- Assessor 2017 World Rescue Challenges Romania
- Assessor 2018 World Rescue Challenges South Africa

- Assessor 2019 World Rescue Challenges France
- Assessor 2020 UAE Rescue Challenges Dubai ▲

The World Rescue Challenge 2022 programme is as follows:	
05-09-2022	Assessors arrive
06-09-2022	Assessors meeting/workshop
06-09-2022	WRO AGM
06-09-2022	WRO AGM
06-09-2022	Challenge – 1st day
06-09-2022	Challenge – 2nd day – swap night
06-09-2022	Challenge – 3rd day
06-09-2022	Challenge – 4th day and closing ceremony
06-09-2022	Transport back to Luxembourg Airport



“With the launch of E3, Lukas Jaws of Life has taken the fastest, most powerful tools in the industry and made them also the smartest, giving first responders an at-a-glance dashboard for tool performance that allows them to keep their focus on the patient,” said Hamilton.

“The tools can operate underwater to a depth of three metres with an operating time of 60 minutes on the 9Ah battery,” added Hamilton.

The Lukas E3 smart tool dashboard provides the tool operator with live, visual and easy-to-see tool feedback in three key areas: roll warnings, which assist the operator with cutter positioning; power level indicator, which alerts the user to real-time power level, so they can reposition the tool for another cut and a battery charge status indicator, ensuring the operator is aware of runtime in real time.

The Lukas E3 line builds on the game-changing 2019 launch of the Lukas Jaws of Life eDraulic Watertight Extrication Tool (EWXT) line, battery-powered tools that have a longer battery life and stronger cutting force, plus are completely operational when submerged in fresh water. E3 offers all the features and benefits of EWXT and then some. In addition to E3’s smart dashboard, E3’s new turbo function adds

increased user-controlled speed and the tool’s patented watertight design allows operation in both fresh and salt water.

The Lukas Jaws of Life eDraulic 3.0 includes 11 tools ie SP 555 E3 spreader, SP 777 E3 spreader and SP 333 E3 spreader, the SC 358 E3 combi, SC 758 E3 combi and the SC 258 E3 combi, the S 799 E3 cutter, S 378 E3 cutter and the S 789 E3 cutter as well as the R 521 E3 ram and the R 522 E3 ram.

Other features and benefits of Lukas Jaws of Life eDraulic 3.0 rescue tools include a brushless DC electrical motor for more efficiency

and performance, an ergonomic design, LED lights and an optimised weight. All Lukas Jaws of Life tools meet NFPA 1936 2020 standards for NFPA performance ratings.

All Lukas vehicle extrication tools are available from Hamilton Hydraulics, its sole distributor for South Africa. Hamilton Hydraulic Services was founded in 1995 and mainly focused on the servicing and repairs of hydraulically operated rescue tools. 27 years later, the company supplies Lukas rescue tools, Vetter airlift and stabilisation systems and emergency lights. Hamilton Hydraulics services and repairs all makes of rescue tools. ▲



Liquefied petroleum gas emergencies

By Colin Deiner, chief director, disaster management and fire brigade services,
Western Cape Government



Responding to an LPG tanker on fire will always be a high-risk situation

Liquefied petroleum gas or 'LPG' as it's more commonly known, could present fire services with some of their most challenging incidents. The physical properties of LPG as well as the volumes in which it is transported, are the two biggest factors that will dictate the strategies and tactics of the responding incident commander. Understanding these properties and being able to recognise the type of storage vessels and type of hazard it is being exposed to ie fire or mechanical damage, is crucial in the survival of your responders and eventual successful management of the incident.

What is LPG?

Let's do a quick catch up on the physical properties of LPG. Liquefied petroleum gas is colourless, odourless and has anaesthetic

properties. For this reason, LPG is usually odourised enabling detection by smell down to one fifth of the lower limit of flammability ie approximately 0,4 percent gas in air. LPG is stored as a liquid either at ambient temperature under its own vapour pressure or in a refrigerated condition at a lower pressure. Given that LPG vapour is heavier than air, it will flow along the ground and into drains, etc, sinking to low levels.

In still air conditions any accumulation of vapour will take some time to disperse. This means that a flammable mixture might become ignited some distance from the point of leakage with the flame travelling back to that point. Escaping gas can also be recognised by its cooling effect on the surrounding air, causing condensation and freezing of water

vapour in the air, showing as frost at the point of leakage. Owing to its consequent lowering of temperatures, liquefied petroleum gas can cause severe frost burns to the skin.

What is propane and what is butane? Propane and butane are both forms of LPG but what does that mean and what are the similarities and differences between the two?

Propane, which comes from natural gas processing and oil refining, is a flammable hydrocarbon gas that is liquefied through pressurisation. It is commonly used for heating and cooking but can be used for a wide range of residential and commercial uses while butane is also a flammable hydrocarbon gas that comes from natural gas processing and oil refining. Butane on the other

hand, is more commonly used as a fuel, propellant and refrigerant.

Propane and butane are both sourced in the same way and are members of the LPG family and while there are several similarities between the two gasses, propane produces more heat than butane and is more efficient in combustion. Butane has a characteristic that is also beneficial to the environment; it liquefies easily, making containment easy. The most important differences come down to the boiling point of the gasses. Propane has a boiling temperature of -42 degrees Celsius, whilst butane has a higher boiling point at -2 degrees Celsius.

Incidents involving LPG

There are many categories of incidents involving LPG for the purposes of this article I will limit it to the following two types of types: Incidents with ignition and incidents without ignition.

Incidents without fire (spills)

These incidents include accidental releases of gas due to damaged or faulty valves or tears/splits in the container. Although the amount of gas released from a damaged valve or vessel tear can be approximated, it is difficult to assess the distance or pace at which a gas cloud has propagated without purpose-designed software. Several computer simulation software could provide a good indication of the gas cloud propagation, however, there are several factors that will need to be considered along with the computer-generated model.

The models are designed to calculate the rate and volume of evaporation based on the following parameters:

- Ambient temperature
- Weather conditions
- Gradient and
- Surface area of the spill, including any obstructions such as walls or drains that could limit or increase the propagation of released gas.

Due to their varying boiling points, propane spills will boil rapidly and its temperature will drop well below

zero while with butane any rapid boil quickly ceases and evaporation can be relatively slow.

With or without the benefit of software models, the on-scene incident commander must consider any physical features in the vicinity of the spillage as well as any potential source of ignition.

Incidents with ignition

An incident where a large column of rapidly escaping LPG (within its flammable range) reaches an ignition source, will result in a high velocity and pressure fire accompanied by pressure and shock waves across the entire volume of the gas cloud, approximately 3 000 metres/second at a pressure of 20-30 atmospheres.

There are generally two types of fires emanating from an uncontrolled LPG release.

- Ignition could occur immediately after the incident has occurred resulting in an immediate ignition resulting a pressure-fed fire with a minimalised risk of explosion, depending on the integrity and proximity of the container. This type of fire could have the additional risk of starting secondary fires due to radiated heat igniting surrounding exposures.
- Flash fires occur when a fuel rich gas cloud finds an ignition source causing the flame to burn towards the released product (and its container). The size and velocity of the combustion will depend on

the amount of released product, its density and propagation distance of the gas cloud. Here also there is a risk of secondary fires starting due to exposed surfaces of other flammable materials in the proximity of the combustion. The shock wave could either cause the flame to be snuffed out or lead to a fire at the point of release. Should the first eventuality take place, a real risk of secondary ignition will present if any secondary exposures are still burning. This type of incident is generally referred to as an unconfined vapour cloud explosion (UVCE).

A third type of incident type does not involve direct contact with the product but is caused by the heating of a vessel containing the liquefied gas by an external fire. The contents of the vessel are heated above their boiling point and the pressure in the vessel increases exponentially. The flames impinging on the surface of the vessel on or near the ullage space will cause the impacted wall to be weakened and may cause a catastrophic failure of the vessel. This is generally referred to as a boiling liquid expanding vapour explosion (BLEVE). As a result, the vessel ruptures propelling large pieces over considerable distances and leaving a trail of destruction in its wake.

This might be a good time to mention the safety systems on LPG storage vessels and road transport



A massive amount of work has been done by the fire fighters from the various POG fire training schools in South Africa over many years

A consistent and reliable water supply must be in place to support at least four hose teams for the entire duration of the operation



- ▶ containers. Bulk LPG is generally stored in stationary storage containers and transported in LPG semi-trailers and custom designed LPG delivery vehicles commonly known as 'Bobtail trucks'. Storage methods will usually depend on the amount of gas stored and the industry it is being used for. Conventional refinery practice is to store LPG, such as butane and propane gas liquids under pressure in tanks or spheres.

Where large capacity LPG volumes of several thousand tons are stored, large, refrigerated storage vessels are placed either completely or partially below ground level. Bulk storage is usually found at the receiving terminals where the gas comes ashore from offshore fields or tankers. Bulk storage vessels for LPG range from small industrial users supplying gas for domestic use to major industrial users and refineries of 1 000 tons or higher. All these bulk vessels are designed for onsite re-filling.

Any storage facility must take into consideration the surrounding risks and the possibility that escaping LPG may migrate towards buildings, process plant, storage vessels or collect in natural depressions. The positioning of cylinders that may fail when involved in a fire must be considered. The direction in which they are aligned may impact the direction of travel of projectiles formed by the debris of the destroyed vessel.

Catchment areas for any liquid that might escape, must consider the propensity of the product to flow into low lying areas and the provision of low diversion walls will tend to ensure that the liquid will be directed to run away from tanks, pipelines and valves to a suitable area where it can be dealt with safely. Main shut off valves must also be placed in a position where they will not be compromised by a blast and where they will be accessible in an emergency.

