

## A lift in the LPG market

The World Bank has dubbed Liquefied Petroleum Gas (LPG) the most environmentally friendly fossil fuel.

An increasing number of South African households are switching to LPG for domestic cooking and heating, saving an average surplus of 120kg of firewood annually.

LPG is a safe, reliable and cost-effective alternative to traditional power supply, for both domestic and industrial use, yet only 3% of South Africans are presently using it as an additional energy source.

However, the recent opening of Africa's largest LPG import and storage terminal in Saldanha Bay is said to create a complete turnaround.

South Africa-based energy infrastructure company Sunrise Energy, has established an open-access (LPG) import and storage terminal in Saldanha Bay, which will enable the import of LPG in large quantities.

The construction of this terminal, including the five giant underground

tanks created 470 jobs and at present hosts 33 permanent employees.

This R1.02 billion facility is intended to boost regional energy security and increase downstream competition, strengthening the country's oil and gas sector.

"The 140km corridor contains the most diversified energy mix in the country, including petroleum, gas, renewables, oil and nuclear energy" said Ebrahim Patel.

This import and storage facility received its first load from an LPG ship in May 2017. This will boost gas availability in South Africa.

Periodically South Africa experiences an LPG shortage, however, since the commencement of the Saldanha Bay facility, LPG has not seen any shortage. This facility can store up to 200 000 tons of LPG, that's 57% of South Africa's annual LPG demand.

The Saldanha bay plant is the largest open-access LPG import and storage facility in Africa and operates on an

open-access model. Therefore, this will facilitate the entry of new players in the LPG industry, creating more competition in the market.

Wider gas availability will bring competition to the industry and most likely bring LPG prices down.

The production and supply of LPG involves many players in the value chain, including the producers, wholesalers, distributors, dealers, retailers, and end-users, the increased availability will be beneficial for all sectors.

Noting that, the built terminal is only the first phase of the three phases approved by the National Energy Regulator.

For more information on the safe use of LPG as, visit the website of the LPG Safety Association ([www.lpgas.co.za](http://www.lpgas.co.za)).



## Methane Based Advisory Council

The Safety and Technical Advisory Council (STAC) was established on the 20th September 2016, this body serves as a transparent, non-biased, non-competitive advisory council that gives insight on Safety and Technical queries for the Methane Based Gas Industry. The Southern African Gas Association (SAGA) governs STAC, as it was established under its umbrella as an advisory body that reports directly to SAGA.

STAC's objective is to render insight to the Methane Gas based Industry in South Africa, this is achieved by immense investigations and research on industry related concerns and queries. STAC, for now only focuses on gas reticulation systems within respective battery limits and within the definition of reticulation as stated in the Pressure Equipment Regulations (PER). The focus will over time be broadened to upstream operations including

compressed and liquefied natural gas systems.

Persons within the industry, being; individuals or organisations, private or government, are all eligible to receive official recommendations from the research conducted by STAC. Any Safety and or Technical item relevant to the Methane Gas Based Industry in South Africa can be brought to the attention of STAC. This Advisory Council is not limited to national technical issues, STAC takes it upon itself to research and consider international trends in safety and technical matters, including practice.

All issues brought to the attention of STAC will be thoroughly evaluated and reported to SAGA. After proper consideration, one of the following will be actioned:

- Have a special council meeting to decide on how to advise on the

matter at hand

- Engage with non-council experts in the field
- Call for public participation in the matter at hand
- Form sub-committees whom will engage with experts in the field, both locally and abroad, in order to advise on certain matters, and then report back to the council.

Once a formal recommendation has been reached by the Council, it is then forwarded to SAGA for consideration and publication as Safety or Technical Bulletin for Industry application.

For more information on SAGA visit [www.sagas.co.za](http://www.sagas.co.za)



# SAQCC Gas - training with the DOL

The four member associations that build up SAQCC Gas, namely, LPGASASA - Liquefied Petroleum Gas Safety Association of Southern Africa, SACGA - Southern Africa Compressed Gases Association, SARACCA - South African Refrigeration & Air Conditioning Contractors Association and SAGA - Southern African Gas Association held respective training sessions alongside the Department of Labour (DOL) inspectors in June 2017.

