Introduction

The Inergen Experience™

FIRE EATER

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BACKGROUND

Fire Eater invented Inergen® and launched this new concept in the first pilot installations during 1989. The idea was born before the ODP (Ozone Depleting Potential) of Freon and Halon issue became known. The dangerous thermal decomposition of Halon 1301 (the most popular fire extinguishing chemical of the 1970's to the early 1990's) was underestimated in the market, but it is now known that there were several serious incidents and damages due to the formation of acidic gases, and this issue is probably also the case with the fire extinguishing chemicals of today.

Fire Eater introduced Inergen® to the market by making numerous full-scale tests, where people could safely get the experience of how an Inergen® system really works. This possibility gives an important HSE benefit: People working where a fire extinguishing is installed, will be much better prepared when a fire breaks out.

During the years we have performed more than 1400 full-scale tests. Maybe with an average of 8-10 participants. So more than 10,000 people. And that's just us, in addition our daughter companies and many of our partners also make Inergen® full-scale tests regularly.
What we learned over the years, What we have learned over the years, is that a full a full-scale test an excellent educational feature, but it is also the most powerful sales & marketing tool.

DEFINING YOUR INERGEN DEMONSTRATION ROOM

It is often advantageous to use a room that fits 1 or 2 cylinders (50 or 80 liter). And even better if is a room where the shifting of the cylinder is easy. Consider to pipe from a remote cylinder location. The average user has no interest in seeing our hardware. We think it is beautiful but the average person don't. And if someone wants to have the hardware explained go show them.

We recommend to generally use manual activation. A fire that is safe to demonstrate, is not easy to detect. Alternatively use a sensitive aspirating detection system. Then it is possible to do a convincing "total system demonstration" with automatic discharge. Include oil lamps, set wick to large flame to make it smoke a bit and se high sensitivity on the ASP-detector.

Your demonstration room can be any office, meeting room, archive or similar. The normal function of the room can be maintained – Inergen® is really safe, and will not harm or damage anything or anybody, even when you do it over and over again.

