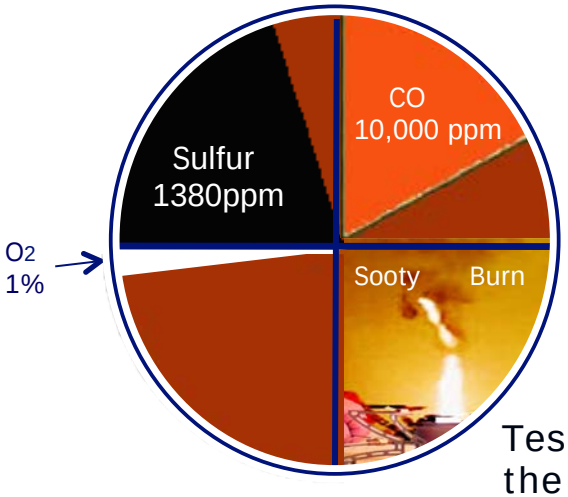
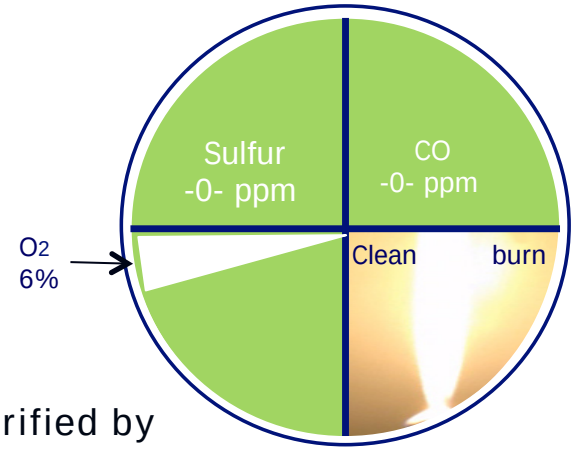
VERIFICATION TEST PROTOCOL

of clean burning diesel fuel
Stockholm, Sweden
June 6, 2013





Test and results are witnessed and verified by the accredited laboratory instrument vendor Olof Sten, CEO Palgo AB.

Palgo AB is specialized in smoke gas air analysis and combusting monitoring.

"According to our professional experience we have never seen results like this before" – ceo Olof Sten

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Olof Sten CEO-Palgo AB
www.palgo.se

Detailed explanation of the accredited testing equipment and procedure follows

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HNG - scrubber TABLE OF RESULTS:

Phase HNG HOT scrubber:

SO2 – Sulfur

HNG + Diesel.....0.2
Only Diesel.....1384.0
Difference -1383.8

CO – Carbon monoxide

HNG + Diesel.....0
Only Diesel.....over measure limit 5000.0
Difference -5000.0

Oxygen – O_2

HNG + Diesel.....6.0%
Only Diesel.....0.6%
Difference +5.4%

Phase HNG WET scrubber:

The following values are eliminated from air in the dry and wet phase of the HNG scrubber system measured by the electronic water analysis system
.

CO_2 – Carbon Dioxide
HNG + Diesel.....8%
Only Diesel.....6%
Difference 2%

Nitric Oxide NO
HNG + Diesel.....80 ppm
Only Diesel.....61 ppm
Difference 19 ppm

Energy efficient increase
Temp for Energy efficiency is increased by nearly 100%
Drive of HNG gas generation is within 10% of used fuel.

Quest and conclusion of Verification Report for the HNG scrubber application

Performed 6 of June, 2013 in HydroAtomic/HydroInfra Laboratory under supervision of authorized measurement inspectors and the tech staff from the laboratory.

ELIMINATION OF SO2

The result of this report shows such remarkable data that it creates a first line of questions:
-As the SO2 (sulfur) disappears from the measurement data, the question is into which form will this become.
Answer:
-In the science research report more details will be explained, but as an initial response by the Universities infraspectrometer shows no sulfur but sign of ethylene appears.

