

Steamexfire BV & Mine and Rescue





- **Steamexfire BV (Ltd), subsidiary of Liberty Gasturbine International, is an innovative company specialized in jet engine technology combined with inertisation technology**
- **Steamexfire BV is the only company in the world producing various capacity Inert Gas Generators**



- The large Alp tunnel fires in the year 2000 were an eye opener for fire fighters. Suddenly we realized that existing equipment wasn't sufficient to suppress large intensive fires
- The result was the birth of the largest Inert Gas Generator, the Steamexfire 2500. After releasing this machine in 2005, we killed 2 major underground mine fires in the same year



- **Inertisation is a well proven method to suppress underground mine fires in USA, South Africa, Russia, Ukraine, Australia, Norway and more.**
- **Various principles are available these days, but when large volumes are needed; jet inertisation is the only solution**



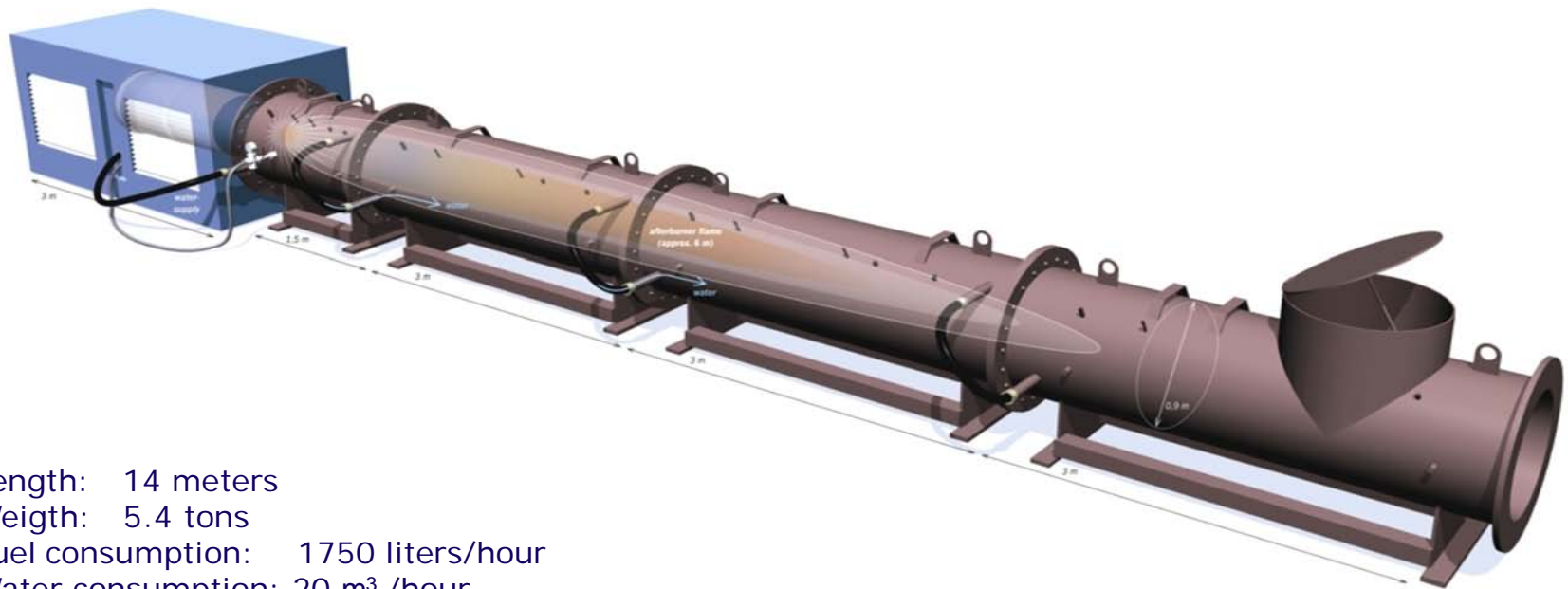
- After studying all available systems, it was our mission to develop a system that resolved all past problems, like safety, communication, controls and operation, but also language barriers
- A system that should be available at all times, from an independent organization



