

## Strict compliance of employee training

The Department of Labour published the Pressure Equipment Regulations (PER) as part of the Occupational Health and Safety Act.

The South African Qualification Certification Committee for Gas (SAQCC Gas) has been accredited by the Department of Labour to register authorized persons. SARACCA, as a member of that committee, is tasked with registering refrigeration and air conditioning practitioners.

SARACCA recognises the importance of Pressure Equipment Regulations certifications and specific delegations of duties. Its members are dedicated to upholding regulations and do not compromise as far as compliance is concerned. One of SARACCA recognised training providers reported on the following case.

Geoff Hobbs of Techniskills, was recently requested by certain parties to attend a CCMA appeal, to give

evidence as to the validity and origin as well as purpose of the PER Act. A company had found it necessary to dismiss an employee after he had failed to successfully complete his PER certification, on his third attempt.

In terms of the Department of Labour's mandate to SAQCC Gas and SARACCA's mandate to providers, the basis of the evidence presented, with precise dates and attempts, the CCMA commissioner was obliged to rule in favour of the company. The company had done all it could to ensure its own and its employee's compliance with legislation.

The employer had a very specific delegation of appointment and duties. Had he not ensured that the employee was appointed to a specific function, there would have been a risk that a non-performing employee may have required accommodation in a lesser role that did not necessitate this certification.

The CCMA agreed that by not attaining the required legislative certification, the employee had incapacitated himself.

This case is evidence that air conditioning and refrigeration contactors do not compromise in following the protocol of the Pressure Equipment Regulations, by the unfortunate dismissing of unfit employees.

Companies who have employees with components of the certification outstanding, need to ensure that the candidates complete this soonest. Recognised training providers are always available to offer training for registration with SAQCC Gas.



## LPG - an alternate electricity solution

Most South African citizens rely primarily on electricity supplied by ESKOM as their source of energy. Eskom's mandate is to generate, transport, and distribute electricity to the entire country. However, many South Africans experience problems with electricity supply, due to the demand exceeding the supply and inadequate infrastructure.

As an alternative energy source, Liquefied Petroleum Gas (LPG) presents a solution to reduce reliance on the national electricity grid. The use of LPG has seen a significant increase over the last few years due to the manufacturing of cost-effective and reliable gas-powered appliances.

LPG is used by both businesses and households, where it is used mainly for cooking, water heating and space heating.

"The market for gas-powered appliances and technologies is growing fast. Sales of gas appliances at Makro have grown steadily in recent years," said Gary Lindhorst, Makro Merchandise Manager.

The use of gas is a helpful substitute that a lot of South African households have moved to and the affordability of LPG means even the poorer households can make use of it. However, when proper precautions have not been taken, accidents are prone to happen.

### GAS EQUIPMENT

Consumers are advised only to purchase appliances that have a Permit Verification Number displayed on it. The LPG Safety Association of South Africa (LPGSASA) and the South African Gas Association (SAGA) jointly established the Safe Appliance Scheme (SAS) and the Safe Gas Equipment Scheme (SGES) to ensure that all appliances and equipment installed in South Africa have been tested and are in compliance with an internationally or nationally acceptable standard that is safe and fit for intended use. Any equipment that has not been manufactured according to that standard can be a health hazard. Only equipment that has been awarded a Safe Appliance or Equipment Verification Permit must be used.

### EQUIPMENT INSTALLATION

Before an LPG appliance can be used, it has to be installed properly. Consumers should never attempt to install LPG appliances themselves. Amateur installations have caused numerous accidents, such as gas leakages which can be hazardous and fires. South African law dictates that only a registered gas practitioner may install gas appliances or equipment.

A comprehensive list of registered installers is available on [www.saqccgas.co.za](http://www.saqccgas.co.za).

Winter is the peak season for gas consumption.

As a result, many fires occur during the winter months.