Risks related to the road (and rail) transportation of LPG will be dependent on the location of the incident. An accidental gas release on a public road or in a built-up industrial could quickly find an ignition source and lead to multiple secondary fires. A road tanker incident with ignition in a similar area will have the risk of a BLEVE if not cooled down. The lack of a reliable water supply could be a major inhibiting factor here. A third situation could be a tanker involved in a rollover or suffering other mechanical damage to the vessel, which increases the pressure inside the vessel. Uprighting the vessel or exposing it to any movement may increase the pressure leading to a sudden rupture of the vessel. Pressure relief valves are designed to detect an increase in the internal pressure of the vessel and activate to relieve it to manageable parameters.

Managing LPG emergencies
Responding to an LPG tanker

on fire will always be a high-risk situation. Ideally you don't want to extinguish a fire involving LPG. The gas cloud formed by the escaping unburned gas will propagate very quickly and any surrounding flames or heat sources could ignite it with catastrophic consequences. The main objective should be to isolate the source of the gas release thereby starving the fire of the fuel needed for it to continue burning.

If a cylinder has been exposed to direct flame impingement the possibility of a BLEVE will be ever present. There is no 'safe period' when a pressurised LPG container is subjected to heat. Pressure relief valves (PRV) on the cylinder are designed to open and vent the gas into the atmosphere in the event of an overpressure situation. Gas will escape through the PRV at a rapid rate, which will increase in proportion to the increase in the pressure inside the vessel. The placement of adequate water-cooling streams onto the vessel is critical in reducing the pressure inside the vessel and gaining control of the incident. Expect a boiling liquid expanding vapour explosion (BLEVE) at any time if adequate cooling has not been available or effectively done.

When the initial size up of a tanker involved in an incident is conducted, particular attention must be given to the condition of the PRV. It might have been damaged during the accident, which caused the valve mechanism to be jammed and while the responders are believing that the PRV has not yet activated and all is well, the internal pressure might already be critical.

The first responding unit must approach the incident from a safe distance and stage in an upwind direction. A pair of binoculars in the fire engine will assist the first-in incident commander to observe the incident from a safe distance where any immediate crew and public life risks can be determined and information can be gathered to assist in establishing an initial cordon around the potential hazard zone.

Try to set up cooling water streams onto the affected cylinders as soon as it is safely possible. This will minimise the possibility of vessel failure. Fire fighters should, however, take advantage of any available substantial shielding/cover and keep as low as possible to the ground. Ground monitors should always be a prime tool in such situations.

Flame contact anywhere on a vessel can lead to failure, however, the cylinder surface area above the level of the liquid is most dangerous as the internal gas will not conduct heat away as quickly as internal liquid.

Fire fighting considerations

Due to their comprehensive safety standards, bulk LPG incidents are rare occurrences. The most common LPG incidents that fire services will respond to would be smaller leaks that have ignited and these can be extinguished by using a dry agent and freeze sealing techniques. The technique of freeze sealing can be easily taught to first responders and entails using a roll of mutton cloth (or similar product) to wrap around the leak thereby causing the vapour surrounding the leak to freeze up between the cloth, thereby producing a temporary seal. The risk of suffering burns from super-cooled air is high and this will require full protective equipment to carry out.

A bulk LPG incident posing no risk to life could be dealt with by employing a defensive strategy whereby the vessel is allowed to burn out until the threat is neutralised. This can be a controversial decision by the incident commander but if it is, for example, a rail or road tanker rollover in an uninhabited area with very little knowledge of the integrity of the storage compartment or the PRVs, this might be the best way to go. A wide area evacuation of the area surrounding the burning vessel will be imperative. If it is necessary to evacuate people in the surrounding areas and this might take time, the employment of cooling streams must be considered.

An aggressive attack where crews will be employed to approach the fire in a controlled manner utilising fog

to approach the source of the leak and then isolate it, must only be done after a thorough assessment of the risk to personnel and the feasibility of such a strategy has been done. The technique, more commonly known as flame bending, has been widely taught in petroleum oil and gas (POG) training programmes for almost 50 years and is reliant on several factors being present before it can be attempted. Sufficient cooling streams must be in place to ensure the integrity of the structure to be approached. Cooling will help prevent a possible tank rupture but also prevent any structures surrounding the vessel from collapsing due to the heat and weakening of its structural members.

A consistent and reliable water supply must be in place to support at least four hose teams for the entire duration of the operation. A burning gas release in a bulk storage facility may have also damaged nearby containers which could have resulted in running flammable liquid fires in the immediate vicinity of the burning gas leak. In such an event a continuous application of foam will be required.

It is not my intention to discuss three dimensional fires at length in this article. Safe to say that the decision to do this should be a carefully considered decision and, once the decision is made to do it, it must be done deliberately (don't deviate from your plan) and with maximum control by the team leader.

When approaching a fire at such close-range, care must be taken not to direct a water stream directly on to a burning gas stream. This could accidentally extinguish the fire and cause the unignited gas to escape uncontrolled to a point where it might again be ignited by a different source thereby engulfing the entire attack team in flame.

The use of attack teams is not only limited to valve isolation but can also be used to approach an area of high radiation heat to place water monitors or even rescue people near the fire.

A massive amount of work has been done by the fire fighters from the various POG fire training schools in South Africa over many years. Here we must be particularly grateful to the guys at the Sasol Fire Training Centre in Secunda who have led the way in understanding and mastering these strategies.

Leaks without ignition

Earlier in this article I have mentioned the risk posed by an unignited leak. When responding to such an emergency, approach and stage your resources upwind and upgradient from the incident site. The incident commander's initial assessment must include the size of the leak, wind strength and direction and the potential for vapour cloud ignition. Any ignition sources must be removed and isolated. ▶



Try to set up cooling water streams onto the affected cylinders as soon as it is safely possible

Command Corner: Communication with aircraft

By Chief Tim Murphy, US Forest Service Africa Disaster Management Technical Advisor



Chief Tim Murphy



Aviation communications should be clear, concise, short and to the point

Discuss the following information in terms of effective communication with aircraft. Involve the pilot(s) in this discussion.

- Establish an air-to-ground frequency on the incident and make sure everyone knows what it is.
- Avoid switching frequencies in the middle of an operational period.
- Discuss guard frequencies ie:
 - How they work
 - When to use them
 - What frequencies are established for aircraft in your area?
- Aviation communications should be clear, concise, short and to the point.
- Use standard terminology that can

be understood by all people you are talking to. Do not use local slang.

- Know what you want to say before you key the microphone. Don't think and talk at same time.
- Before you key your microphone to talk, be sure to listen to ensure you don't cut into another transmission.
- Identify who you want to talk to by the call sign and identify yourself in every transmission.
- If the frequency gets congested, request another frequency. Upon receipt, ensure that all people who need to be on the new frequency transfer to that frequency.

- When giving ground descriptions, describe the location as if you are viewing the location from the direction an aircraft would be traveling. Use a common frame of reference for the sender and receiver.
- Use easily understandable directions, such as north, south, east, west, 2 o'clock, 9 o'clock, left 20 degrees, right 45 degrees, etc.
- When giving directions, always give them in relation to the pilot's perspective. "I'm at your 1 o'clock position."

Review Incident Response and Fireline Safety Pocket Guide pages 86 to 98. 🔥

- ▶ Your priority will be to consider the need for evacuation of members of the public in the vicinity, vapour containment and dispersal using fog nozzles or monitors and other ground sprays to curtail the movement of vapour clouds and to reduce the gas concentration to below its lower explosive limit by the entrainment of air. The application of water to liquid spills will increase the rate of vaporisation.

Flammability detectors can also be used to determine the remaining areas of risk and the effectiveness of the mitigation methods being employed. Remember to also check for possible accumulations of gas at low levels, eg, in basements, drain and water courses.

Conclusion

Although I have spoken at length about the properties of LPG and the various risks it presents, I haven't elaborated much about incident

location. We must appreciate that with mobile LPG containers (road, rail or portable) an LPG incident can happen virtually anywhere. It will not be possible to pre-plan for LPG leak or fire incidents at every location. It is therefore important to carefully evaluate the surrounding environment and consider which of the surrounding features may be particularly vulnerable or exasperate the incident. Ensure you are looking "inside-out" as well as "outside-in". ⚠️

Preparation for the Winter Fire Season

By Simon Thomas, operations manager and fire protection officer,
KwaZulu-Natal Fire Protection Association (KZN FPA)



Fire and Rescue International spoke to Simon Thomas, KwaZulu-Natal Fire Protection Association's (KZN FPA) operations manager and fire protection officer with regards to the necessary preparations for the winter fire season.

Thomas explained, "At this stage, preparation is very much as normal, although perhaps slightly delayed due to good rains and we are still getting the odd rain in places. Emphasis, however, is more on awareness at this stage to ensure landowners are aware of their duties under the law."

Explain the impact of the recent high rain fall

"The 2020/21 and the 2021/22 summer rainfall figures have been above normal with the 2021/22 season seeing an increase of some 12 percent in places. During last year's fire season build up, we had very late frosts. This resulted in landowners not getting through their burning programme in time for the cut off dates. Even where burns were done, there were not clean burns and as a result there was a lot of unburnt fuel left. The good rains of the past

summer season has resulted in a further build-up of fuel, which could result in very hot burns. If we once again get late frosts, we are going to end up with very high fuelloads resulting in extreme fire behaviour."