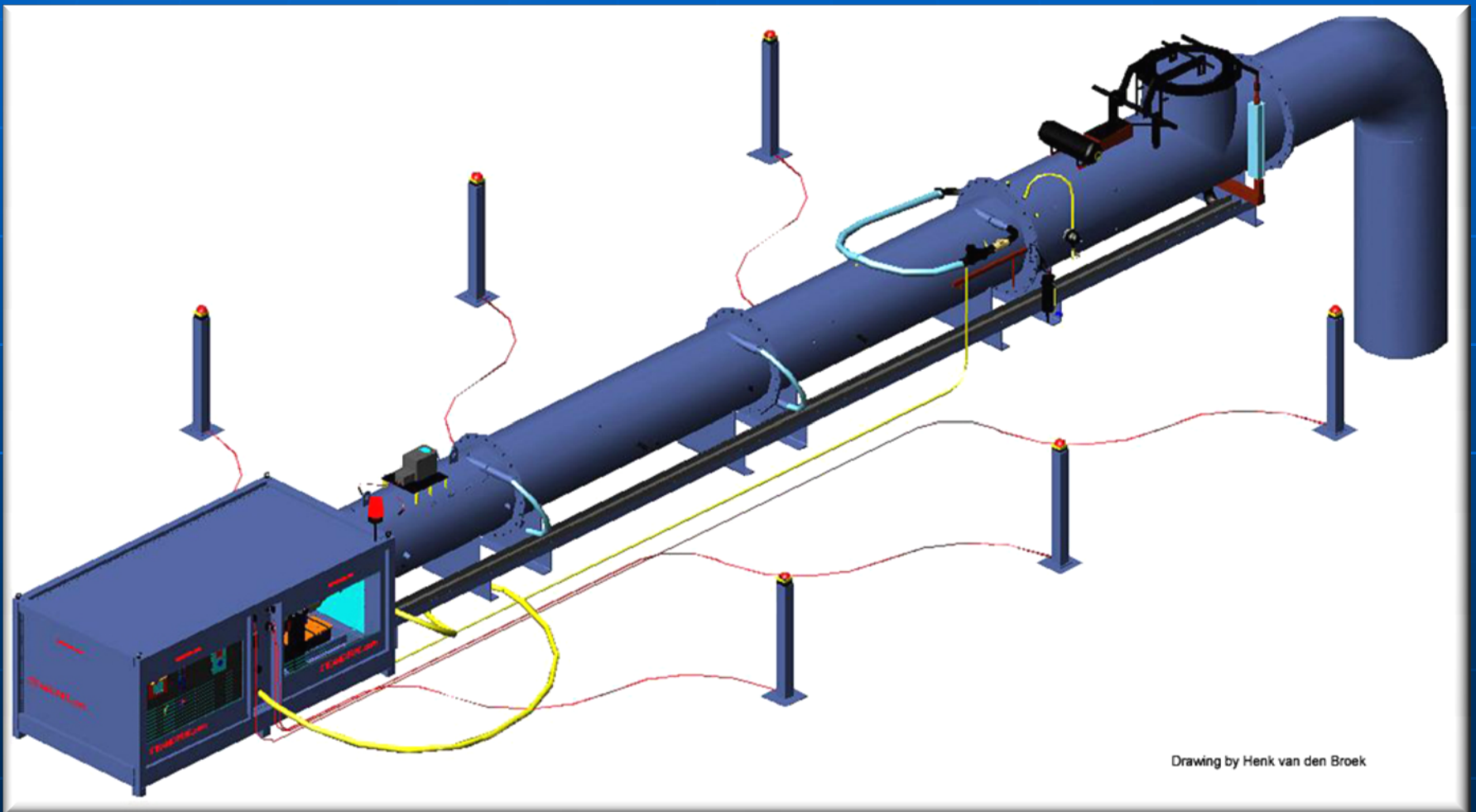
We had a vision.

