

Air Liquide's Specialty Gas offering

Tailored to precise needs at dependable quality

African Fusion speaks to Andisha Ross and Thulare Kodisang about Air Liquide's capability to manufacture high purity customised specialty gases (SG) for complex and niche markets as well as industrial processes. Air Liquide is also launching the ALPHAGAZ™ brand coupled with its innovative valve called SMARTOP™.

Air Liquide's state-of-the-art SG blending plant, based in Alrode, is set up to deliver exceptionally high purity gases and specialty gas mixtures, begins Andisha Ross Specialty Gas Business Unit Manager at Air Liquide.

In addition, she reveals, the KZN region has been selected to launch the ALPHAGAZ™ brand into South Africa, which will be available with SMARTOP™, an ergonomic gas cylinder valve innovation developed for laboratory and analysis of pure gases that has become very successful in other parts of the world.

"Our specialty gases are used in various sectors such as refineries, power generation, cement plants, universities and laboratories and are used for applications where customers require high purity and very low impurities in the gases they use," continues Ross.

"Our SG plant has the high-precision blending and analytical capability to create exact mixtures to customer specifications. Our facility has the qualified personnel, a variety of high specification raw materials – sourced from both local and international suppliers – and highly sensitive measuring and control equipment to meet these

very niche customised gas needs, which we manufacture to globally benchmarked standards," she tells *African Fusion*.

Air Liquide's SG plant provides the highest safety standards while delivering premium quality gases at much lower operating costs with excellent lead times, Ross adds. The plant is a key tool and innovation to gain market share, enlarge Air Liquide's offer and build a leadership position in emerging and mature countries. In emerging countries, by producing Specialty Gases mixtures locally at competitive costs and shorter lead times, Air Liquide will capture the high growth and demand for these products and markets. The technology within the SG plant is the result of the experience shared by Air Liquide International Group Experts and know-how. Similar blending plants have been deployed in other parts of the world such as the UK, China, Middle East and North Africa.

Air Liquide's SG plants have been designed using a modular approach, with all of the high-tech preparation, filling, admin and laboratory facilities installed inside 20 and 40 ft ISO-containers. This highly flexible and modern approach minimises the infrastructure required and the facility costs – an



Andisha Ross and Thulare Kodisang.

approach ideal for localisation initiatives.

Key innovations of the plant include: Purifiers for producing Alphagaz 2 inert gases (such as, Ar, He and N₂) from industrial grade raw materials, Gravimetric equipment for producing mixtures to within 100 ppm without the need for using primary mixture cylinders and automated mixture production equipment. Furthermore, this plant abates all of the highly toxic gases such as SO₂, H₂S or NO, thereby providing zero toxic gas emissions.

Air Liquide R&D teams worked with major analytical manufacturers to determine the recommended gas purity for their instrumentation. "Our findings indicated that two basic ranges for gas purity (ALPHAGAZ 1; and ALPHAGAZ 2) ensure optimal performance in most applications.

ALPHAGAZ™ – ALPHAGAZ 1; ALPHAGAZ 2 and ALPHAGAZ Mix – Air Liquide's premium brand of specialty gases for laboratory and analytical applications, will be launched into the South African market starting in KZN in the third quarter of this year. "As a worldwide leader with over 30 years of experience in this field, we have made it our business to understand how our customers use high purity gases and mixtures. This has allowed us to continuously innovate in our field of expertise," says Thulare Kodisang, Specialty Gases Sales and Marketing Manager for Air Liquide in South Africa.

"While we offer undisputable accuracy and traceability, we do it with a complete, yet simple, range of the most commonly requested pure gases and mixtures. Our customer service teams are easy-to-access and totally engaged, ready to support customers, from assessing the right product to eventual utilisation in the laboratory," he adds.

"ALPHAGAZ 1, for the accuracy of analy-

sis ranging from % to ppm, covers pure gases that meet or exceed the purity recommendations of most laboratory instrument manufacturers, making them the choice for all-around laboratory use," he says, adding that these are generally 99.999% pure, that is with less than 10 ppm of total contaminants.

"ALPHAGAZ 2, for the high accuracy of analysis, ranging from ppm to low ppb, are pure gases for high accuracy analysis and these have the lowest impurity levels available in the industry, making them the best choice for laboratory, analytical and process control applications where uncompromised ultra-high purity is needed," Kodisang says adding that these gases are generally 99.9999% pure.

The ALPHAGAZ™ Mix range can be mixed to order, depending on the analytical accuracy and blend tolerance required. "This combination offers ultimate flexibility. ALPHAGAZ™ Mix products feature high purity instrumentation and calibration gas mixtures and are defined as products combining 2 to 40 components with accuracies ranging from % to ppb levels, covering a very wide range of needs, including research and engine testing, as well as environmental and refinery applications," he tells *African Fusion*. Air Liquide is capable of certifying gas mixtures to ISO 17025 and FSSC 22000 standards, as well as being able to source mixtures that comply with metrological traceability and EPA Protocols.