Safety precautions when using gas heaters:

- Always read and follow the manufacturer's guidelines carefully.
- Always turn your heater off at the cylinder valve before going to bed or leaving the room or your property - in fact, any time when the heater is not in use.

- Ensure all the components of your unit are well maintained e.g. heater, regulator, hose and hose connections.
- When changing the cylinder, first close the cylinder valve and then remove the regulator.
- Always check that the rubber "O-ring" (washer) at the end of the regulator is not worn, brittle or damaged in any way.

Replace if it is.

- Test any gas appliance or heater for possible leaks by spraying a soap-water solution on all connections. Leaks will show in the form of bubbles.  
In the case of leaks, appliance must be repaired or replaced.
- Do not use aerosols, flammable cleaning liquids or sprays close to the heater.
- Avoid sitting or standing too close to your heater - a safe distance is approximately one metre.
- Always ensure that the room in use is ventilated so that there is a continuous supply of fresh air (oxygen).
- Ensure that your heater is positioned away from any flammable materials and is not blocking any escape route.
- Never place clothes or other items on or near your heater.
- Do not move your unit while it is in use.
- Educate children on the safe use of gas appliances and never leave them without supervision in a room where an appliance is located.
- If you suspect a gas leak, turn off the gas cylinder immediately and, if possible, take the heater outside.
- Only use LP gas appliances that are permitted to be sold in South Africa. A complete list is available on [www.lpgas.co.za](http://www.lpgas.co.za). Click on the 'Safety' button and then on 'Find a Safe Appliance'.
- Have your heater serviced regularly.



## Hot tapping and linestop technical specification

Hot tapping is a means by which access is made to the inside of an operational pipeline. Using either a drill or a circular cutter, it is the process of drilling a hole in an on-stream operational piping system without spilling its contents or interrupting its flow.

A hot tap is performed when it is not feasible or impractical to take piping or equipment out of service.

Hot tap applications include:

- Attachment of a branch connection to the line.
- Installation of an internal probe or monitor.
- Stopping or redirecting flow in a line for maintenance or repair purposes.
- Positioning a branch fitting on an operating pressurised line, flowing or stagnant. Followed by cutting a hole in the header through the branch to allow connection to the flowing media. Normally implies using a welded fitting.
- Can also be applied as a repair method to remove defects, i.e. dents.

### HOT WORK

Hot tapping is classified as hot work, an operation that can produce heat from flames, sparks or other sources of ignition with sufficient energy to ignite flammable vapours, gases, or dusts.

Hot work includes electric arc and gas welding, chipping, flaming, grinding, cutting, abrasive blasting, brazing and soldering.

Special procedures and permits are required when hot work is to be performed in certain areas.

Due to the process of hot tapping being potentially harmful, it may only be performed by a competent and qualified person i.e.:

- One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has the authorisation to

take prompt preventative and corrective measures to eliminate them.

- A person found competent by the employer, by way of his expertise gained through training in the procedure to execute a hot tap, who by extensive knowledge, training and experience has successfully demonstrated the ability to solve problems relating to hot tapping subject matter. It is the responsibility of the employer to ensure that their employees have the skills and knowledge to perform their tasks safely.

### OBTAINING CLEARANCE FOR DOING A HOT TAP

- The hydro test shall be witnessed and signed off by the AIA.
- Before signing off the Certificate of Compliance (COC), the contractor and client shall do a visual inspection of the hot tap stub and all associated attachments, such as studs, nuts, gaskets, new piping, blind flanges etc. to ensure that it conforms to all the requirements.
- A defects list shall be compiled and all defects shall be rectified before the COC may be issued.
- The COC shall be signed off before a hot tap may be done.

### THE CERTIFICATE OF COMPLIANCE

The certificate of compliance proves:

a. A proper review to confirm that a hot tap is required.

b. Development and conformance to job-specific procedures. With the aim of making a hot tap connection safely without interference with process operations or spilling the contents of the pipe or equipment.