To offer a system that would:

- Meet the highest safety standards in the world,
- Variable O₂, CO and CO₂ levels
- Datalogging
- A system that would communicate with your cell phone and laptop
- A system that is light and modular, easy transport
- A system that is checked by full camera's/monitors
- RESULT:



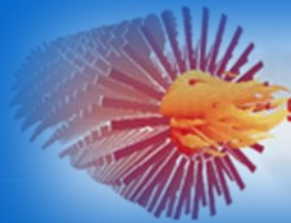
Length: 14 meters
Weight: 5.4 tons
Fuel consumption: 1750 liters/hour
Water consumption: 20 m³ /hour
System capacity: 25 m³ of inert gas mixed with water vapor and steam



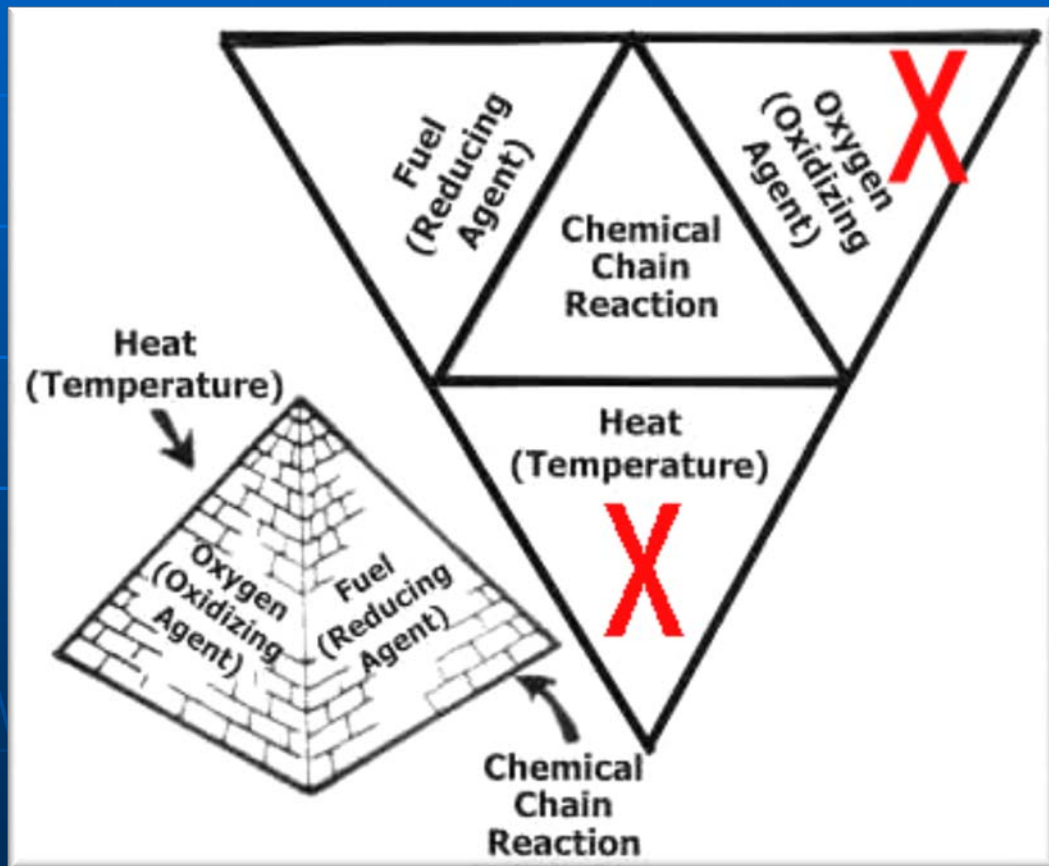
Drawing by Henk van den Broek

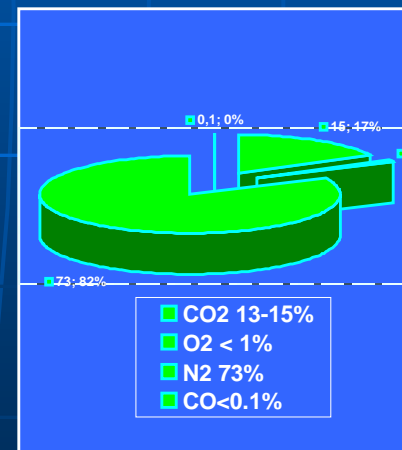
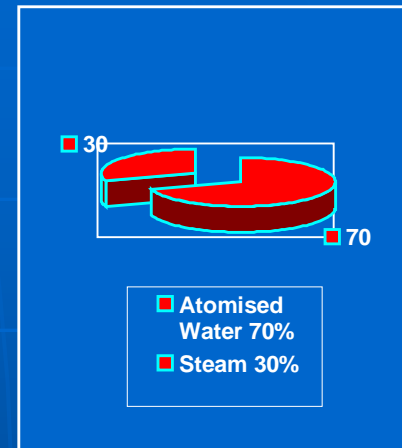