Describe the importance of fuelload reduction

"I think my previous point answers a lot of the importance in grasslands. Very much can be said when it comes to harvesting debris. This is going to be of utmost importance in harvested timber compartments along large grasslands as extreme behaviour in the grass could result in jumps into these compartments."

Maintenance of firebreaks

"The maintenance of firebreaks is extremely important and one may have priorities those firebreaks on the so called dangerous sides of properties going as far as going back and doing touch up burns to reduce the fuel load as much as possible."

Maintenance of pumps and equipment "The maintenance of pumps and equipment is extremely important as well as ensuring that all filling points are

clear, working, have adequate water and are properly mapped and signposted."

Training and refresher training "Another extremely important aspect. It is a legal requirement in terms of the law. A landowner does not want to have an injury on duty (IOD) or the worst case, a fatality and a fire fighter is not trained by an authorised/ recognised training authority."

The importance of FPA membership "I cannot emphasise the importance of this enough and I believe that the benefits of being a member of an FPA, has been published on many occasions. But, needless to say, for the peace of mind and the benefits of having access to equipment and the community assistance, it is in every landowners interest."

MOUs or as we term it, neighbour agreements

Make sure that, through your local FPA, your neighbour firebreak agreements are current and that any changes are updated. This way there can be no arguments when it comes to who is responsible for what and when in terms of your mutual boundaries. ▲

You need this beast of a machine on your team



When managing grass fires, the Stihl BR 800 C-E can remove and reduce the fuelload, reducing the risk of the spread of fire

After the wet year it's been, there's a heavy fuelload that makes burning firebreaks even more challenging. It's vital to have a well-equipped crew that can make light work of this critically-important, time-consuming and labour-intensive task.

The Stihl BR 800 C-E is the most powerful Stihl backpack blower to date, delivering a maximum air throughout of more than 2 000m³/h of air volume and a maximum air speed of 97m/s.

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- It can quickly and effectively clear hard-to-reach areas of potentially flammable organic material like leaves and grass
- It is estimated that a powerful blower is equivalent to eight people with handheld beaters
- It helps to create a very hot fire that burns and clears firebreaks faster and more efficiently
- It's far more comfortable to use for extended periods than handheld tools, with an excellent power-to-weight ratio and an anti-vibration system for reduced user fatigue
- It is easy to start: the Stihl BR 800 C-E features side-start technology so operators don't have to remove the backpack to restart

and it also has Stihl ErgoStart technology that cuts the effort required to start the tool by half. The starter cord can be pulled at just one third of the normal force.

- The Stihl BR 800 C-E can blow the fire back on itself in controlled burning where the fuelload is light
- When managing grass fires, the Stihl BR 800 C-E can remove and reduce the fuelload, reducing the risk of the spread of fire.

Blowers have been used by the United States Forest Service to help fight wildfires since the late 1960s and are an integral piece of equipment used by Australian fire fighters. While no blower is a stand-alone fire management tool, they are an important addition to any fire management team. Get your Stihl BR 800 C-E in time for this fire season.

Note that proper training, especially focusing on fire behaviour, is essential when preparing to use a blower for fire management purposes. ⚠



EXPERIENCE STIHL'S MAXIMUM BLOWING POWER

The STIHL BR 800 C-E is a tough, impressively powerful machine, and a vital part of any fire management team. It effectively removes organic matter from hard-to-reach places and helps create a hot, fast-burning fire for firebreaks. This revolutionary 80cc model has a completely redesigned system and is the most powerful STIHL backpack blower to date, delivering 2000 M³/h of air volume and a maximum air speed of 97 m/s. Operators don't have to remove it to restart as the BR 800 C-E has side-start technology, and the telescopic tube is easily adjustable without tools for different user heights. Get the STIHL BR 800 C-E for your fire management programme today.

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Southern Cape Fire Protection Association hosts Nelson Mandela University Veldfire Management students

By Avelile Cishe and Hannes van Zyl, Nelson Mandela University



Dirk Smit, manager of SCFPA, explaining firebreak preparation

The management of natural disasters such as veldfires are becoming increasingly complex. This increase in complexity is driven by factors like climate change and an ever-changing

socio-ecological environment. This poses a substantial risk to the wellbeing of affected communities and the functioning of ecosystems. An integrated approach where all role-players are engaged is needed

to manage these 'wicked' problems effectively. Training and educating students is a key element of this integrated approach, after all they are the decision makers, scientists, activists and practitioners that will have to navigate the uncertain waters of the managing our environment for a safe and sustainable future.



Dirk Smit, SCFPA; Hlobisile Madlala, NMU class representative, Japie Hendrikz, SCFPA

The Nelson Mandela University's Higher Certificate in Veldfire Management (HCVM) aims to give both existing fire management practitioners and young students a holistic understanding of veldfire management. This cannot be done without the kind assistance of industry partners such as the Southern Cape Fire Protection Association (SCFPA). The SCFPA hosted the HCVM students for a field day in Knysna to help the students understand how theory

meets practice. The main objective of the field excursion was to learn and observe some of the approaches to effective disaster management, specifically for veldfires in the urban interface zone.

The field day kicked off with a brilliant presentation on 'Wildland-Urban Interface: Wildfire prevention, protection and suppression' by Dirk Smit the manager of SCFPA's Eastern Region. A special thank you to the Knysna Angling Club for making their facilities available for this. This presentation led to a heated discussion amongst the students that mainly dealt with the necessity to integrate various stakeholders eg government agencies, general public, higher education institutions and the private sector in the management of veldfires.

The students were also treated to a demonstration from a Working on Fire crew. The crew gave an in depth talk on the various tools they use to suppress fires and manage invasive vegetation. They also explained the importance of effective communication and the line of authority when dealing with a fire incident. The correct use of PPE and the differences between structural and wildfire clothing were demonstrated. The crew ended their session with a fitness and drilling exhibition to the delight of the students.

At Margret's Viewpoint students learnt about the history of the area and the effects of the devastating fires of 2017. This included the impact on the critically endangered Knysna Sand Fynbos and the rehabilitation efforts needed in the area. The land adjoining the viewpoint is a good example of where a conservancy applied for firebreak exemption, Smit explained application process and the requirements for firebreak exemptions.

The final stop of the day was at the viewpoint above Brenton on Sea for a stimulating discussion on the legalities and complexity of firebreak construction and maintenance. The importance of ecological burning was illustrated by showing how Brenton on Sea was saved by the

ecological burn that was done shortly before the 2017 fire.

The University sincerely thanks the Dirk Smit and Japie Hendrikz of the SCFPA, Ian Bezuidenhout of the Knysna Fire and Rescue Services for their continued support.

For more information of the Higher Certificate in Veldfire Management contact:

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Thabo from Working on Fire during the demonstration

NELSON MANDELA UNIVERSITY



Faculty of Science

School of Natural Resource Science and Management

Nelson Mandela University is an academic institution at the forefront of education and training in the Eastern and Southern Cape.

George Campus focuses on becoming a world-class knowledge catalyst for the green economy and a more sustainable future and plans to realise this through cutting-edge research and engagement, quality teaching and learning; as well as competitive innovation and entrepreneurship.

In addition to the offerings in the School of Natural Resource Science and Management, qualifications in business, science, law and information technology are also offered at George Campus.

Science Faculty Programmes offered at George Campus include:

Extended programmes

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academic support and skills development to students who do not meet the specific admission requirements for the mainstream programme of their choice but who have the potential to succeed. They enable such students to obtain the same mainstream qualification.

Higher Certificates

Veldfire Management

Diplomas

- Agricultural Management
- Forestry
- Game Ranch Management
- Nature Conservation
- Wood Technology

Further study options are available, including opportunities for postgraduate studies in the Faculty of Science at both master's and doctoral level.

Anco Manufacturing launches new Ural 4x4 CAFS fire engine



The heavy-duty Anco Ural 4x4 fire engine with a CAFS and rugged off-road performance

The new heavy-duty Ural 4x4 fire engine was built by Anco Manufacturing based in Piet Retief in Mpumalanga, South Africa and transferred into an all-round fire fighting vehicle. Drakenstein Farm Watch NPC (DFW), an independent fire and rescue volunteer group based in the Western Cape, was chosen to be the first in South Africa to experience and utilise the Anco Ural truck combination in their fleet.

The DFW fire and rescue group fights fires of many origins, already for many years, from field and forest,

to structures, residential dwellings or even informal settlements.

The new fire engine was built on a Ural 43-206 4x4 chassis cab, has a 3 000-litre tank and offers legendary off-road capabilities.

The new Anco Ural fire engine is fitted with a compressed air foam system (CAFS), which was specially developed and designed by Anco Manufacturing and is a definite game changer in fire fighting.

A TFT EF1 remote control bumper monitor is mounted on the front bull

bar and the unit is equipped with enough storage bins and its own vehicle protection system.

The truck has inflate and deflate capabilities while driving and can use the power take off (PTO) while driving. It has a massive ground clearance, 900nm torque and a diff lock.

The vehicle is designed around rural and wildfire conditions where pumps and equipment are simplified but robust and where CAFS can be added to give the vehicle a much greater fire fighting capability.