The scope of hot tapping involves the attachment of welded branch fittings to piping or equipment in service, followed by creating an opening in the piping by means of drilling or cutting inside the attached fitting, without upsetting the process or spillage of the content.

## HOT TAP FITTINGS

Hot tap fittings are either bolted or welded to the existing header pipelines.

A tapping/drilling machine is attached to the valve, which is attached to the hot tap fitting.

A cutter, attached to the tapping machine is inserted into the hot tap fitting through the valve to make the tap. In the case of a permanent valve, a branch connection can be made, allowing flow through the outlet.

## SELECTION OF HOT TAP FITTINGS

For reduced-branch taps, weldneck flanges on a weld-o-let can be used, but the size of the branch must not exceed 50% of the header diameter, to ensure that the remaining strength is not compromised. It also compensates for the material that is cut out of the header and provides strength to support the hot tap valve and hot tap machine.

Where the branch exceeds 50% of the header diameter, hot tap fittings are full-branch or reduced-branch split tees, designed for use with tapping machines.

Where unlisted material under ASME is used to manufacture a hot tap fitting, or where listed ASME material is modified, there shall be an Approved Mechanical Design in accordance with the applicable ASME code, signed off by an engineer and AIA.

For South African Legislative Compliance, Pressure Equipment Regulations under the OHSact of 19993, as well as SANS347 shall comply. The design must be signed off by a registered professional engineer.

CST29 (Pty) Ltd has been performing hot tapping and linstopping in the petrochemical industry, particularly at Sasol since 2004, for the replacement, abandonment, additions and modifications of pipe work from 1/2" up to 60" diameter without the need for shutdowns or interruptions to consumers or critical services

The option to adequately perform abandonment, additions and modifications of pipe work without the need for shutdowns or interruptions to consumers or critical services is a more efficient way of altering pipe work today.

# Natural gas fired boiler installed in SAB plant



The South African Breweries (SAB) between 2012 and 2013 commenced a programme aimed to reduce its carbon foot and emission by ceasing the use of coal fired boilers.

They substituted their coal fired boilers by installing two new natural gas fired boilers and converting two coal fired boilers to natural gas with energy savings of 13-32%.

## WHY NATURAL GAS?

Natural gas is one of the least contaminated fuels used for boiler operation. It does not generate any dirty emission or cause any unpleasant odours when burning. It is an eco-friendly alternative.

Natural gas is steady and reliable, supply is seldom disturbed even when demand is high such as electricity, or oil where supplies can be depleted.

Natural gas is a convenient fuel for boiler purposes, it needs no storage tank on the premises for reserve gas supplies.

Natural gas is not only friendly to the atmosphere, it is also economically friendly. It is one of the least expensive fuels available - alternative fuels such as oil are subject to market fluctuations. This contributes to the overall economic nature of gas fired boilers.

SAB installed a twin furnace boiler plant which is ideally suited for large applications. This range can be equipped with super-heaters to produce very high quality energy.

The boiler was supplied by Combustion Technology and the Burners by

Limpsfield Combustion Engineering, an industrial burner manufacturer supplying bespoke high efficiency burners for a range of applications, varying from industrial to water tube boilers, commercial fire tube boilers to ovens and furnaces.

## BENEFITS OF INSTALLING A NATURAL GAS FUELLED BOILER

The brewery has improved from 175-154 MJ/HI to 105-99 MJ/HI - approximately 32% with an increase in boiler efficiency by approximately 13%. Sub 3% O<sub>2</sub> levels through the complete firing range and CO less than 10ppm with significant reduction in maintenance costs.

Additional benefits:

- Consistently meets air quality regulations.
- Quieter boiler house.
- New plant provides quick reaction to plant load and allows for easy maintenance.
- Much cleaner boiler house and happy people.

The installation of a natural gas boiler has proven to be a more energy efficient, cost effective and eco-friendlier alternative for the South African Breweries plant.