These training sessions were both theoretical and practical, based on the use of natural gas, liquefied petroleum gas, air conditioning and refrigeration gas, compressed industrial and medical gases. The DOL inspectors were given training on conducting full inspections where gas, gas installations and gas equipment are concerned.

## SACGA



The DOL Inspector training was held at Air Product's Cylinder filling facility in Kempton Park.

The day commenced with a site safety induction to ensure that the inspectors understood the site safety requirements and that they had all the necessary personal protective equipment (PPE) to enter the cylinder filling facility.

Barry Little, SACGA General Secretary/Technical Adviser presented an overview of the Southern Africa Compressed Gases Association (SACGA). This was followed by a presentation on gas cylinders which included the history of gas cylinders, how they have evolved over the years, the different types of cylinders and how they are filled and tested to ensure they are safe to use.

The inspectors were then taken on a walk around Air Product's palletised cylinder filling facility, where they were shown how gas cylinders are received and sorted, what pre-fill checks are carried out to ensure they are safe to be filled, the filling process and final inspection before the cylinders are ready for shipping to the customers. The DOL inspectors then visited Air Product's cylinder test and

maintenance facility to see how gas cylinders are re-validated.

The day concluded with a question and answer session and a test to confirm understanding from the day's training.

## SAGA



The morning session was theoretical and included:

- Reticulation systems
- Combustion and fuel handling equipment
- Safe Gas Equipment Scheme (SGES) - Verification Permits
- Inspector checklists for domestic/commercial and industrial gas installations
- Difference between LPG and NG
- Live demonstration of firing up a gas train (Industrial thermoprocessing)

The afternoon session was practical site visits to two users to demonstrate:

- Industrial thermoprocessing (reticulation gas system)
- Compressed natural gas vehicles and industrial applications (fuelling station)

Discussions sparked the need to develop a booklet that will be used as a reference to all gas specifications when site inspections are conducted.

## LPGSASA



The DOL Inspector delegates spent a day and half which included:

- Site visit to WASAA's LPG filling depot
- User friendly checklists when inspecting LPG sites
- Knowledge and understanding of the PER and SANS Standards
- The ability to interact directly with the facilitator

A particular highlight of the training

was the inspection checklist. Many of the delegates have subsequently contacted LPGSASA for copies of the checklist to make use of during field inspections.

One of the most common observations of the inspectors was that the overall training course was too concentrated and that future courses should be split up or run over more days.

## SARACCA



The training by SARACCA in refrigerant gases and the use of refrigeration for cold storage and air conditioning was held at ACRA on Kempton Park.

Grant Laidlaw of ACRA gave an outline on refrigeration and its application.

This was followed by a comprehensive talk by Mike Labasher of A-Gas on identifying refrigerants in their transport cylinders, the general safe handling of the containers and the transfer of gas into systems. A hand-out of the common refrigerants and the colour coding of cylinders was given to the Department of Labour inspectors.

A tour of the ACRA training facility was given by Grant Laidlaw showing the various types of refrigeration and air conditioning systems, as well as the types of compressor and application in water chillers, air conditioning units and cold rooms.

Barney Richardson gave a talk on the issuing of Certificates of Conformity for the many different systems using refrigeration. The talk covered the competencies of practitioners authorised to sign COCs. The requirements of the Pressure Equipment Regulations were pointed out with respect to refrigeration. The specific items to look out for in any inspection were highlighted.

The day was concluded with a presentation by Charel Marais on the quality of installations in air conditioning.

# DOL Inspectors ready themselves for the HVAC industry

On the 22nd June 2017, SARACCA in conjunction with SAQCC Gas held a training session at the Air Conditioning and Refrigeration Academy (ACRA) with the Department of Labour (DOL) inspectors. The reason for including the DOL inspectors was to highlight the lack of compliance within the HVAC industry. All attendees agreed that a high proportion of non-compliance is by installers who are not registered practitioners.