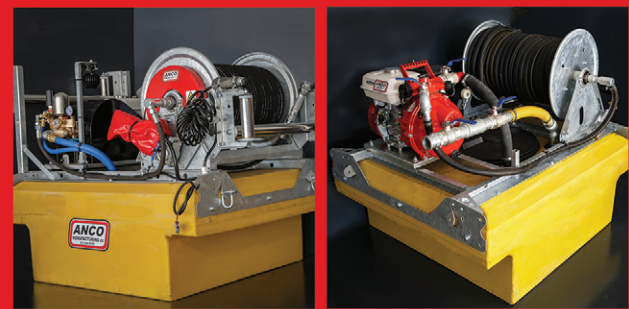
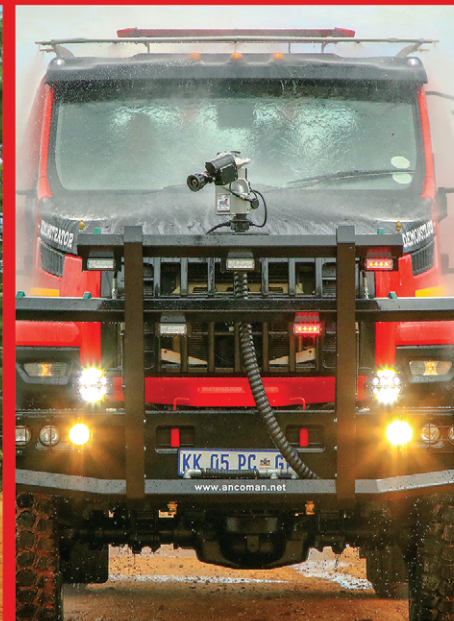
The project was done in conjunction with Feeler Africa, the importers of Ural 4x4 and 6x6 truck chassis into South Africa. They supplied the chassis and Anco, in conjunction with a few other suppliers, supplied the fire fighting capabilities.

The plan is to have the vehicle work in real-world conditions over the next year. First up is Drakenstein Farm Watch in Paarl, who will be using the vehicle in their fleet of fire trucks. Various other players in the fire fighting community in the Western Cape will also be given the opportunity to test



The hand-over to Drakenstein Farm Watch

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The Anco Ural was fitted with a vehicle protection system



The truck has inflate and deflate capabilities while driving

- CAFS can be successfully delivered at head heights exceeding 70m (own studies has confirmed)
- Compact design: equipment occupies less space on fire fighting vehicles due to compact designs and the ability to retrofit a system onto existing fire fighting trucks and on multiple vehicle platforms
- Due to significant reduction in weight (foam is much lighter than water) hoses are easier to handle reducing fatigue and effort
- Virtually no friction loss (foam bubbles moves easier through a hose compared to water) allows longer hose to be used compared to conventional water-based systems.
- Increased ability to put down a highly visible, longer lasting protection barrier for protecting vegetation and structures
- CAFS significantly reduces water damage in fire fighting operations

Why Anco CAFS?

Anco Manufacturing has been developing and producing world-class fire fighting equipment for many years. The need for a lower cost, South African produced and supported CAFS system lead to the development of a 100 percent local version of this popular fire fighting apparatus. All components used in the Anco CAFS system are from reputable manufacturers that have been tried and tested in fire fighting operations. ▲

- ▶ the vehicle during the fire season there. Thereafter the vehicle will be moved up north for the winter to work in commercial forestry, industrial and perhaps municipal/wildfire scenarios.

The capabilities of the “Truck Norris”, so nicknamed by its designers, as well as its many automated functions and the protection measurements for the truck and crew, make the operations so much easier and a three-men crew is all that is needed to operate the truck to its full potential and capacity.

Anco Manufacturing Pty Ltd is a South African manufacturing company with roots going back three generations. Anco has made a name for itself as a leader in quality innovative products in the fire fighting and agricultural manufacturing industries.

Benefits of CAFS

- Very low water consumption (compared to conventional water methods)

- Excellent knock-down capabilities. CAFS has more than seven times the fire extinguishing properties compared to water (independent studies)
- Water expansion: effectively expands water capacity up to 10 times



The new Anco fire engine was built on a Ural 43-206 4x4 chassis cab

13th Fire Management Symposium: 23 to 25 November 2022

Nelson Mandela University George Campus, Southern Cape



Globally, effective wildfire management is impeded by a lack of integration between research results, technological development, and efforts by fire managers. In the end all strive to prevent, suppress and protect the environment, human wellbeing and assets against wildfire.

This event aims to integrate the efforts of natural resource managers, engineers and scientists. Through an integrated approach, different role-players will be sensitised about each other's realities.

You are therefore invited to join fire managers and authorities from different disciplines and land uses such as nature conservation, agriculture, disaster management, forestry, local authorities, etc for a range of informative presentations and exciting networking opportunities.

Focus

Following the worst fire experienced in the history of South Africa (Southern Cape) on 7 June 2017, as well as

numerous other urban interface fires in South Africa, it was decided to dedicate our biannual wildfire symposium to the topic: "Preparing for the next Mega fire event".

Programme ([Download programme](#))

The 2022 Fire Management Symposium promises to be a special event. Not only because of the unique setting of the venue in the heart of the Garden Route but because of the conglomeration of top rated fire management specialists whom will share their expertise in a very practical and applied manner. Internationally renowned fire scientist Prof Pete Fule will deliver the first keynote address and will be supported by local fire specialists such as Pieter van der Merwe. We will also proudly host other international fire specialists as well as specialists from leading forestry companies in South Africa. The second day of the event, hosted by The Southern Cape Fire Protection Association (SCFPA), will provide opportunities to visit the Southern Cape region to observe the unique vegetation and take note of fire related issues.

In general

This event presents opportunities to people from different entities and parts of South Africa to network. In addition, the world of scientists who are engaged in research, will meet that of the hard-core fire manager who gets the smoke of wildfires in his/her eyes. Due to the capacity of the venue only 200 delegates can be accepted for the event. Final cost of the event has not been finalised but as in the past, will be very reasonable in order to provide the opportunity for everybody to afford attendance. The event dinner will take on the form of a spit braai with live music.

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Fire belt preparation methods

By Tian Pool, lecturer, Wildfire Management, School of Natural Resource Science and Management, Faculty of Science, Nelson Mandela University George Campus

A fire belt is a planned firebreak. Its location, dimensions, preparation method and time of preparation are planned by fire managers. Although fire belts will not stop all fires from crossing boundaries, it should stop most. Preparing fire belts include the preparation of trace belts. In addition, fire belts should also serve as a point of attack or defence in the face of a fire threat. All factors considered; fire belts must be cost-effective.

When preparing fire belts, landowners are therefore challenged by the following questions:

- What are the minimum legal requirements that I must adhere to?
- Which method of preparation is the best?
- What is it going to cost me?
- How effective will my fire belts be?
- How much time do I have to prepare my fire belts before the fire season arrives?
- What else can I do to create a fire belt?

Personal observations revealed that landowners often use a single method to prepare all fire belts. Logistically this practice is the easiest and requires little skill. The important questions, however, to answer is if it is the most cost-effective method and if all legal requirements are met?

In this article, effort will be made to provide answers to these questions and to introduce the reader to alternative ways to create fire belts.

What are the minimum legal requirements that I must adhere to?

Although the National Veld and Forest Fire Act (NVFFA) 101 of 1998 is not prescriptive in the method or dimensions of fire belts, it states that:

- A fire belt is required on a property if there is risk of veldfires.
- Fire belts should be long and wide enough to provide a reasonable chance to stop a fire.
- The environment should not be damaged when preparing a fire belt.
- Fire belts should be reasonably clean of burnable material; this allows the fire manager fire belt preparation options that are cheaper and be less damaging to the environment.

Which method of preparation is the best?

Responsible landowners do not only consider 'cost' and 'effectiveness' when preparing fire belts but also the impact of the fire belt and the preparation method on the environment. Factors guiding the choice of preparation method includes:

- Soil sensitivity: sandy soils are very erodible and wind and water can lead to loss of topsoil and vegetation. In low rainfall areas like the Kalahari where denuded areas are subject to wind erosion and vegetation to slow recovery, a jeep track often serves as the only reasonable fire belt (Figure 1). In high rainfall areas like Zululand in KwaZulu-Natal, wind and rain are erosion factors to consider.
- Steep slopes: manual preparation of trace and fire belts often leads to water erosion.
- Biodiversity: use of herbicides to prepare trace belts may not have the same effect of erosion as in the case of manual belt preparation but may lead to loss of biodiversity and promote the establishment of pioneer vegetation (often weeds) in trace belts (Figure 2).
- Endangered/sensitive species: habitats of endangered plant or insect species can be significantly reduced/damaged by indiscriminate fire belt preparation methods.
- Riparian zones: water sponge areas ie swamps, marshes and catchments or riverbanks can be negatively affected when belts are prepared in the wrong season, using wrong methods or when water flow is disrupted.

If these situations are encountered, fire managers should consider alternative methods to prepare fire belts, even if these methods are expensive and less effective.



Figure 1: Jeep track serving as fire belt in sensitive sandy soils of the Kalahari (stock.adobe.com)



Figure 2: Disturbance of vegetation after repeated trace belt preparation using herbicides.

Jeep-tracks serving as firebreaks works well but it may be necessary to mow down the centre and along the edge of the road to reduce tall fuels.

The following preparation methods are used often and can be regarded as the 'traditional' belt preparation methods:

Burning

This method is the cheapest and fastest method to create a fire belt. Unfortunately, it is also the riskiest. Spot fires are reported with up to 40 percent of fire belt burning operations. The main reason for this is inexperience and incompetent fire managers/fire fighters, wrong resources at the fire, too little resources at a fire and pressure on fire managers to complete burning operations in a very small window period. With climate change that cause longer fire seasons, less suitable days for planned burning and out of season weather, fire managers are forced to take unnecessary risks to complete fire belt burning. Burning operations are often undertook on days less suitable for burning and on suitable days shifts are longer resulting in tiredness and carelessness.