POSITIVE ENERGY BALANCE

The other question:
-When the HNG and diesel are mixed in the burner what is the energy balance of HNG gas and the gain of higher efficiency and BTU levels.
Answer:
- HNG gas in its own is not the energy carrier but as a reaction gas frees the boundary of hydrogen in hydrocarbon.
-it will only require a minimum of the diesel fuel to create the reactive gas. Actually, it is less then 10% but the net BTU value gained is in the area of 20%. This will further be described in future the science reports.

With this introduction the following pages show the report data.

CONCLUSION

This will give the reader the possibility to imagine the consequences for the climate if the full implementation of the HNG takes place.

THE VERIFICATION PROCEDURE
HOT scrubber process

The following data is from the HNG hot scrubber verification procedure.

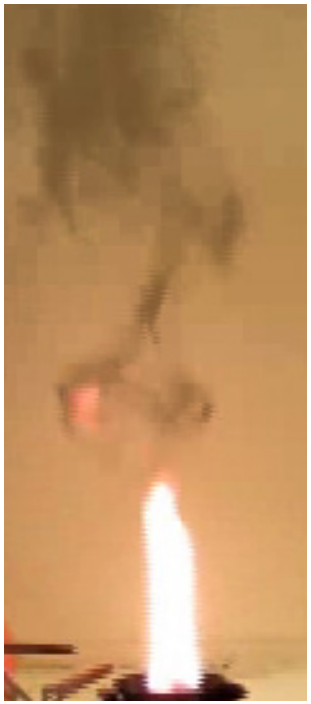
Diesel

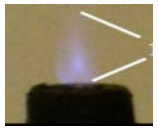
HNG gas

HNG with Diesel

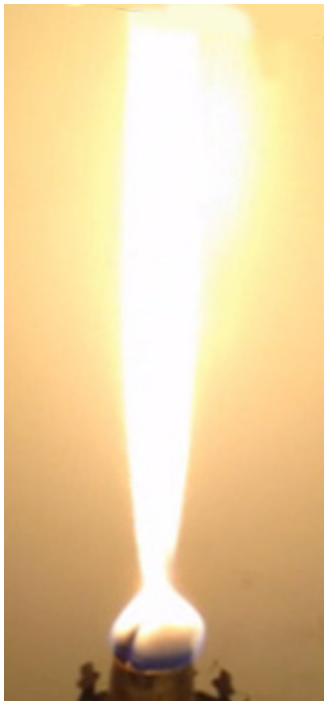
The diesel oil flame with no gas:

