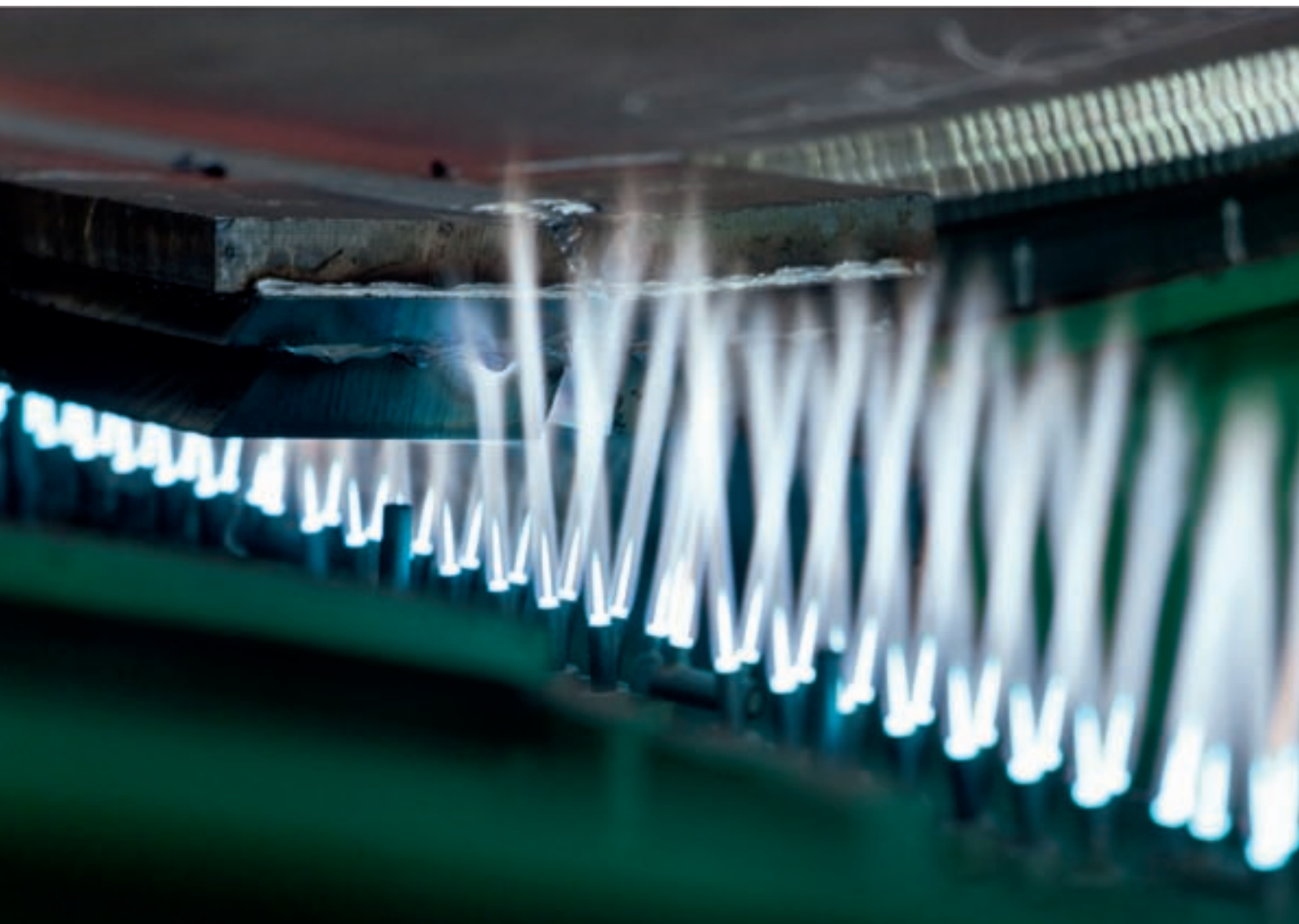


Pre-heating and post-heating

The ideal treatment for high-strength materials



Increased component performance

With pre-heating and post-heating solutions from BOC

The use of high-tensile steels is becoming ever more important as they provide increased component performance at reduced weight and cost. However, these materials require special treatment during cutting and welding in order to maintain their material integrity.

Pre- and post-heating help to avoid defects such as cracking. These techniques are recommended – and indeed specified – by many standards and codes of practice. Pre-heating is usually applied immediately prior to cutting while both pre- and post-heating are used in welding.

Pre-heating is also used when working with thicker sections. In cutting, for instance, pre-heating provides additional energy, allowing thicker sections to be cut with better quality.

Successful pre-heating is achieved through precise temperature control and uniform heat distribution across the thickness of the material. The temperature depends on the type and thickness of the material, and the subsequent process. Correct measurement is essential and requires special care.

However, with the wrong gas, equipment or set-up, valuable time and money is wasted. It is therefore important to have an experienced and reliable partner who can provide a comprehensive range of products, best-in-class technology and full support from beginning to end.

The complete package

Our full service offer

If your work requires pre- or post-heating, BOC will provide you with a solution that suits your individual specifications.

Furthermore, you can benefit from our wide range of services, partnering with you from design through to implementation. Our pre- and post-heating solutions are part of the extensive LINDOFLAMM® technology programme. We can offer you anything from manual to fully automated systems, meeting both your cost and performance needs.