Trace belt preparation is the expensive and time-consuming part of fire belt burning but necessary to facilitate safe burning. Traditionally trace belts are sprayed with contact herbicides when the vegetation is still green and then burned (Figure 3). After tracers are prepared, burning of the entire belt follows (Figure 4).



Figure 3: Trace belt preparation by burning vegetation killed by a contact herbicide



Figure 4: Burning fire belt by using trace belt as anchor point for the fire

One of the elementary mistakes made by landowners who make use of the burning method to prepare fire belts, is a lack of planning. By planning a burn carefully, potential human error can be eliminated. Planning is done best in a structured way. This implies that planning should be done on paper by addressing a pre-determined list of questions. These plans can be saved and used again during the following cycle of burning and should be improved after the burn is completed.

A planning document should typically include the following items:

- Based on biological and physical characteristics of the site
- Type and status of vegetation
- Topography
- Soil characteristics
- Weather conditions predicted for the day of burning (three days before the burn day, the day of the burn and three days after the burn day). This will ensure that burning conditions on the day conform to expectations and prevent smouldering material that might reside in the belt to re-ignite the following days.
- Resources needed and available
- Legal aspects ie burning permit and communication to neighbours and other role players
- Predicted fire behaviour
- Starting point and time of the fire
- Short summary of the burn afterwards.

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► **Hoeing**

Hoeing is manually removing of vegetation by hoeing and then distributing the hoed vegetation in the adjacent area with hay forks (Figure 5). This is probably the most expensive fire belt preparation methods and hoeing the same area repeatedly will leave scars in the environment and will be conducive to erosion. When hoeing trace belts, the root systems of vegetation should not be removed from the soil.



Figure 5: Hoed vegetation from the trace belt is distributed with a hay fork

Ploughing/disking/grading

Ploughed/disked firebreaks are used with mowing if grass fuels are tall and/or heavy. Disked firebreaks are best made after mowing first, then disking twice, in opposite directions. It is important to ensure that residual vegetation grass does not form continuous fuel (Figures 6 and 7).



Figure 6: Ploughed fire belt next to road



Figure 7: Disking of an internal fire belt

Graded trace belts should be scraped and not excavated. It is important not to leave piles of soil containing fine fuels such as grass in the burn area of the belt. Rather push soil piles outside of the burn area. Piles of soil mixed with vegetation may cause ground fires. In addition, brush should be pushed inside the burn area and scattered. Brush piles along a firebreak create hot spots that can catch fire when the belt is burned.

Roads

Roads work well as fire belts but the road reserve adjacent of the road should be disked, mowed, slashed or burned to create a more effective break (Figure 8).



Figure 8: Road reserves that are disked, create a more effective fire belt

Natural and other fire belts

Natural and other fire belts including rivers, streams, dams, indigenous forests, rocky outcrops and open areas can be incorporated into a fire belt system to save costs. It should, however, be kept in mind that these areas may not be located at the best places in the landscape to 100 percent effective (Figures 9 and 10).



Figure 9: Small stream used as a trace belt to facilitate fire belt burning

Alternative fire belt preparation methods

Some alternative fire belt preparation methods that need closer investigation will be discussed in this section. Keep in mind that the NVFFA only requires “fire belts that are reasonably clean of burnable material”.

Grazing

An area where the vegetation has been grazed down to its roots, can serve as a fire belt (Figure 11).



Figure 10: The indigenous forest with its ecotone serves as a firebreak



Figure 11: Grasses grazed down to their roots provide a situation/area that can serve as a fire belt

Farmers in the Free State, as well as Lion Match Forest Company in the Piet Retief area, has experimented with grazing belts by applying molasses to grass in areas where a belt is required (Figure 12). Cattle are attracted to these areas and will graze grasses down to its roots.



Figure 12: Quad bike fitted with boom to spray molasses (www.quadmaster.co.za)

According to nafstore.co.za (2018), there are various benefits of using molasses as supplement in animal feeds. By spraying molasses over cured grass, some of these advantages will benefit the animals grazing it. Molasses improves the palatability of the grass and is rich in easily digestible energy. All animals but especially working animals like horses, benefit from this high-energy intake. The basis of this energy is found in certain B vitamins and minerals contained in molasses and in addition, molasses is also a source of sulphur and potassium. Potassium facilitates the control of water absorption by organs, bones and muscles.

Mulching

Mulching is often used in forestry and as part of weeding project to chip woody material into a mulch. Mulched woodchips are then distributed in a thin compacted layer on the ground and serves as a fast-decomposing humus layer. In addition, it also reduces the flammability of organic material in these areas, as organic fuels are compacted, reducing the exposed surface area of the fuel and incorporating it with the soil. Mulchers are not only able to mulch woody material but also herbaceous material like grass (Figures 13 and 14). Mulching is unfortunately expensive and mulching machines are limited by terrain.



Figure 13: Mulcher incorporating woody material with the soil (www.prinoth.com/en/vegetation-management)



Figure 14: Mulcher working between eucalyptus tree rows

Green belts

Green or living plant material usually does not burn. By establishing evergreen plant species in areas where fire belts are needed, a permanent belt can be established (Figures 15, 16 and 17).



Figure 15: Spekboom (*Portulacaria afra*) fire belt planted in a hedge to protect a house from fire



Figure 18: A belt created by raking the area clean of loose material



Figure 16: Kikuyu grass (*Cenchrus clandestinus*) fire belt planted next to a commercial plantation



Figure 19: Cutting and baling grass in sensitive areas where a fire belt is required will also serve as a firebreak

- ▶ The kikuyu grass can be irrigated and grazed or baled. In areas receiving frost, these belts should be mowed before the frost season (Figure 17).



Figure 17: Evergreen legumes planted in the road reserve



Figure 20: Mowed and baled grasslands can serve as a fire belt.

Raking and baling

In areas where dead litter accumulate like under tree canopies (Figure 18), a belt can be created by raking the area clean of loose material. In Figure 19 the result of a mechanical raking operation leaves a fire belt clean to mineral soil.

Windbreaks

The purpose of a windbreak is to block and break the velocity of wind. Farmers have been using the practice of windbreaks very successfully to protect crops from the brunt of strong winds. Wind is the weather factor with the biggest impact on fire behaviour and the spread of veldfires. By reducing the wind velocity, the spread rate of a veldfire can be reduced to the extent that it can be controlled.

In many commercial plantations Eucalyptus belts (20 to 40m wide) used to be planted across the plantation. The

theory was that these trees can grow very tall and serve as a windbreak as well as a fire brand (burning sparks/embers transported by wind and causing spot fires), catchers. Litter and vegetation under these had to be removed annually to prevent surface fires. This practice was abandoned because it was labour intensive to maintain a clean area under these belts and because of the flammability of the crowns of Eucalyptus trees. This is, however, a practice that needs to be re-investigated. Not only should different species of trees and shrubs be incorporated in these belts but it can be kept clean underneath through mechanical means.

In Figure 21, the effect of a windbreak on the wind patterns is illustrated. Simplefendorfer (1989) states that a well-designed windbreak can reduce the speed of the wind up to 70 percent within five tree lengths from the windbreak. A windbreak can also reduce the windspeed up to twenty tree lengths from the windbreak before it resumes its original velocity. Figures 22 and 23 display multi-storey windbreaks. These windbreaks are designed to elevate the wind. The hypothesis is that if the wind is elevated, fire brands will be elevated with it and reduce the chances of the fire brand starting a spot fire in the opposite side of the windbreak. In addition, if the plant species used to establish the firebreak are fire resistant, like wattle trees - *Acacia mearnsii*, it could stop or slow down the fire.

Black wattle (*Acacia mearnsii*) is well known for its resistance to fire. Because of its nitrogen fixation and allelopathy characteristics, undergrowth in stands is suppressed and decomposition of the forest litter layer accelerated (Figure 24). These qualities of black wattle make it ideal to use in a windbreak belt. The only challenge that fire managers may face in using black wattle to establish green fire belts, is the invasive status of the tree.



Figure 24: A well maintained wattle stand with a very thin litter layer and a void of undergrowth

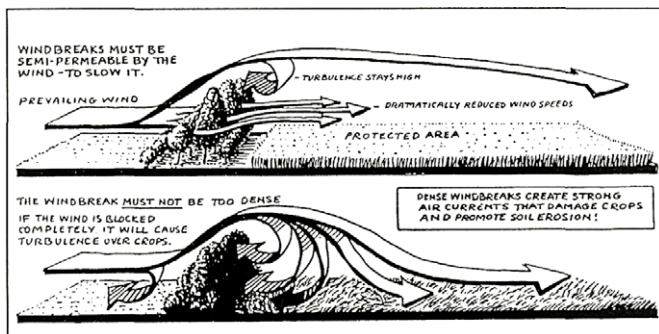


Figure 21: Windbreak design.
(Adapted from www.worldagroforestry.org)

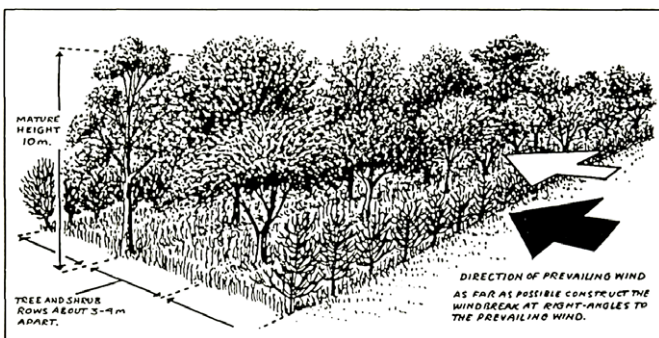


Figure 22: Multi-storey windbreaks (Adapted from Montana State University Extension Bulletin 366)

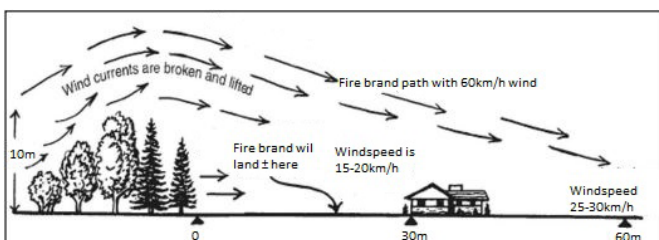


Figure 23: Wind patterns deviated by the windbreak (Adapted from Montana State University Extension Bulletin 366)

Mechanical burning of trace belts

The use of herbicides to prepare trace belts for burning has been questioned in recent times because of the negative effects that these herbicides have on the environment. Since international environmental custodial organisations like the Forest Stewardship Council (FSC) have been frowning about the use of these chemicals, many alternative methods have been investigated as cost-effective ways to prepare trace belts.