Sooty toxic emissions





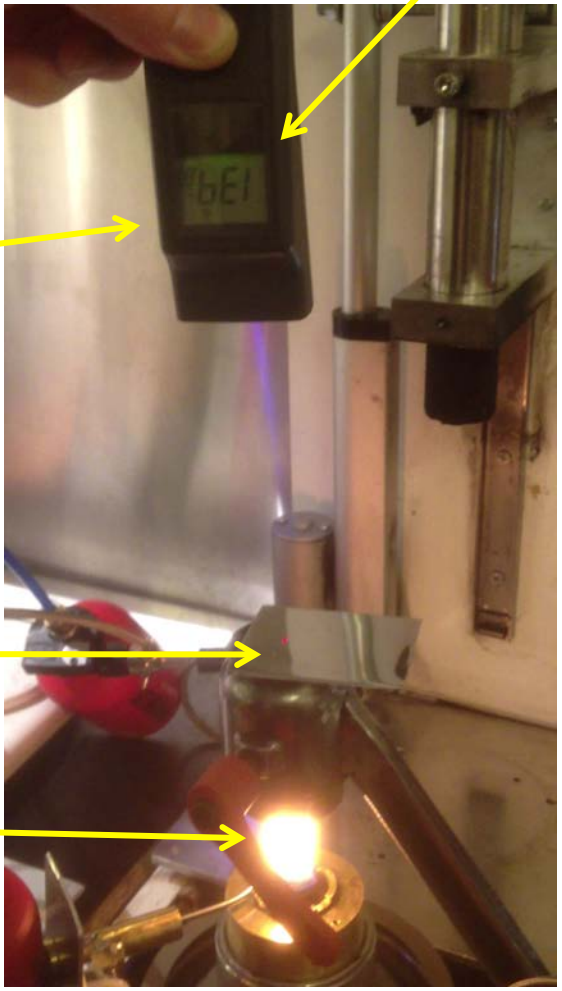
1 cm



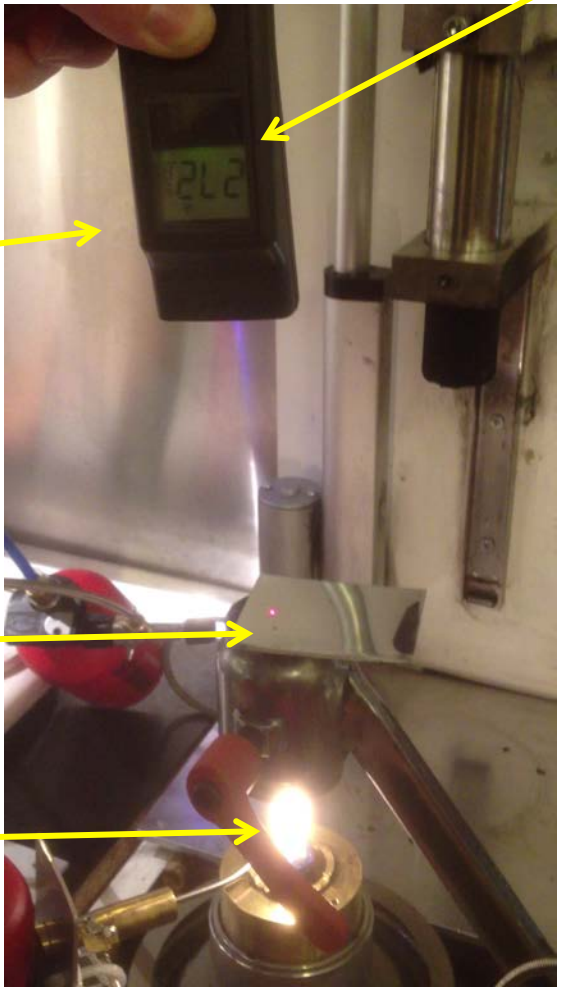
The results from the insertion of a thin 1 cm HNG gas flame

The HNG scrubber system includes DRY and WET system which complete the HNG scrubber functions down to emission neutralization

Maximum temperature of oil flame upon metal plate 139c



Temperature increases 100% from same fuel with insertion of small amount of HNG gas 272c



An overview of the lab

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Horiba gas analyzers

Horiba analyzers are state of the art and standard equipment used by accredited inspectors to check that the emission is within legal standards of power plants and other emission outlets.