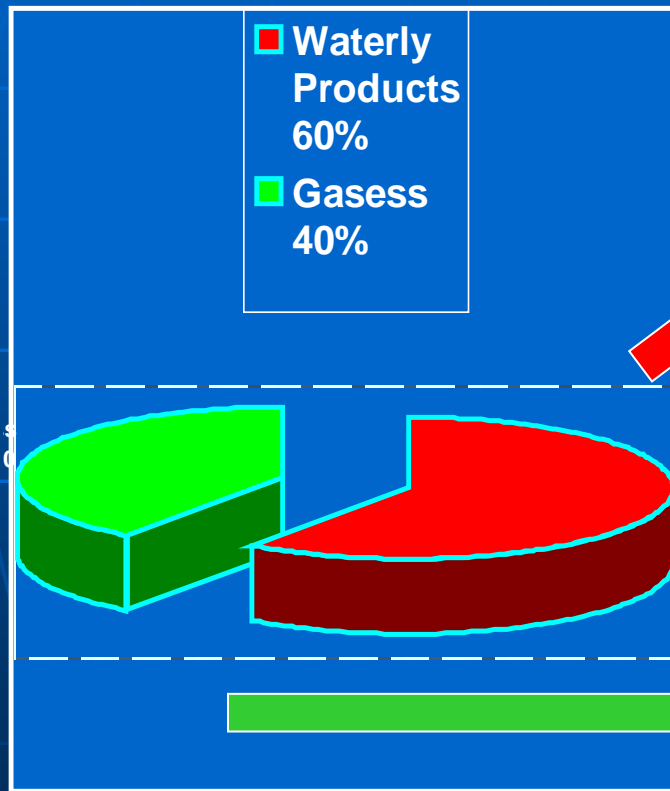


- The Steamexfire produces an inert gas mixed with water vapor and steam, in quantities of 25 m³ per second
- When this product is introduced to a fire, two of the three elements of fires, oxygen and heat will be greatly reduced and finally being taken away



STEAMEXFIRE





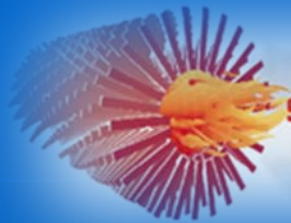
Typical Product Content



STEAMEXFIRE:

25 m³/s inert gas mixed
with water vapour and steam





STEAMEXFIRE





SteamExFire

Outside 3.4 °C



- Oil level normal
- Oil level low

6640 RPM

CH4	0 %	Barom press	949 mbar	Oxygen	0.9 %
CO	347 ppm	Backpress	964 mbar	Steam temp	84.0 °C
CO2	13.1 %	Backpress WG	5.9 inch		