An interesting method used by organic farmers to kill weeds between their crops, needs to be investigated as a possibility. Flame throwers are used to incinerate green unwanted vegetation (Figures 25 and 26). A tractor-mounted flame thrower can be used on level areas suitable for a tractor to drive (Figure 26) and a hand-drawn model (Figure 25) can be used in difficult terrain.



Figure 25: Hand drawn mechanical igniter
(www.terrateck.com)



Figure 26: Tractor-mounted flamethrowers used to incinerate green plant material

► **Leaf blowers**

The last decade saw the use of leaf blowers to extinguish fires. The same way that a burning match can be blown out, a fire can also be blown out. In Figure 27 a demonstration of effective use of blowers to facilitate safe burning can be seen.

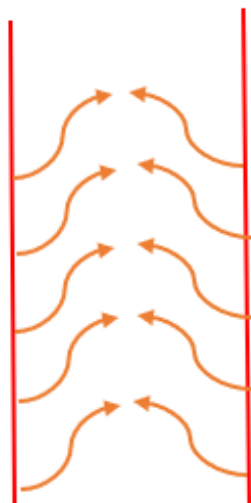


Figure 27: Leaf blowers used to facilitate belt burning (<https://www.youtube.com/watch?v=pSjyO2Uoi8o>)

Open-ended fire belts

The open-ended fire belt burning technique is used by experienced fire managers to create fire belts. Two parallel lines of fire are lighted up three to five metres apart and then the two flame fronts are pulled into the middle of the two lines because of convection. Remaining fire on the outside edges of the fire belt are easily extinguished with fire beaters.

Figure 28: Open-ended fire belt technique



How much time do I have to prepare my fire belts before the fire season arrives?

The answer to this question is a difficult one as the fire season depends on the weather. Some years' the fire season will arrive early in the year because of drought or early frost. The opposite can also be true. Fire managers should therefore pay close attention to medium term weather predictions to get an idea when all fire belts should be done.

One of the biggest limiting factors preventing the timeously completion of fire belts is the weather window that presents burning opportunities. From the time that vegetation is cured enough to burn, the number of suitable burning days is counted. If one considers that planned burning usually does not occur on Fridays or weekends, this challenge becomes real.

By making use of alternative fire belt preparation methods (other than burning), weather does not play a role and more time is available to complete fire belts before the fire season.

Conclusion

Fire belt preparation has been identified as one of the most important fire management strategies. There are, however, many factors that make the preparation of cost-effective fire belts difficult. Although fire belt preparation is an expensive activity, the law requires the timeous construction of fire belts before fire season.

To achieve this, fire managers need to consider the time available as well as the biological and physical characteristics of the area where planned burning must take place. Successful fire belt preparation therefore requires the investigation and application of the method most suitable to ensure minimum damage to the environment, effective fire belts and timeous completion of the fire belts on a property.

Landowners as well as organisations and authorities involved in fire management should invest in research that will identify fire belt preparation methods for the best operating practices in specific areas and for specific situations. 🔥

St John Ambulance still serving after 1 000 years



St John has been actively involved in South Africa healthcare for over 130 years

Having started during the first Crusade, The Order of St John is the only Order of Chivalry still performing work for which it was originally founded, “to alleviate the suffering of all mankind”.

St John is a global non-profit organisation present in more than 40 countries with a member base of staff and volunteers exceeding 300 000 worldwide.

St John is an Order of Chivalry of the British Crown also known as an order of Hospitaler Knights formed as far back as 1070 AD. Through time, St John has evolved into a multicultural, charitable and respectable organisation with an aim to encourage, promote and support the communities in which

it holds a presence and to uphold the integrity of the Order of St John, committed to the service of others.

St John has been actively involved in South Africa healthcare for over 130 years, pioneering the earliest classes in first aid during the Zulu War and has developed into a diverse South African organisation which offers a bouquet of prehospital services. These include country specific first aid training, eye care including optometry and ophthalmology, home based care training and home care nursing for people living with chronic illnesses, as well as programmes in youth development and upliftment.

St John is based in eight major centres across six provinces with a

national footprint and further spread into parts of Southern African Development Community (SADC) and East African countries including Kenya, Zimbabwe and Mauritius.

St John Ambulance is a certified healthcare provider in Emergency Medical Services. St John Ambulance is unique in the industry as a doctor-led prehospital focused extension of St John with a niche in emergency medicine.

This extension of St John focusses on emergency/primary response, inter-facility transfers, and event medical coverage. The organisation has the ability to provide a full scope of emergency medical services for communities countrywide as well international clients.



St John Ambulance head of special projects, Chris Martin; head of eye care, Fatima Hoosen and centre manager, Cathy Dedman, hold albums containing the history of the organisation. Photo: Shelley Kjonstad, African News Agency

▶ Dr WP Tritton was regarded in Natal as the pioneer of St John Ambulance in 1886. Records show him as the examiner of a First Aid class held in uMzinto in 1886. While the centre in Durban was opened in 1906 and another centre in Pietermaritzburg a few years later, the St John Ambulance headquarters was opened in Epsom Road in 1932.

In 1909 the first horse-drawn ambulance used by the Borough of Durban was donated by the Natal Centre and St John trained men and women in first aid and nursing during World War I.

When riots broke out in Durban in 1948, an emergency hospital was erected at the Epsom Road headquarters and manned by St John Brigade members.

In 1955, at the laying of the foundation stone for the new headquarters in Old Fort Road, a sealed metal cylinder was buried in the wall. It contained coinage from a farthing to a five shilling piece, postage stamps of similar value, copies of the Natal Mercury newspaper and the centre's annual report. The metal cylinder cannot be removed until the building is demolished.

Pilot project: mobile eye clinic
With almost 1 000 years of

history and the oldest charitable organisation in the world, this year (2022) St John Ambulance in Durban is spearheading a pilot project converting an ambulance into an eye clinic to head out into rural areas.

Filling a huge gap in affordable optometry services, as well as providing first aid and lifesaving skills and ambulance services, head of special projects, Chris Martin, said that the organisation's main goal was to assist in all communities.

Dating back to the first Crusade in 1099, Martin said it was the forerunner of the modern concept "to help all people". "It's an extraordinary organisation steeped in history and it's an organisation which transcends barriers. It is completely apolitical," he said.

When he was released from prison in 1990, South Africa icon Nelson Mandela was asked if he wanted his health to be checked and reportedly remarked, "not to worry, I'll go to my friends at St John". Mandela was appointed as a Bailiff Grand Cross of The Order of St John, while Archbishop Desmond Tutu was appointed Prior of The Order of St John.

Martin said that in the current climate, NGOs had to be sustainable and have a business element to

survive. "It's about making sure you have the right people and provide service excellence. The funds generated are ploughed back into the organisation," he said.

One of the key services offered is affordable eye care. St John Ambulance optometrist Fatima Hoosen said it had six clinics, two of which are in Durban and Pietermaritzburg. "We fill in the gap in the health system to provide affordable eye care. About 80 percent of people use public health in our country," she said, adding that one of the leading causes of blindness in South Africa was "uncorrected refracted error", which is caused by not getting glasses. "It gets worse and leads to blindness. A simple pair of glasses prevents that from happening," she said.

Hoosen said Durban would lead a new project in which an ambulance is currently being converted into an eye clinic to travel to rural areas. The funds for this project were raised at the organisation's annual Christmas Fair in Johannesburg last year. "We will take it (the new mobile clinic) into the community. We want people to have access to quality eye care and affordable glasses," she said.

Centre manager Cathy Dedman, who has volunteered for the organisation for more than 40 years, racking up an impressive 12 000 hours and is now employed at the centre, said it all started when she decided to take a first aid course "It's a lovely feeling to help somebody," she said, adding that their volunteer base had collapsed by 50 percent during the COVID lockdown.

During that time, St John ran courses on how to administer oxygen to home-based patients. Dedman said the organisation provided first aid training to corporates, as well as customised training, whether home-based care for an elderly person or first aid for babies or children.

She said volunteers were required to do 60 hours a year and to attend meetings 12 times a year. ▲

Gauteng urban search and rescue (USAR) simulation exercise held in Ekurhuleni, South Africa



The Gauteng Provincial Disaster Management Centre (PDMC) held an urban search and rescue (USAR) simulation exercise at the Leon Ferreira Fire Station in Ekurhuleni on 28 and 29 March 2022. The simulation exercise was held to showcase various USAR skills acquired by fire fighters and technicians such as rope rescue, hazardous materials (hazmat), structural collapse rescue, confined space rescue as well as swift water rescue capabilities.