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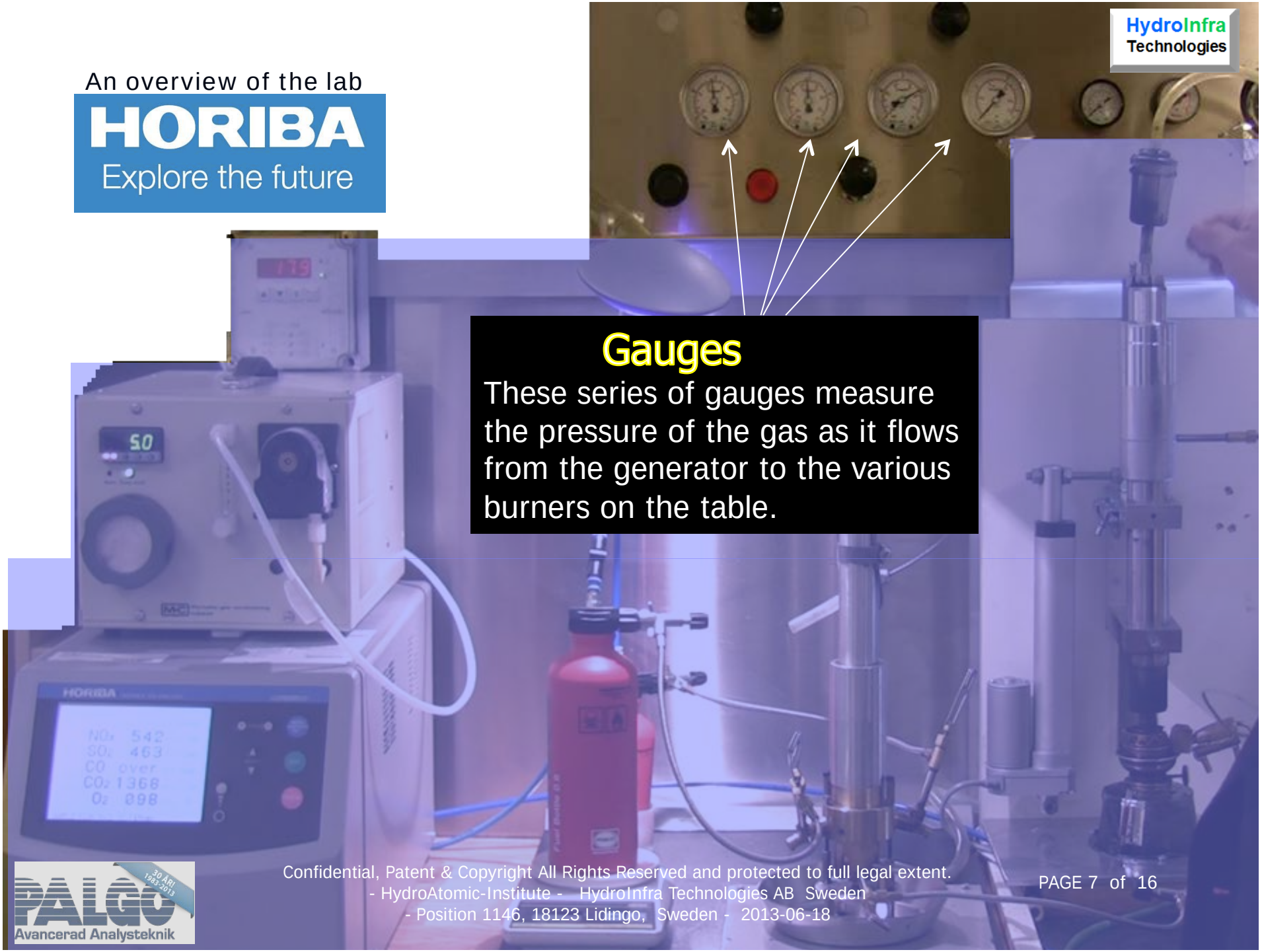

Gauges

These series of gauges measure the pressure of the gas as it flows from the generator to the various burners on the table.

An overview of the lab

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The HNG scrubber systems

The analyzer input

The gas is sucked through this tube from the chimney into the analyzer.