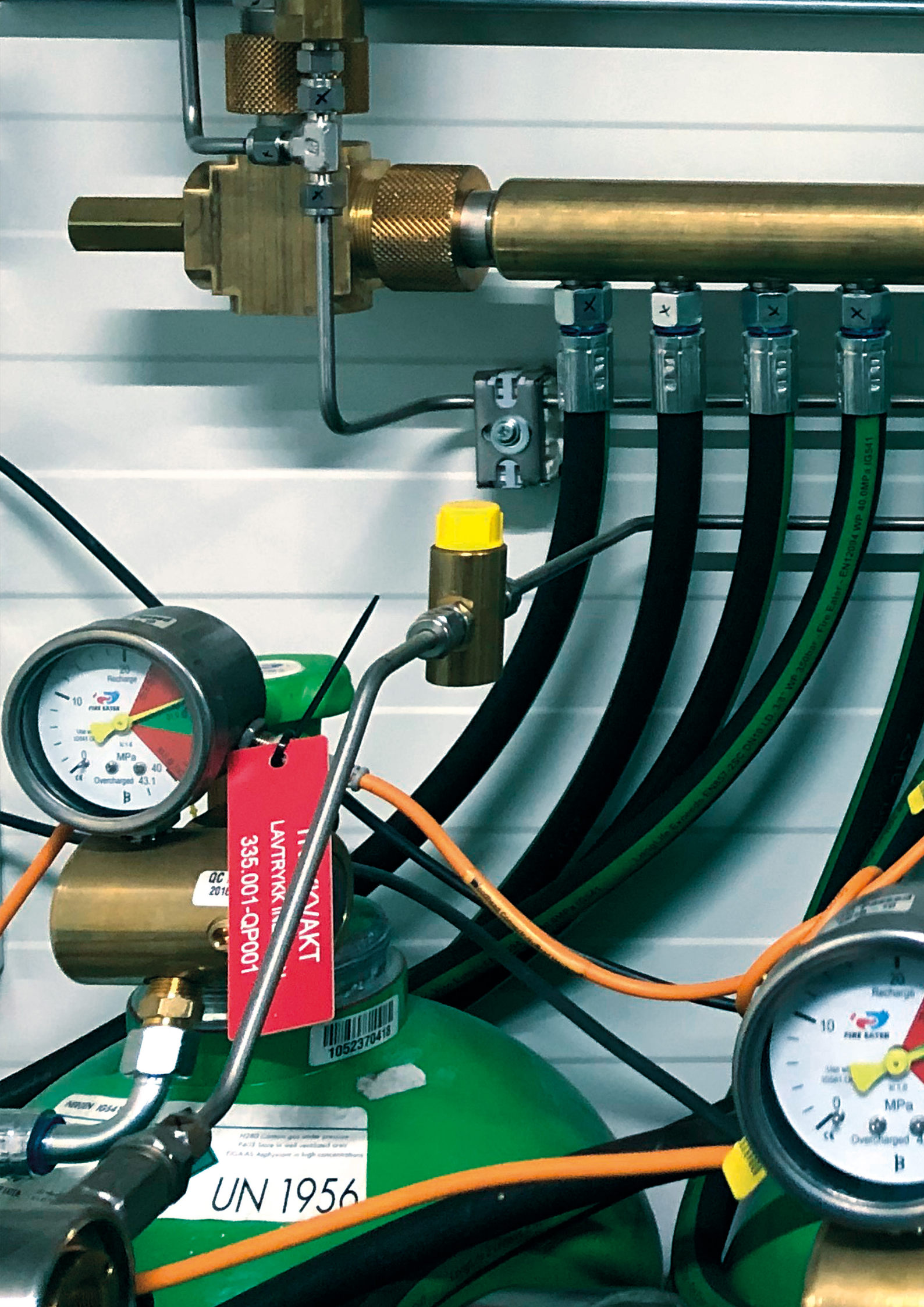
After a demonstration you will have to ventilate the room, so give this requirement consideration.
If your room is equipped with HVAC/ventilation system with fresh air inlet, ideally the ventilation should be stopped during the demonstration. If this is unpractical for the general HVAC operation 1 air shift/hour will not have significant effect on the performance.

When deciding the discharge time and use of CFR or natural flow (with fixed orifice), our experience is that 120 s discharge with a constant flow gives a good impression for the average customer: reduced noise and turbulence, particularly with a nozzle silencer fitted. But for the high level user, consultant, insurance or fire brigade person, it may be beneficial to demonstrate e.g. 120 seconds natural flow in comparison with 120 s regulated.

The most flexible solution is to design the system for 60 seconds natural flow discharge, and then have nozzles and CFR to fit to 60 s regulated, 120 s natural and 120 s regulated. That is if you want to be prepared for any demonstration need your audience would like to see.

If you want to have even more advanced demonstration options you may consider to have e.g. pop-up nozzles, normal mono-orifice nozzles, and nozzles with silencer. Please consult us for advice
Visible pipework passing over delicate furniture or equipment shall be isolated to avoid dripping after the discharge (the decompression during discharge causes a cooling well under the freezing point, whereby moisture will condensate on the cold surfaces, and when the small layer of ice melts afterwards some dripping is often experienced).

Include a tee with a ¼" female parallel thread (G 1/4" ISO 228) connection near a nozzle to install the pressure transducer. Best accuracy will be achieved when the transducer is fitted on the branch.
If the cylinder(s) is (are) activated manually with a mechanical actuator directly on the discharge valve, or are installed inside the demonstration room, a hose safety wire must be fitted, securing the hoses firmly at both ends.


MPa
Overcharged
UN 1956

Your audience may also ask for other inert gas blend (IG55, IG100, IG01) demonstrations for comparison. We do not recommend it: The Oxygen supply to the brain will quickly drop to an insufficient level. 1 or 2 minutes exposure is probably relatively harmless, but we would not want to do it. If you do it, uncompromisingly discontinue the exposure when SpO2 drops 10% from the starting point (1-2 minutes, and it will continue to drop over time), and do not allow people to participate with less than 95% SpO2 pre-exposure level.