The agencies that was involved in the simulation included Gauteng Cooperative Governance and Traditional Affairs (CoGTA); the City of Ekurhuleni Emergency

Services, Disaster Management and Metro Police; the City of Tshwane Emergency Services; USAR SA 01, which included the City of Ekurhuleni Emergency Services, the City of Tshwane Emergency Services, the City of Johannesburg Emergency Services and Midvaal Fire and Rescue; Gauteng Department of Health Emergency Medical Services, the South African Police Service (SAPS) K9 unit and local response; Gauteng Forensic Pathology Services; Search and Rescue South Africa (SARZA); Standard Bank and The FIRM.

The main objective of the exercise was to evaluate preparedness and response mechanisms for Type 3 incidents. The sub-objectives are:

- To test the level of integration of stakeholder planning for the management of incidents and incident resources, including the Gauteng USAR team on a Type 3 incident and to make the necessary adjustments to all plans to remain relevant
- To test the effectiveness of the Gauteng's inter-municipal fire services memorandum of understanding (MOU) in terms of activation
- To develop and improve flexible plans enabling emergency services in the province and their counterparts to ensure integrated response efforts for effective and efficient all-hazard incident management







- ▶ • To improve relationships between personnel from emergency services and other agencies that may be required to work together in close liaison during a multidisciplinary incident
- To encourage coordination and cooperation between each organisation at a tactical, operational and strategic level to enhance preparedness
- Confirm the roles and responsibilities, including the chain of command
- To understand the operational response of corporations and non-governmental partners.

The scenario was an earthquake that hit the area, which lead to:

1. Hazmat container that contained Bromine developed a leak. The driver and assistant managed to get out of the vehicle with minor injuries, however, the assistant has cardiac problems and suffered an AMI and died.
2. The building where Standard Bank was housed suffered damage. The branch manager got stuck in the safe due to the quake and eventually died there. An employee was stuck on the first floor of the building because of the collapse. The ground level of the bank managed to evacuate. Two clients

that had just left the bank drove into the structure as the earthquake happened and died. In the process they hit a bank employee that got his arm stuck under the car possibly have it amputated.

3. There was also a concrete structure that collapsed where two people in a car died when concrete fell on the car. Two persons were trapped in structures that had to be freed, they were still alive.
4. One person was trapped in a high-rise building (the tower) and due to a secondary shock, some rescuers were also trapped in the building.
5. Multiple patients were around the collapsed structures, however, most of them were not seriously injured.

Operations

USAR-SA was activated to the incident after 11h00 on the day of the incident. The team reported to the incident and reported to the joint operations centre (JOC) that was established by the Ekurhuleni Disaster and Emergency Management.

The team requested an allocation of a site to set up a base of operations (BoO), which was allocated on the

eastern side of the Leon Ferreira Fire Station. The team conducted assessments and searches based on onsite information. The team managed to locate multiple victims who required extrication from entrapments as a result of collapsed structure.

The team conducted shoring, breaching, lifting, moving and breaking operations using an assortment of rescue tools to treat and extricate the identified victims. They also had to construct a high-line using rope and rope gear to extricate a patient from the third floor of the building.

The scenarios kept the team busy up to until near midnight. The team remained in camp (BoO) for the night and completed the demobilisation at approximately 06h00am.

Sources: Dr Bongani Elias Sithole, head of Gauteng Provincial Disaster Management Centre and Provincial Fire and Rescue Services; Thabo Charles Mabaso, deputy chief: public information and liaison officer City of Tshwane Emergency Services; Theresa Geldenhuys, senior district manager: Training, Emergency Services Training Academy, City of Ekurhuleni Disaster Management and Emergency Services (DEMS) ▲

Urban Search and Rescue South Africa (USAR SA) first K9 Search and Rescue Handler's Team certified

By Morné Mommsen, Midvaal Fire and Rescue Service



Presenting the team from left (back row) Tony Stacey, Ekurhuleni, USAR team leader and K9 handler; Chris Morris, GPG, ALS paramedic and K9 handler; Morné Mommsen, Midvaal, K9 coordinator and team leader; Mervyn van Ginkel, City of Tshwane, USAR team leader and K9 handler and in front Rachel Martin, City of Johannesburg, USAR tech and K9 handler.

The Urban Search and Rescue South Africa (USAR SA) first K9 Search and Rescue Handler's Team qualified as K9 handlers on 11 February 2022, a 12-week intense course presented by Genesis K9 Group.

The team was certified in the following different K9 disciplines from care for a service dog, handle a trained service dog to deter crime, supervision of kennel practice, handle a patrol dog to assist in apprehension of a suspect, handle a trained sniffer dog in the detection of a substance (narcotics, explosives, arson), utilise a tracker dog to follow a human scent trail (live scent, human remains detection (HRD), biological human matter, search and rescue). In addition, the team also completed the following training: evaluate the use of equipment

and accessories for socialising and conditioning of service dogs, conditioning a service dog in obedience and maintain training standards of a trained service dog.

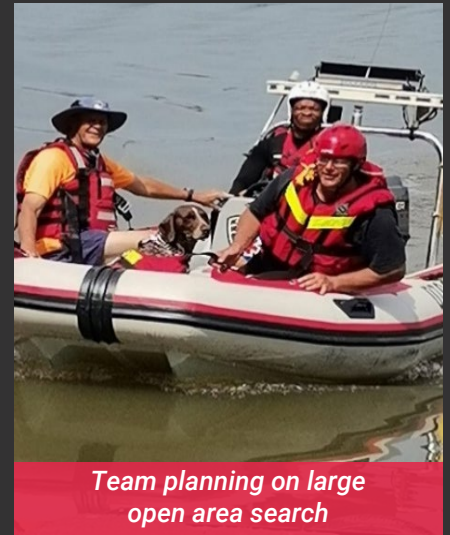
Department of Cooperative Governance and Traditional Affairs (CoGTA) together with the Provincial Disaster Management Centre (PDMC) made this



USAR SA team graduation with role players



Wilderness search and rescue planning for missing person and dam search for missing person



Team planning on large open area search

► course possible and funded this training course.

The course started with Genesis K9 Group on 2 November 2021, Genesis K9 Group is an accredited SASSETA and PSIRA registered service provider in Dog Handling (DH 1-5, Tracking) and further modules and training. Both the directors Thys Kleyn and Andre le Roux of Genesis K9 served within the South African Police/ Military Service and work aboard in Afghanistan, Iraq, Bosnia and other area as K9 explosive handlers and instructors in the different K9 disciplines. Their staff is all very professional, well presented and

highly qualified within the field of narcotics, explosives, arson, tracking, man trailing, search and rescue and so much more.

The team started with the basic course (DH1). This module focused on different dog breeds, kennel and kennel areas, dog handling equipment and maintenance of such, how to inspect the dog and care taking of the dogs based on diseases and other medical conditions. The team also had the opportunity to learn from the staff of Onderstepoort Veterinary Services on how to sedate dogs, how to take blood samples and so much more. During this module

we came up with a new way of expressing any problem by referring to a “ticky ticky flea fly” problem. In addition to this module the focus was on applying safety precaution when working with a service dog in any given situation.

The second module (DH2) focused on how to handle a trained service dog to deter crime. But the most important aspect of this module was the “Animal Protection Act No 71 of 1962 and the Performing Animal Protection (PAPA) Act 24 of 1935 (Amendment Act 4 of 2016), which postulated the “Restriction on exhibition and training of performing animals and the use of dogs for safeguarding and any other functions”. This act does not exempt any service or person, meaning that anyone who wishes to use a dog for work-related purposes, must have a PAPA License. There are also very clear stipulated penalties postulated within this Act if a service or individual does not comply with this Act.

The third module (DH3) placed focus on how to handle a patrol dog to assist in searching for and apprehension of a suspect. Many will now wonder why does USAR SA focus on the security dog environment. Based on the International Search and Rescue Advisory Group (INSARAG) standards, INSARAG states that a K9 team need to meet the country of origin, in this case



Genesis K9 Trophy from USAR SA K9 Team made by Chief Hannes Steyn, Midvaal Fire and Rescue Service

South Africa, minimum K9 handler qualifications and DH 1 to 5 and Tracking are the minimum approved national/international dog handlers training for South Africa. This is a minimum 12-week full-time course.

The module “utilising a search and rescue dog in structured scenario to locate missing persons and evidence” is currently under development by professionals within the industry ie fire department, SAPS and SETA and based on International Search and Rescue Dog Organisation (IRO), Federal Emergency Management Agency (FEMA) and the National Fire Protection Association (NFPA) standards as per INSARAG guidelines and recommendation for search and rescue K9 services.

The fourth module (DH4) was all about “Supervised kennel practice”, a very important module teaching us on how to plan the infrastructure of kennel practice, management of resources, how to supervise personnel and administration systems together with understanding dog behaviour and how to deal with this.

From the following module, ‘Utilise a trained sniffer dog to assist in the detection of substances’ (Dh5) and ‘Utilise a tracker dog to follow a human scent trail’, Genesis K9 made use of Retired Captain Paul Rheeder from the South African Police (SAPS) K9 Unit. Rheeder have more than 30-years K9 search and rescue experience and is well known within the K9 search and rescue environment.

Rheeder’s knowledge with regards to swift water, rope rescue, K9 search and rescue and other related fields, are phenomenal and was really welcomed within the course.

The focused shifted and was based on narcotics, explosives, arson, biological human matter, live victim search, human remain detection in areas such as buildings, vehicles, open area search, wilderness search,

mountain search, swift water, and dam search.

Most of these substances we used within the different scenarios are artificial scent articles that are approved globally by all leading K9 industries.