The release of the ALPHAGAZ™ range in South Africa will also benefit from Air Liquide's SMARTOP™ valve, which has the following features: easy opening with an ON/OFF lever; a permanent pressure gauge that allows gas content to be easily checked, even when the cylinder is closed; immediate gas cut-off; a residual pressure valve, which prevents back-flow contamination and permanent and ergonomic protection for the valve.

"SMARTOP™ will be available with ALPHAGAZ™ branded specialty gases and it works perfectly with all single and two-stage gas pressure regulators from Air Liquide," notes Kodisang.

"In addition, the Specialty Gases facility produces welding shielding gases as well as resonator and assist gases for laser cutting. The facility has the capability to produce custom made gases that comply to EN14175 and AWS A5.32 specifications. The one to two percent nitrogen in argon gas, for example, is mixed at the SG plant and used for GTAW of duplex stainless steels," explains Kodisang.

The demand for laser cutting gases is



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steadily growing, he continues, and Air Liquide offers the associated lasing/resonator gases and assist gases. "The different OEMs for CO₂ laser processing equipment, such as Trumpf, Amada and Bystronic, recommend different lasing gas mixtures, which are in general three-part mixes of nitrogen (LASAL 1), carbon dioxide (LASAL 2) and helium (LASAL 4) with varying concentration percentages. The resonator gas mixture can be supplied at the point of use either from individual LASAL cylinders of each of the aforementioned high purity gases, or this can be a pre-mixed cylinder blending the three gases that are supplied through our LASAL Mix range," Kodisang explains.

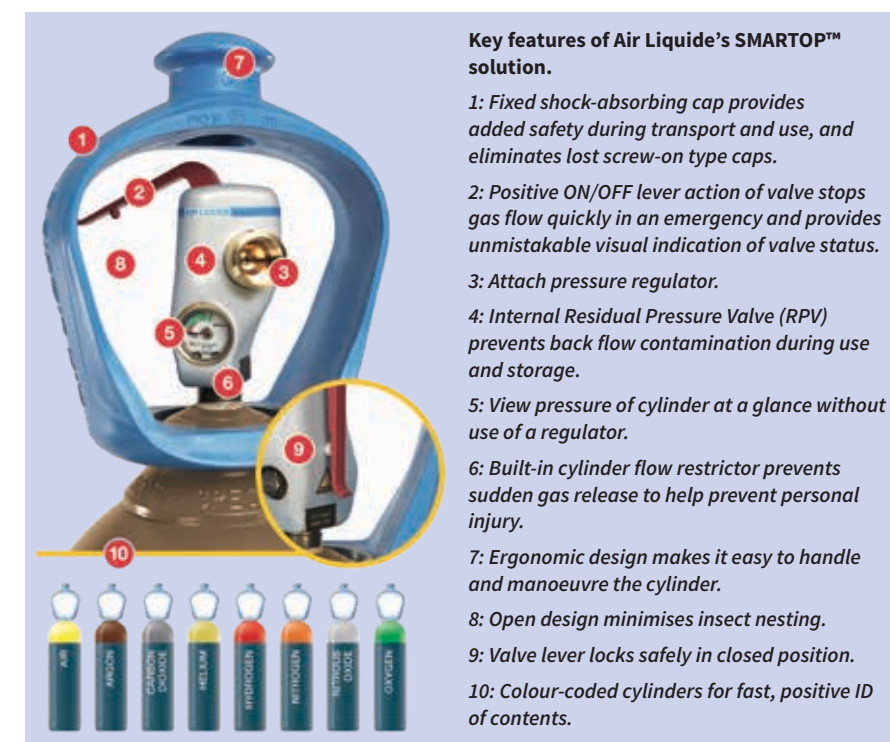
Laser cutting also requires the use of a process assist gas. "For carbon steel materials, high purity oxygen LASAL 3 is generally used at relatively lower pressures and flow rates, because it combusts the kerf area and makes the dross easy to blow clear. For stainless steel and exotic materials, however, nitrogen LASAL 1 is preferred. It is inert and requires higher pressures and flow rates to flush the dross from the kerf area," he explains.

"We strive to supply exactly what customers in varying industries need, but we also believe in simplifying the choices and keeping costs down," Kodisang concludes.

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Key features of Air Liquide's SMARTOP™ solution.

- 1: Fixed shock-absorbing cap provides added safety during transport and use, and eliminates lost screw-on type caps.
- 2: Positive ON/OFF lever action of valve stops gas flow quickly in an emergency and provides unmistakable visual indication of valve status.
- 3: Attach pressure regulator.
- 4: Internal Residual Pressure Valve (RPV) prevents back flow contamination during use and storage.
- 5: View pressure of cylinder at a glance without use of a regulator.
- 6: Built-in cylinder flow restrictor prevents sudden gas release to help prevent personal injury.
- 7: Ergonomic design makes it easy to handle and manoeuvre the cylinder.
- 8: Open design minimises insect nesting.
- 9: Valve lever locks safely in closed position.
- 10: Colour-coded cylinders for fast, positive ID of contents.