Engine

Afterb. Water

Setpoints

Manual values

Graph

Fuel supply

Water supply

Alarms

Startup values

GSIS Personnel

Engine



Clear messages



LOGIN

LOGOFF

Operators

PLC CONNECTION

RUN

STATUS: AUTOMATIC

0,031

Logged in: michel

27-8-2005

20:41



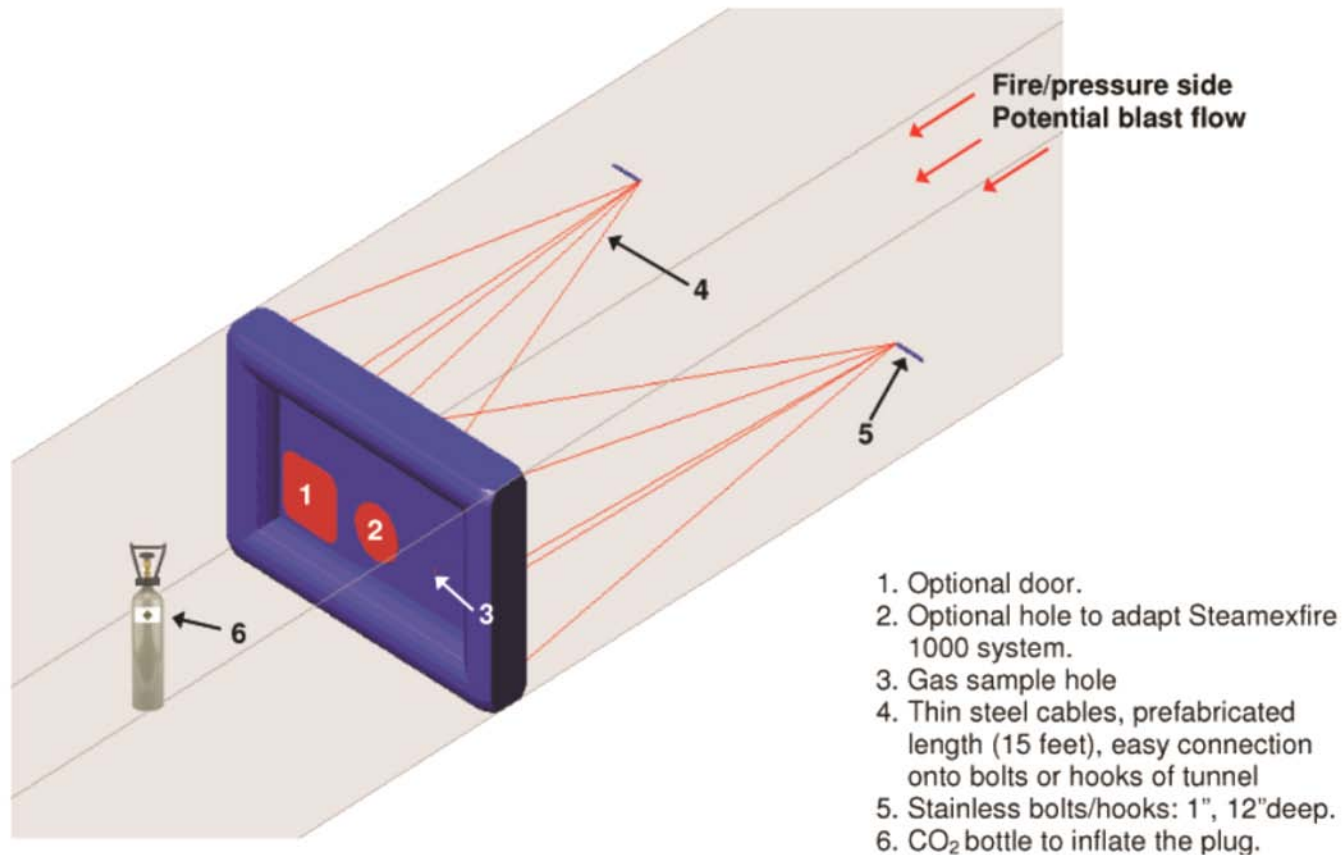
- **After doing several inertisation jobs, mining companies and Mine & Rescue organizations asked for smaller systems for:**
 - ⇒ **Taking underground**
 - ⇒ **Inertising via boreholes**
 - ⇒ **Systems that are easier to transport**



- Further development resulted in systems not only suitable for mine fires, but applicable for fighting fires in:
 - ⇒ Tunnels
 - ⇒ Large storages and ware houses
 - ⇒ Mechanical parking spaces
 - ⇒ Coffee, cacao bean, peanut storages
 - ⇒ The use of an inflatable mine plug (stopping) is very welcome