The chimney

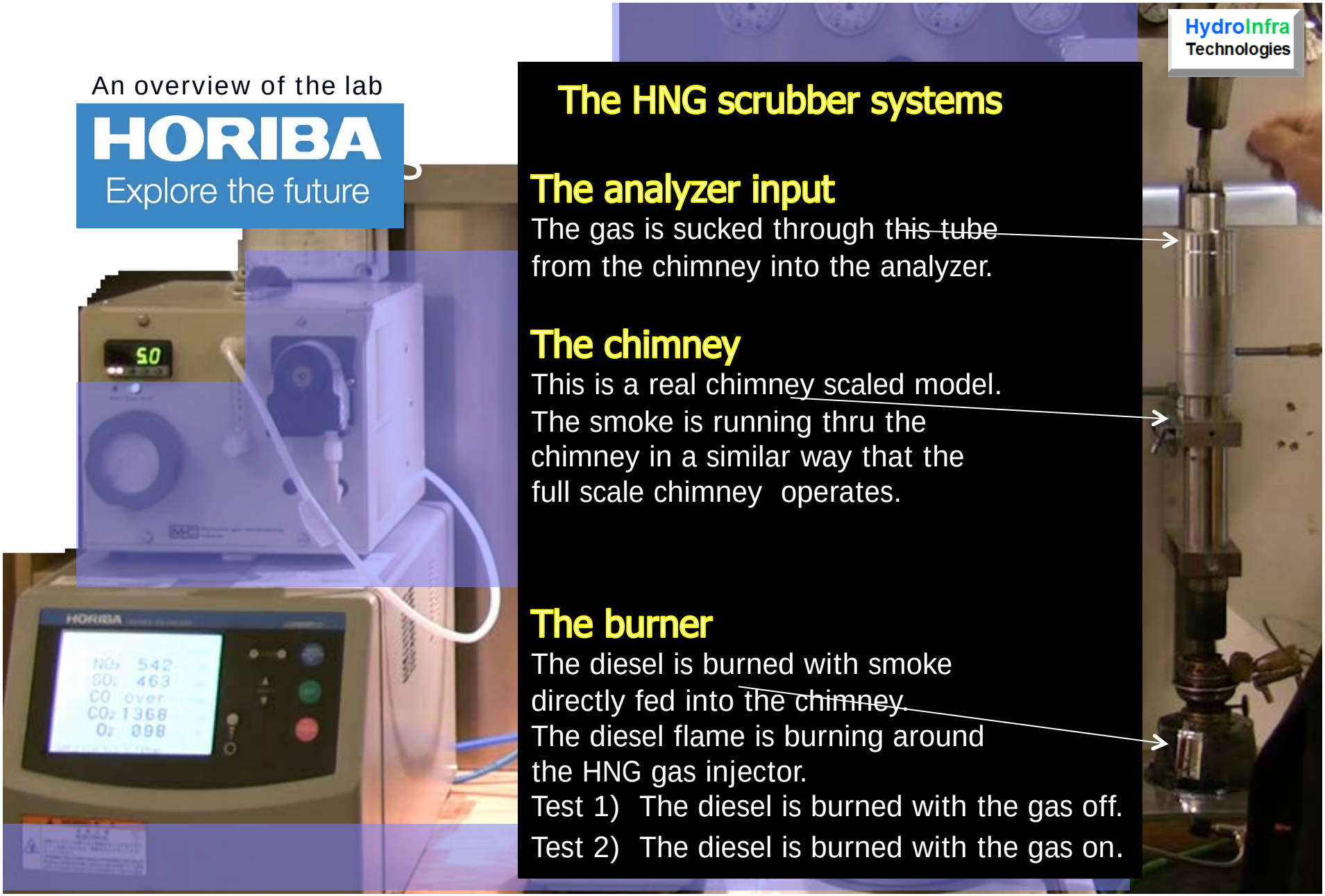
This is a real chimney scaled model. The smoke is running thru the chimney in a similar way that the full scale chimney operates.

The burner

The diesel is burned with smoke directly fed into the chimney. The diesel flame is burning around the HNG gas injector.

Test 1) The diesel is burned with the gas off.

Test 2) The diesel is burned with the gas on.