Providing a COC after any HVAC related installation or modification is a legal requirement.

Barney Richardson, Director of SARACCA, announced that additional requirements on semi-skilled installers have been initiated which are endorsed by the Department of Labour. They can now sign a COC in instances where installations carry a capacity of less than 18kW.

## DEPARTMENT OF LABOUR CALLS FOR COMPLIANCE

End-users will be requested to hand over required documents including the COC when labour inspectors make their official visit. The consumer must therefore always request a completed COC upon conclusion of installations and modifications. The Pressure Equipment Regulations (PER) were put in place to ensure that all gas installations meet safety standards. These regulations set out the requirements regarding the design, manufacture, operation, repair, modification, inspection and testing of pressure for all equipment used in the HVAC industry. The Occupational Health and Safety Act, 1993 (PER) also requires everyone working on gas equipment to undergo specific training and to be registered with the South African Qualification and Certification Committee – Gas (SAQCC Gas).

## LEGAL DOCUMENTATION

A Certificate of Conformity (COC) for gas installations is a legal document which must be obtained whenever a gas system is installed, modified or repaired and should be retained for possible future requirement. Only Registered Practitioners may issue a COC.

When the size of the refrigeration system causes it to be in category II or higher, as defined by SANS 347, an Approved Inspection Authority (AIA) is required to examine and to countersign the certificate of conformity issued by the gas practitioner.



# The Montreal Protocol and the phasing out of HCFCs

Over the years, numerous types of gases have been used for multiple purposes. The constant development from one gas to the other has, in turn, exposed the environment to multiple chemicals that have placed the ozone layer in danger. Due to this, on September 16th, 1987, over 197 countries agreed on a treaty that was designed to restore the ozone layer. As per this treaty, the production of numerous Ozone Depleting Substance (ODS) has been phased out. One of the substances to be phased out is the popular hydro chlorofluorocarbon (HCFC) gas Chlorodifluoromethane, commonly known as R-22, also called HCFC-22.

## THE PHASE OUT OF R-22

R-22 is a colourless gas commonly used as a refrigerant and propellant for air-conditioning, heat pumps and refrigeration. This gas is used in several blends and is widespread mainly because of its low-cost, availability and effectiveness. R-22 or HCFC-22 has been a favoured refrigerant since the 1960s. However, R-22 is classified as a greenhouse gas that contributes to

global warming. In addition, the release of R22 through leaks in systems also damages the ozone.

## WHAT THIS MEANS FOR AIR-CONDITIONING AND REFRIGERATION.

On the 22nd June 2017, Michael Labacher at a training session conducted by SARACCA at the Air Conditioning And Refrigeration Academy (ACRA), spoke of the decrease of R22 importation since 2015 amongst South African companies. A complete phase-out is estimated by the year 2040. South Africa is in the lead in the phasing out of HCFCs with the 2013 baseline of 3163 tons being surpassed in 2016, when only 2673 tons were imported, and just 2556 consumed.

This means air conditioning and refrigerating practitioners now have to use alternative refrigerants. South Africa is an innovative promoter of CO<sub>2</sub> refrigeration alongside all European countries, Japan and Australia.

There has been a ban on R22 charged systems that are assembled in South Africa since January 2015, from

components assembled to the complete system.

The regulations in Government Gazette 37621 of May 2014 dub it illegal for stockpiles of R22 to be stored for a period exceeding 18 months. Companies that have stockpiles are required to register them with the Department of Environmental Affairs and submit a plan as to how the stockpiles will be disposed of.

## OZONE HOLE IS RECOVERING

As a result of the Montreal Protocol, the ozone hole discovered in Antarctica is gradually recovering, and climate projections say between the year 2050 and 2070 the ozone layer will return to 1980 levels.

SARACCA's training facilities conduct training courses on how the new refrigerant systems should be installed and maintained.