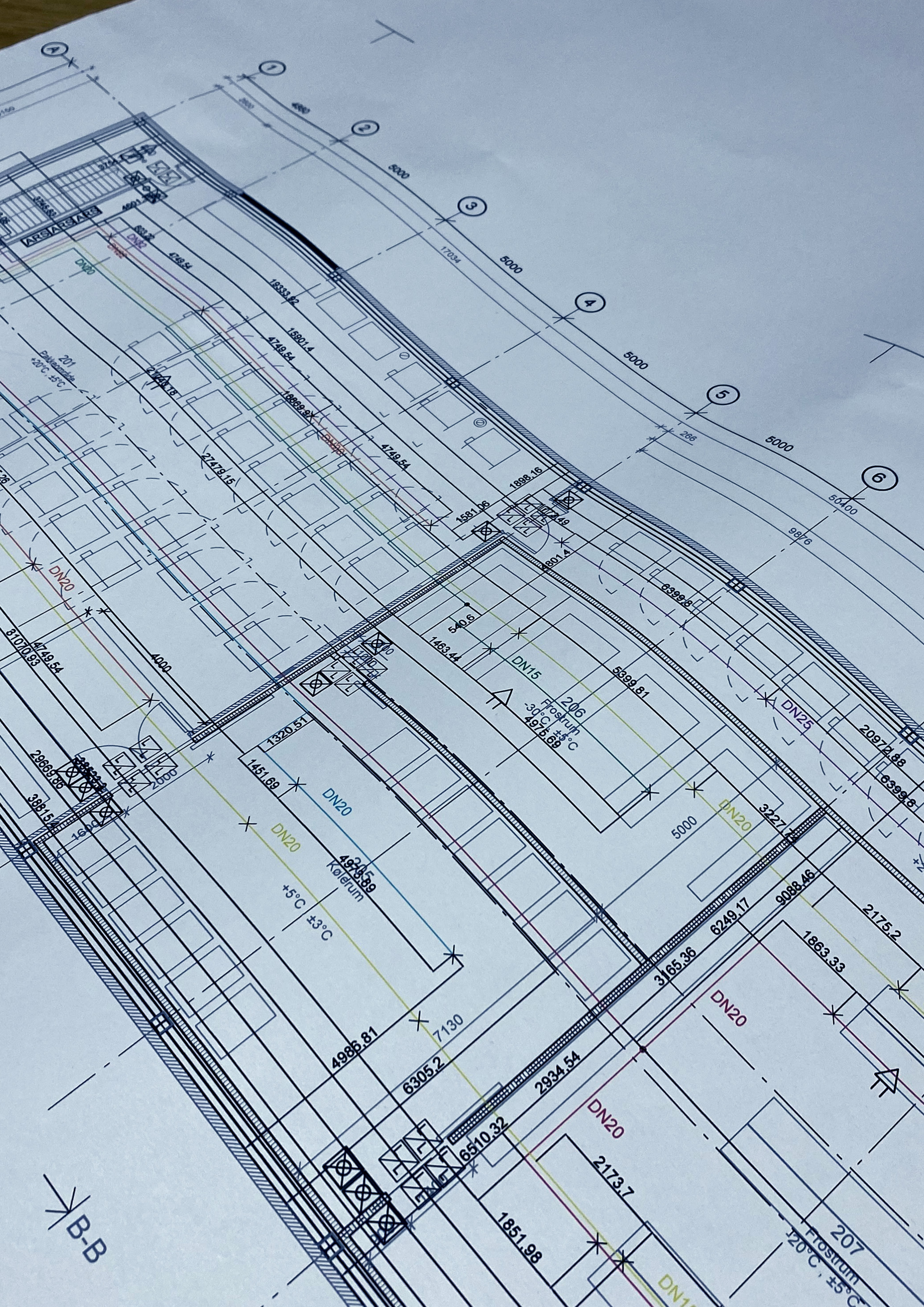
Your audience may also ask for a demonstration of a fire extinguishing chemical (like HFC 227ea or Fluorinated Ketone "FK"). Please consult us if you are ever forced to consider this. To our knowledge not even the organizations promoting it dare to do it. And you shouldn't as far as we are concerned. When you have chosen your demonstration room, carefully measure it to define the accurate volume, identify location for over pressure venting, possible cylinder location (just as you would for any project calculation you do), and run an IMT calculation. When you have done the calculation we recommend that you let us review – we may be able to provide some good advice.