At a glance

Process solutions

- Gas solutions
- Burner technology
- Automation systems
- Temperature measurement
- Complete design service
- Integration management

Quality and safety services

- Optimisation of burner setup
- Burner maintenance
- Safety audits
- Safety training
- Installation and inspection services
- Dedicated support

Supply solutions

- Supply reliability
- High-quality equipment and installation
- Next day and emergency delivery
- A variety of gas supply modes

Process expertise

- Applications training
- Assistance with customer R&D
- Process consulting
- Developing new technologies

Bespoke solutions

Our programme for high-strength materials

Gas solutions

Pre-heating systems (both gas and equipment) must be tailored to the individual application.

Acetylene is the fuel gas for LINDOFLAMM® solutions because it offers many advantages for pre-heating:

- Highest possible oxyfuel temperature
- Fastest heat transfer
- Maximum flexibility – oxygen source can be adjusted to achieve different flame temperatures
- Precise heat distribution
- Low moisture production – no hydrogen cracking
- Reduced oxygen consumption – air (compressed or aspirated) can be used for most pre-heating applications

Burners

LINDOFLAMM® burners are customised for each application. This ensures an optimal set-up, minimising gas consumption, while still achieving superior heating performance. For some applications, it is possible to heat in line with the cutting or welding operation. In these cases, the system is designed to heat the work piece to the desired temperature at a speed matched to that of the corresponding process.

Different levels of automation are available, ranging from mechanised torches with standard gas control equipment to fully automated torch systems with work piece temperature control and automated ignition. The appropriate level of automation depends on your application and requirements.



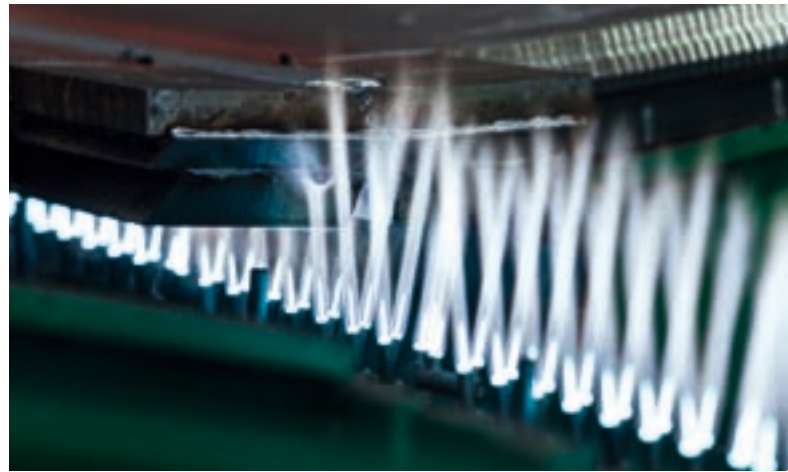


Customer case study: Pre-heating of special pipes prior to SAW welding

		LPG	Natural gas	Acetylene
Processing duration	min	75	75	30
Fuel gas demand	m ³ /h	9.2	19.4	6.7
Compressed air demand	m ³ /h	-	-	46.9
Total fuel gas consumption	m ³	11.50	24.25	3.36
Total compressed air consumption	m ³	0 (aspirated air)	0 (aspirated air)	23.46
Total gas cost reduction	%	-	60	32
Workplace cost reduction	%	-	0	60
Total cost reduction	%	-	7.54	32
Specifications		Material: S 690, diameter: 3.5 m, thickness: up to 55 mm, length: up to 90 m; rotation speed: 1 m/min; preheating temperature: 150 °C		

Getting it right

Precise temperature measurement



The measurement of the actual pre-heating temperature immediately prior to cutting or welding can be problematic and requires a great deal of care by the operator. BOC offers a number of solutions to optimise temperature measurement including: temperature-sensitive crayons and paints; mechanical contact thermometers; thermocouple elements; and infrared pyrometers. Apart from the crayons and paints, all these devices allow the user to document the measured temperatures for quality control purposes. LINDOFLAMM® control systems can be integrated with temperature measurement devices to automate temperature control.

Total support

From start to finish

Working with BOC, you benefit from the process excellence, experience and commitment of our highly qualified experts. Whatever your application, our engineers will work closely with you to design a solution that meets your performance and cost needs, and will support you in every phase of a project. Finally the optimal set-up is ensured through correct nozzle selection as well as stand-off and flame adjustment, resulting in a uniform and rapid heat transfer.

If you currently use pre-heating or are considering it for future production, please get in touch with our experts. They will demonstrate to you how LINDOFLAMM® can help you improve productivity and quality while reducing costs.



BOC – turning ideas into solutions

BOC is a member of The Linde Group, the leading global gases and engineering company. BOC is the UK's largest provider of industrial, specialist and medical gases, as well as related products and services. As a leader in the application of technology, we are constantly looking for new ways to provide our customers with high quality products and innovative solutions.

At BOC we help our customers to create added value, clearly discernible competitive advantage and hence greater profitability. To achieve this we have a comprehensive range of products and services, and technical support which can be customised to meet the individual requirements of our clients.

To keep ahead of the competition in today's market, you need a partner for whom quality, service, process and productivity optimisation are an integral part of customer support. We are there for you and with you, helping to build your success.

BOC's reputation has been forged through partnerships – with customers, with relevant regulatory authorities and with key suppliers. In this way, we deliver comprehensive and consistent benefits to you.

BOC – world-leading knowledge and resources adapted to local requirements.

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