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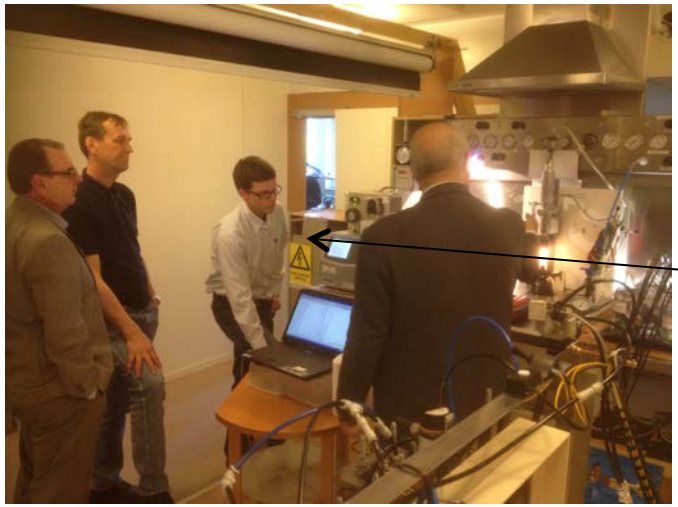
THE AUTHORIZED VERIFICATION PROCEDURE

1. **The burner for the diesel is started to run constantly throughout the verification process.**
2. **The access of the burner flame to the chimney was adjusted during the process to achieve a continually stable measurement.**
3. **The measurement system is continually activated to sense the smoke flowing through the system.**
4. **The measurement processing system is delivering data to the screen and the electronic log systems and recorded by the computer every ten seconds.**
5. **The verification procedure is continually active within the two periods. A) When diesel only is burning. B) When diesel and HNG gas is burning together. All data is also recorded continually.**
6. **During the verification test procedures some sight inspections of the flame in the chimney is done by opening and closing of the chimney access. This effect was recorded in the data.**
7. **As indicated by the data, the verification process was done in two continual period. One without and one with injected HNG gas. The data from these verification periods is presented in report.**

THE VERIFICATION PROCESS UNDER INSPECTION OF ACCREDITED MEASUREMENT INSPECTORS



The verification procedures took place in the HydroInfra/HydroAtomic institute laboratory during the date of May 30th 2013 in presence of:

- Olof Sten, CEO of Palgo AB, accredited measurement systems

- The verification procedure was overseen by the professional measurement companies represented by their CEO's.
- These representatives are doing accredited official measurements of emission for the government control of the Swedish industry.

The definition of the various gases analyzed.

Oxygen (O_2)

Gaseous chemical element chemical symbol O, atomic number 8. It constitutes 21% (by volume) of air and more than 46% (by weight) of Earth's crust, where it is the most plentiful element. It is a colorless, odorless, tasteless gas, occurring as the diatomic molecule O. In respiration, it is taken up by animals and some bacteria (and by plants in the dark), which give off carbon dioxide (CO). In photosynthesis, green plants assimilate carbon dioxide in the presence of sunlight and give off oxygen. The small amount of oxygen that dissolves in water is essential for the respiration of fish and other aquatic life. Oxygen takes part in combustion and in corrosion but does not itself burn. It has valence 2 in compounds; the most important is water. It forms oxides and is part of many other molecules and functional groups, including nitrate, sulfate, phosphate, and carbonate; alcohols, aldehydes, carboxylic acids, and ketones; and peroxides. Obtained for industrial use by distillation of liquefied air, oxygen is used in steelmaking and other metallurgical processes and in the chemical industry. Medical uses include respiratory therapy, incubators, and inhaled anesthetics. Oxygen is part of all gas mixtures for manned spacecraft, scuba divers, workers in closed environments, and hyperbaric chambers. It is also used in rocket engines as an oxidizer (in liquefied form) and in water and waste treatment processes.

Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless, odorless, and tasteless gas that is slightly lighter than air. It is toxic to humans and animals when encountered in higher concentrations, although it is also produced in normal animal metabolism in low quantities, and is thought to have some normal biological functions. In the atmosphere it is spatially variable, short lived, having a role in the formation of ground-level ozone.