A GOOD DEMONSTRATION CALLS FOR A REAL FIRE

But take care to keep it under control, and do it safely. The fire should not emit harmful gases, soot or toxins. We use a Biofuel (Ethanol) fireplace, and or a tray/pot suitable to use with high temperature. Ethanol burns practically without CO and soot emission, and is therefore compatible with HSE requirement. Additionally we use hurricane/oil lamps. They illustrate how "hidden fires" are also extinguished.

Ethanol looks like a very weak and easy to extinguish fire. But it is actually quite opposite, Ethanol is one of the combustible materials that is most difficult to extinguish and require higher extinguishing concentration that e.g. gasoline that looks much more impressive. Unfortunately gasoline, diesel/heptane is not advisable to use as it produces unhealthy smoke (CO and soot).
Finally: ensure that you don't spill combustible liquids and escalate the fire to become "a real fire". Inergen® will easily extinguish the fire that ran out of control for you, but it will give a messy and unsafe impression even though it also demonstrates how truly efficient Inergen® is.


EMERGENCY
STOP
RESET


1
2
3
4
5
6
5000
DN20
DN15
DN25
206
Frostrum
205
Kølerum
+5°C ±3°C
207
Frostrum
B-B

FULL-SCALA TEST PRECAUTIONS

Inergen® is documented safe to use, and you may refer to Dr. Erlend Skraastads review (is supplied together with the presentation template) of the safety of Inergen® concluding that the typical Inergen® exposure is safe for people in the typical exposure of 10% to 12.6% Oxygen with 4% to 3% CO2 for 30 minutes exposure. Even for people with COPD (reduced lung function) or other deceases. People with such medical conditions may experience non-critical additional discomfort.

Fire Eater has further demonstrated Inergen® for COPD patients and people suffering from late effects of brain stroke/brain damage. And in nursing homes elderly people (age 80-99), and elderly with severe COPD. Further Inergen® has extinguished real fires in nursing homes for elderly heavy smokers with cognitive challenges (often referred to as risk citizens in relation to fire). All cases prove that the conclusion of the Skraastad report is correct. Of course it is correct, it is based on a wide range of medical tests and documentation combined with specific knowledge of exposure of sick people to low Oxygen pressure.

The demonstration will expose the people participating to a physical stress similar to walking (approximately a 50W workload). So therefore you must ensure that participation is on the participants own risk and responsibility.

Before a demonstration use the Fire Eater template for a full-scale test seminar.
If people with moderate or serious medical conditions are participating, this must be under professional medical supervision, and coordinated with Fire Eater beforehand.
If a guest before the test measures less than 92% SpO2, it is an indication that they may have some health issues that should be examined before participation. Most people are above 95% and will during the demonstration drop 3-5%-points. This is normal and fully acceptable. A low (95% and less) SpO2 reading could be a Covid-19 symptom.

During the demonstration there will be some turbulence, so keep the room clean to avoid annoying dust being circulated. When the Ethanol is extinguished it is heated to the boiling point. It may sting lightly in sensitive eyes, but is harmless and it will not lead to intoxication.
Only use Inergen® provided from Fire Eater, or a filling station using the Fire Eater approved instructions for filling, with the correct analyzing and certificate for the particular fill.

Before you make the first demonstration for your guests, make a test of the system for yourself.
10% O2 with 4% CO2 has been scientifically tested for 7 days exposure time without negative effects. But for demonstration purposes we advise to end the demonstration after 8-15 minutes. When you use a "Discharge time (nominal)" value of 300 s in the Measurement and Display Unit, the QR-code for feedback appear after 5 minutes.