Example of inflatable plug

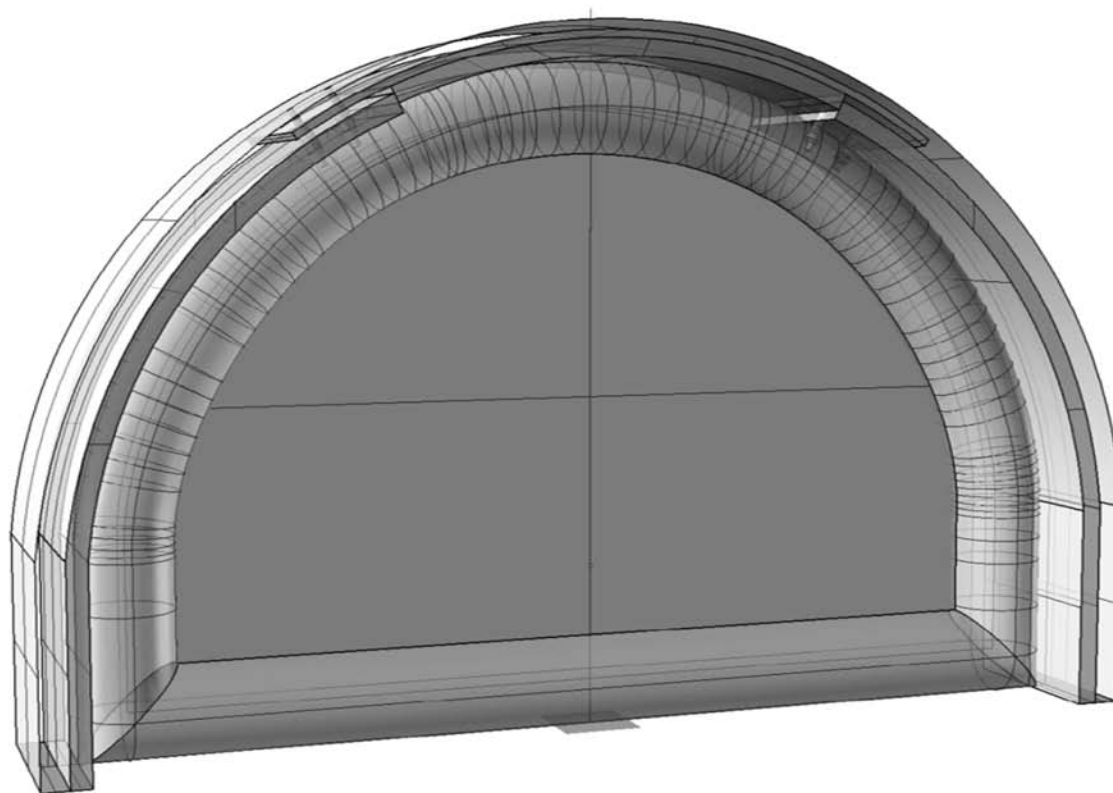




Tunnel plug



www.jbroche.com





- **Steamexfire BV has developed a smaller version, the Steamexfire 1000**
- ⇒ **Capacity** **12m³ per second**
- ⇒ **Weight** **900 Kg 3,4 or 5 modules of 2 meters**
- ⇒ **Fuel consumption** **1 m³ per hour**
- ⇒ **Water consumption** **12 m³ per hour**
- ⇒ **System can be taken underground**



Steamexfire 1000





Steamexfire 1000





- **Another scale down is the Steamexfire 750. This system can be taken underground as well**
- | | |
|----------------------------|-------------------------------------|
| ⇒ Capacity | 5-7 m³ per second |
| ⇒ Length | 4 meters (2 modules) |
| ⇒ Weight | 350 Kg |
| ⇒ Fuel consumption | 650 liter per second |
| ⇒ Water consumption | 9 m³ per second |