These scent articles mimic the real product and therefore, allowing for the acclimation process on the dogs that need to be carefully and gradually introduced to prevent potentially traumatic experiences by the dog(s). Dogs react to new things like people do but they can be far more sensitive. Too much sensory input may lead a dog to shut down and result in the dog to become fearful of places or things.

The Genesis K9 Group skilfully introduced DH 5 and Tracking based on the different substances to the team’s training programme and included the search and rescue and body recovery scenarios as per International K9 Search and Rescue recommendations.

All members of the team are qualified USAR technicians and have more than 20 year plus work experience in the emergency services environment. Thus, they only needed to add the K9 components to the field of knowledge each technician already consist of.

After many weeks of really hard work and dedication, the team qualified and graduated on 11 February 2022 as K9 handlers for USAR SA.

The K9 USAR team would like to express thanks to CoGTA, PDMC, Genesis K9 Group and Retired Captain Paul Rheeder, SAPS SAR K9 instructor. The USAR K9 team presented Genesis K9 Group with a gift to show the team’s appreciation for everything Genesis K9 has done for the team over the 12 weeks.

This is a great privilege to represent the Urban Search and Rescue South Africa (USAR SA) Team and the different emergency services within Gauteng as a Qualified K9 team.

In anticipation, the team hopes to see the newly planned K9 partners in due time. These dogs, together with each handler, will be certified based on IRO and FEMA Standards to comply with INSARAG and South Africa Performing Animal Protection Amendment Act 4 of 2016 (PAPA Act).

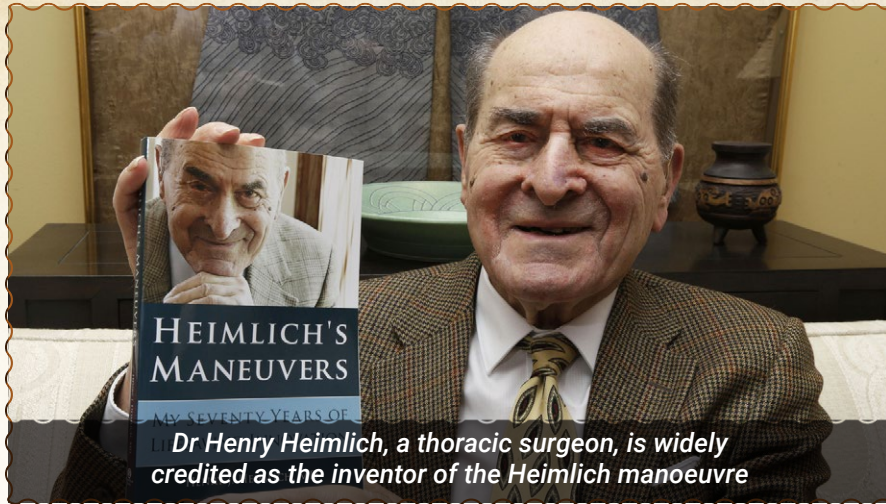
In closing

“Dogs have amazing abilities and can be used in many different ways to benefit mankind”. We need to build the much-needed K9 search



The team qualified as K9 handlers after the 12-week intense course presented by Genesis K9 Group

History of the Heimlich manoeuvre



Heimlich first published his views about the manoeuvre in an informal article in the magazine *Emergency Medicine* on 1 June 1974, entitled, "Pop Goes the Cafe Coronary". On 19 June 1974, the *Seattle Post-Intelligencer* reported that retired restaurant-owner Isaac Piha used the procedure to rescue a choking victim, Irene Bogachus, in Bellevue, Washington. Heimlich formally described the technique in a pair of 1975 medical journal papers, published in the *Journal of the American Medical Association* and the *Annals of Thoracic Surgery*.

The Heimlich manoeuvre was conceived of by Dr Henry Heimlich, a thoracic surgeon, who noted that many people were dying each year from choking. He conceptualised using air that was compressed in the lungs to help expel whatever was blocking the windpipe. Dr Heimlich first worked on anaesthetised dogs in a laboratory in order to perfect his technique. He found that by compressing the abdomen with an upward thrust, he could successfully clear a blockage in the windpipe. Since the invention of this

technique, the Heimlich manoeuvre has saved several million lives.

Henry Judah Heimlich (3 February 1920 – 17 December 2016) was an American thoracic surgeon and medical researcher. He is widely credited as the inventor of the Heimlich manoeuvre, a technique of abdominal thrusts for stopping choking. He also invented the Micro Trach portable oxygen system for ambulatory patients and the Heimlich Chest Drain Valve or "flutter valve", which drains blood and air out of the chest cavity.

From 1976 to 1985, the choking-rescue guidelines of the American Heart Association and of the American Red Cross taught rescuers to first perform a series of backblows to remove the foreign body airway obstruction (FBAO); if backblows failed, then rescuers learned to proceed with the Heimlich manoeuvre (aka 'abdominal thrusts'). After a July 1985 American Heart Association conference, backblows were removed from choking-rescue guidelines. From 1986 to 2005, the published guidelines of the American Heart Association and the American



USAR SA K9 Search and Rescue Handler's Team

and rescue emergency industry by focusing on the correct way of doing thing. There are no shortcuts, only hard work and dedication to achieve this.

Institutes must focus on the minimum requirements for South Africa as K9 handlers. Therefore, implementing and enforcing the PAPA Act requirements and safeguarding all working dogs as recommended by the Act, irrelevant of the industry.

There is a vast difference between 'man trailing/tracking' dogs

vs search and rescue certified dogs. Man trailing/tracking is searching for a missing person/item with the use of a dog and NOT 'search and rescue'. Search and rescue by law is a municipal function under the appointed fire chief having jurisdiction and not a voluntary service or any other services responsibility. Without disrespecting any institutes or individuals based on the above statement, the recommendation will be to read the Fire Brigade Services' Act, The White Paper for Fire Services and the relevant Governing Municipal Systems Act's. 🔥



Heimlich Maneuver



1. Lean the person forward slightly and stand behind him or her.



2. Make a fist with one hand.



3. Put your arms around the person and grasp your fist with your other hand near the top of the stomach, just below the center of the rib cage.



4. Make a quick, hard movement, inward and upward.

Place the infant stomach-down across your forearm and give five thumps on the infant's back with heel of your hand



ADAM



Place fist above navel while grasping fist with other hand. Leaning over a chair or counter-top, drive your fist towards yourself with an upward thrust

Red Cross recommended only the Heimlich manoeuvre as the treatment for choking; the National Institutes of Health still does apply it for conscious persons over one year of age, as does the National Safety Council.

The 2005 choking-rescue guidelines published by the American Heart Association called the procedure 'abdominal thrusts'. The new guidelines stated that chest thrusts and back blows may also deal with choking effectively.

In 2005, the American Red Cross "downgraded" the use of the Heimlich manoeuvre, essentially returning to the pre-1986 guidelines. For conscious victims, the new guidelines nicknamed 'the five and five', recommend first applying five backblows; if this method fails to remove the airway obstruction, rescuers will then apply five abdominal thrusts. For unconscious

victims, the new guidelines recommend chest thrusts, a method first recommended in a 1976 study by Charles Guildner, with results duplicated in a study by Audun Langhelle in 2000. The 2006 guidelines also eliminated the phrase 'Heimlich manoeuvre' and replaced it with 'abdominal thrust'.

Allegations of case fraud have dogged Heimlich's promotion of abdominal thrusts as a treatment for drowning. The 2005 drowning rescue guidelines of the American Heart Association did not include citations of Heimlich's work and warn against the use of the Heimlich manoeuvre for drowning rescue as unproven and dangerous, due to its risk of vomiting leading to aspiration.

In 2003, Heimlich's colleague Edward Patrick issued a press release portraying himself as the uncredited co-developer of the

manoeuvre. "I would like to get proper credit for what I've done...but I'm not hyper about it."

Heimlich claimed to have used his namesake manoeuvre to rescue a choking victim for the first time on 23 May 2016, when he was aged 96, reportedly saving the life of a fellow resident of his senior living community, Patty Ris. However, in 2003, he told the BBC that he had used it for the first time on a man choking in a restaurant. According to his son, Peter M Heimlich, "Both 'rescues' were bogus."

Heimlich claimed his namesake treatment may have saved the lives of more than 50 000 people. However, according to Sayre in 2005, "Despite widespread education on the use of the Heimlich manoeuvre and other techniques for treatment of acute airway obstruction, the death rate remains stable." ▲

What does a fire fighter know?



They know that fire should never be taken for granted.
 As a witness he/she quickly learns that fire's sole aim to devour and destroy.
 Every second counts.
 Feeling its heat, fire attacks their protective gear,
 returning the water used to extinguish back at them as super-heated steam.
 Battling against exhaustion, the heat induces dangerous rises in blood pressure,
 profuse sweating, struggling to cool oneself against the debilitating heat.
 They see tears of joy and sadness.
 They hear the screams of delight, relief... of horror too.
 Training, experience, equipment and each other is what they rely on.
 Brotherhood above all else.
 Always an individual but only able to carry out these most difficult tasks as part of a crew, a team, a family.
 They never forget.
 And also know that two in... means two out.
 They will be a fire fighter until the last bells ring.
 Fire fighters will know and suffer all of this (and more) if you tell them that you,
 your loved ones, neighbours, friends or even total strangers are in need of their help.
 But what none of them will ever know...
 is what the next call will bring.

Collaborative work by Kevin Wright, fire fighter for 32 years, retired, London Fire Brigade and Jonathan Lusk, captain, 16 years of service, active, Fresno Fire, California, publisher "Brotherhood of Fire"