At that time take a propane burner or lighter and fire up outside. Slowly open the door and slowly move the fire inside the room at hip-height while the participants are watching. The fire will be extinguished right where the door would be in the closed position. Repeat a few times, and then encourage the participants to spend some minutes to enter their user feedback.
Always use the Fire Eater Inergen Experience package to add additional safety and a really convincing user experience.


Oxygen
20.9 %
CO2
0.07 %
Nozzle
2 bar
Manual start
FIRE EATER
NONIN
86
96
98
75
64
OK
FIRE EATER

PREPARING THE INERGEN EXPERIENCE KIT

You have received this package

This is what awaits you, when you open:

The measuring and display unit, "MDU"

- Power connection on the top of housing behind the display
- Pressure transducer connection left side behind display.
- USB and LAN connection right side behind display.

PREPARING THE INERGEN EXPERIENCE KIT

Pulse Oximeter, PO, with wireless connection
In the standard kit you receive 4 pulse oximeters.
Optional 4 can be connected.

Pressure transducer

Wireless keyboard w. mousepad

QUICK START GUIDE

1. If you use an external screen (recommended), connect the HDMI cable to the MDU and the TV, and turn on the TV. When an external screen is used, the pressure transducer shall be connected and "show nozzle pressure" shall be ticked. Manual start on the MDU is disabled with external screen connected.

2. Connect the MDU power supply to the mains, and plug into the MDU

3. The MDU will power up (takes a minute) and you can start your demonstration (read the rest of the manual!). The sensors have been through a 48 hours factory burn-in period, for optimum precision. However, after transportation it is advisable to power up a couple of hours before use for the sensor data to stabilize correctly, and recalibrate just before the test.

   If you need to start the test shortly after power up, go to the settings menu and recalibrate after 10-15 minutes. some drifting may occur after this but typically no more than 0.5 % for O2. Recalibration shall always be made in normal fresh air.

4. If the pressure transducer is NOT connected, go to settings>application settings>untick "show nozzle pressure"

5. Switch the keyboard/mousepad on (switch on top edge/right). If keyboard has not been used for 3-4 min.s, it powers off, and shall be switched off-on to reconnect. The screen is a touchscreen, so most operations do not require the use of the keyboard. With external screen connected the keyboard shall be used (and cursor movement will appear on the external screen only).

6. It is important to deliver the measurement data to Fire Eater. After the test, insert a USB drive in a free USB port (next to the dongles). Go to the settings. "Export measurement data". Then email the downloaded measurement data to Fire Eater testdata@fire-eater.com.

7. It is also very important to get the user feedback, so ensure that your guests use this feature right at the end of the test. There feedback is automatically paired with the measurement data, and will provide really important statistical data for the future.

   As a Fire Eater partner you will have access to all the data generated, from all Experience Fire Eater kits being used globally. The feedback is anonymous, untraceable to the individual guest, and completely GDPR compliant.

QUICK START GUIDE

8 If you want to run a new test without recalibrating or restarting the MDU, use "Settings >> New Test". This may also be used if you do not want people to use a QR code for an old test. However as each QR code expires a certain time after its first use, this is normally not necessary.

9 Do NOT use any solvents to clean the MDU, Oximeters and Keyboard. A dry or damp cloth may be used. Do not apply any physical contact to the O2 sensor (backside middle of MDU).

10 Now you have the basic knowledge of the system. The detailed manual can be accessed on the MDU Help menu together with a revision log, license information and the privacy policy. Please take care to read the full manual before using the system.


Oxygen 20.9 %
CO2 0.07 %
Nozzle 2 bar
Manual start
FIRE EATER


NONIN
NONIN
NONIN
1
NONIN


V+
V−
OK
L
R
Esc
F1
F2
F3
F4
F5
F6
F7
F8
F9
F10
Del
BACK
Tab
Caps
Enter
Shift
Fn
Ctrl
Alt
AltGr
Win

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