Steamexfire 750





Steamexfire 750





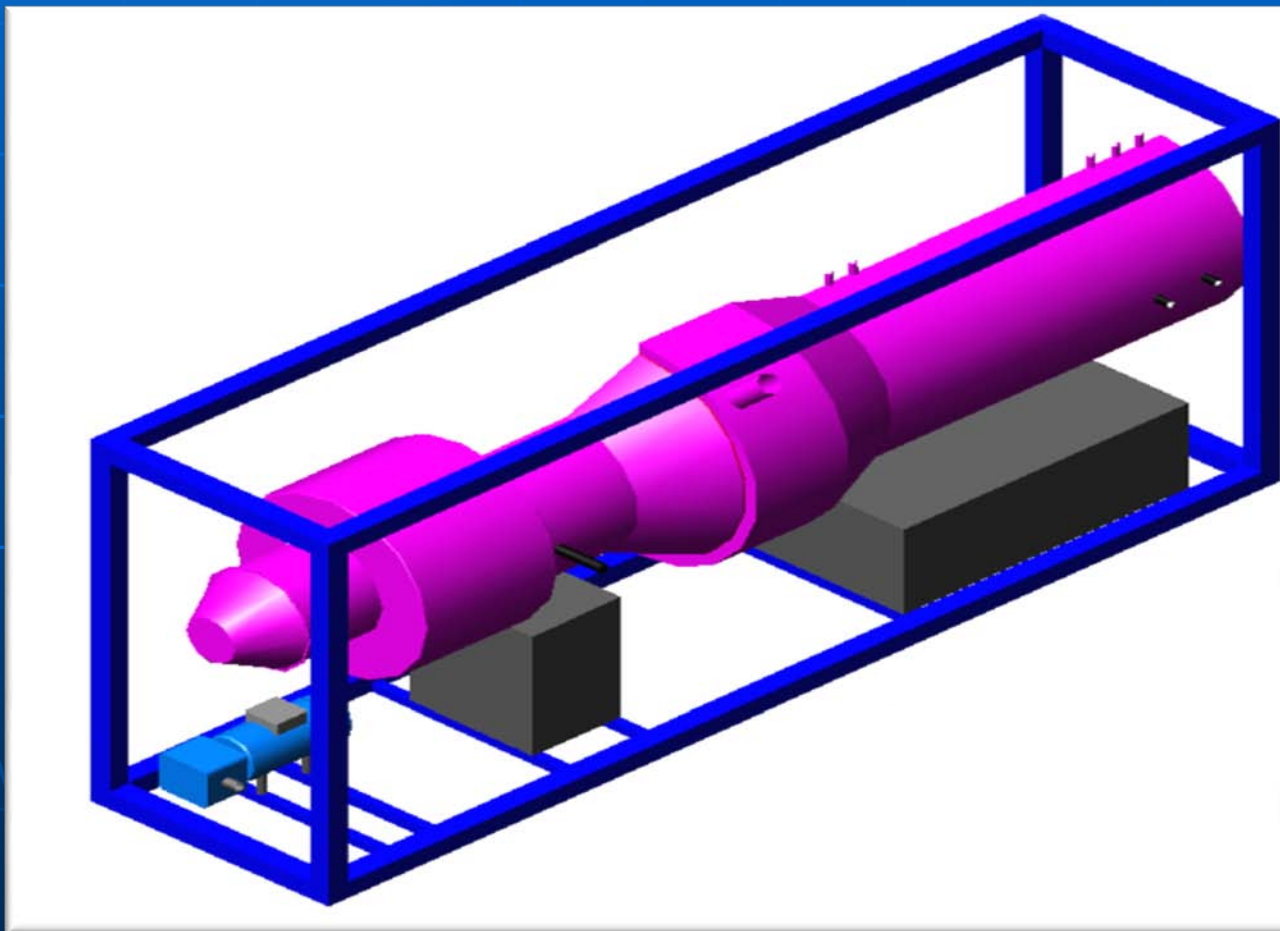
- The latest development is the smallest jet inert gas generator globally available, the Steamexfire 300
- ⇒ Capacity 2-3 m³ per second
- ⇒ Weight 200 Kg
- ⇒ Fuel consumption 250 liter per hour
- ⇒ Water consumption 3000 liter per hour



- **This Steamexfire 300 is ideal for use underground but also for the use of inertising through boreholes**
- **This can be equipped with a water condense unit, which produces an almost dry inert gas**