Carbon monoxide consists of one carbon atom and one oxygen atom, connected by a triple bond that consists of two covalent bonds as well as one dative covalent bond. It is the simplest oxocarbon, and isoelectronic with the cyanide ion and molecular nitrogen.

In coordination complexes the carbon monoxide ligand is called carbonyl.

Carbon monoxide is produced from the partial oxidation of carbon-containing compounds; it forms when there is not enough oxygen to produce carbon dioxide (CO_2), such as when operating a stove or an internal combustion engine in an enclosed space. In the presence of oxygen, carbon monoxide burns with a blue flame, producing carbon dioxide.[1] Coal gas, which was widely used before the 1960s for domestic lighting, cooking, and heating, had carbon monoxide as a significant constituent. Some processes in modern technology, such as iron smelting, still produce carbon monoxide as a byproduct.[2]

Sulfur Dioxide (SO_2)

Sulfur dioxide (SO_2) is one of a group of highly reactive gasses known as “oxides of sulfur.” The largest sources of SO_2 emissions are from fossil fuel combustion at power plants (73%) and other industrial facilities (20%). Smaller sources of SO_2emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment. SO_2 is linked with a number of adverse effects on the respiratory system.

Sulfur dioxide can cause acid rain that seriously affects ecosystems. Acid rain is a major problem in the northern hemisphere, where trees and whole forests have been affected. Acid rain does not occur in New Zealand. However, sulfur dioxide deposition can affect vegetation around industrial discharges and in cities. Lichens are good bio-indicators of pollution and do not like to grow where there is sulphur dioxide in the air.

Carbon dioxide (CO_2)

Carbon dioxide (chemical formula CO_2) is a naturally occurring chemical compound composed of two oxygen atoms covalently bonded to a single carbon atom. It is a gas at standard temperature and pressure and exists in Earth's atmosphere in this state, as a trace gas at a concentration of 0.039 per cent by volume.[1]
As part of the carbon cycle, plants, algae, and cyanobacteria use light energy to photosynthesize carbohydrate from carbon dioxide and water, with oxygen produced as a waste product.[2] However, photosynthesis cannot occur in darkness and at night some carbon dioxide is produced by plants during respiration.[3] Carbon dioxide is produced by combustion of coal or hydrocarbons, the fermentation of sugars in beer and winemaking and by respiration of all living organisms. It is exhaled in the breath of humans and land animals. It is emitted from volcanoes, hot springs, geysers and other places where the earth's crust is thin and is freed from carbonate rocks by dissolution. CO_2 is also found in lakes at depth under the sea, and commingled with oil and gas deposits.[4]
The environmental effects of carbon dioxide are of significant interest. Carbon dioxide is an important greenhouse gas, warming the Earth's surface to a higher temperature by reducing outward radiation. Atmospheric carbon dioxide is the primary source of carbon in life on Earth and its concentration in Earth's pre-industrial atmosphere since late in the Precambrian eon has been regulated by photosynthetic organisms. Burning of carbon-based fuels since the industrial revolution has rapidly increased concentrations of atmospheric carbon dioxide, increasing the rate of global warming and causing anthropogenic climate change. It is also a major source of ocean acidification since it dissolves in water to form carbonic acid,[5] which is a weak acid as its ionization in water is incomplete.

NO_x

NO_x is a generic term for mono-nitrogen oxides NO and NO_2 (nitric oxide and nitrogen dioxide). They are produced from the reaction of nitrogen and oxygen gases in the air during combustion, especially at high temperatures. In areas of high motor vehicle traffic, such as in large cities, the amount of nitrogen oxides emitted into the atmosphere as air pollution can be significant. No_x gases are formed everywhere where there is combustion – like in an engine. In atmospheric chemistry, the term means the total concentration of NO and NO_2. NO_x react to form smog and acid rain. NO_x are also central to the formation of tropospheric ozone.

END OF VERIFICATION PROTOCOLL

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