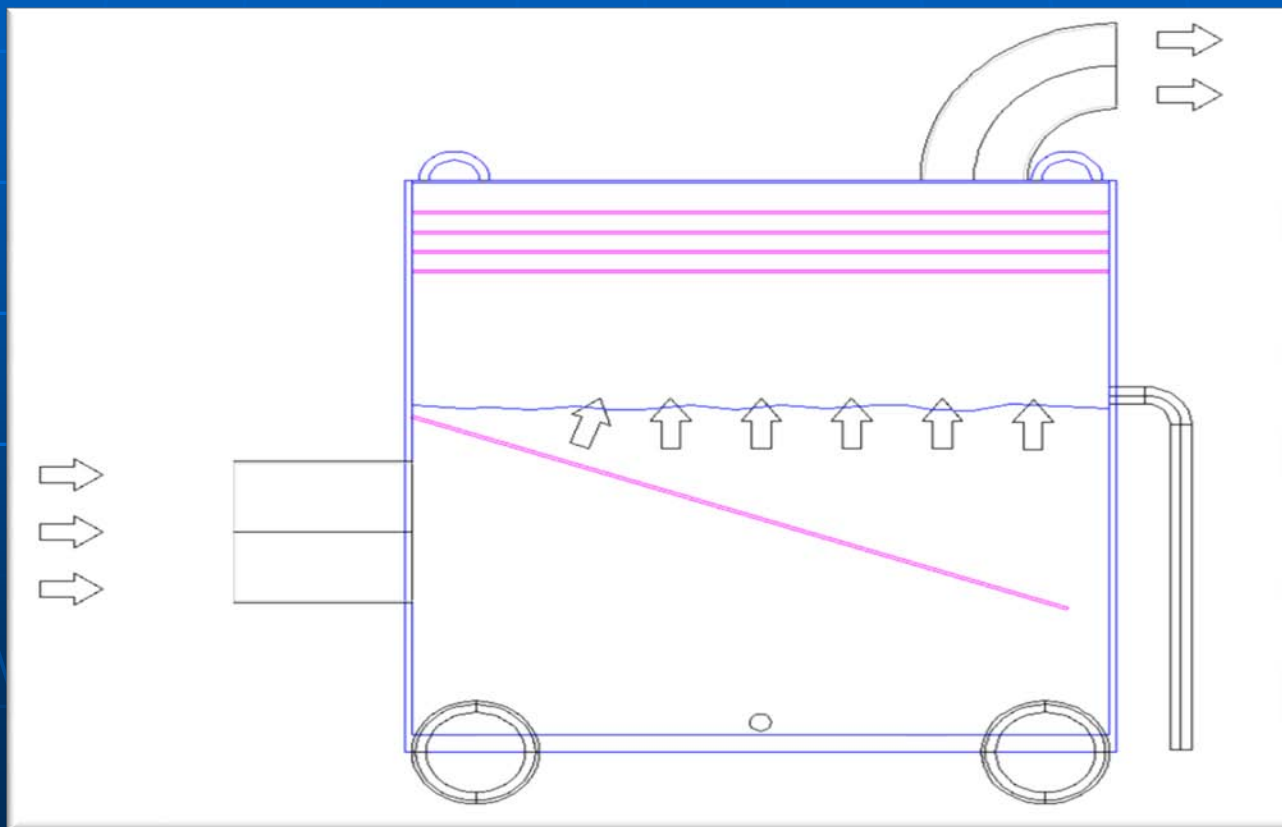


Steamexfire 300





Steamexfire 300





Steamexfire benefits:

- **Steamexfire is capable of deploying their systems with operators within 48 hours (pending on flights availability) global**
- **Steamexfire crew members are experienced in mining operations, mines rescue, fire fighting, engineering**



Steamexfire benefits:

- Steamexfire is committed to customer confidentiality
- Steamexfire has no trade barriers or restrictions to operate worldwide
- Steamexfire has 80m³ per second inert gas on the shelf !!



We offer various business proposals:

- ⇒ **Sales**
- ⇒ **Rental or lease**
- ⇒ **Contribution subscription for fixed territories**
- ⇒ **In all cases we work together with local authorities and Mine and Rescue Organizations**



Now a practical causus: Minefire !!!!

- ⇒ **Call us, I will fly over**
- ⇒ **Formation of DMU, mine manager, vent engineer and Mine/Rescue organisation**
- ⇒ **Sign the contract, downpayment**
- ⇒ **Shipment of equipment, fly in operators**
- ⇒ **Action !!**



**We can't do it without
YOU.**

Thanks for your attention

Michel Kooij

www.steamexfire.com