Glaverbel Czech

Our work together

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Pavel Sedlbauer, Production Manager, Glaverbel Czech.
In just ten years, the Czech subsidiary of Belgian glassmaker Glaverbel has turned itself from a lumbering model of inefficiency into a modern and highly competitive producer of float and automotive glass. One of the keys to this transformation has been Glaverbel’s partnership with Air Products.

In 1991 the state-owned glass company in former Czechoslovakia was typical of much east European industry at the time: over-staffed and under-funded. The company’s three manufacturing plants near Teplice, in what is now the north of the Czech Republic, employed around 7,000 people to produce glass of rather poor quality, says Pavel Šedlbauer, the group’s Production Manager.

As a subsidiary of the Belgian Glaverbel group, which itself belongs to Japan’s Asahi Glass, the company now runs four plants (including glass manufacturing and fabrication) with just 1,500 employees. Turnover has tripled, giving Glaverbel Czech a capacity of 1,300 tonnes/day from its two float glass lines. Quality is much better too, allowing the company to break into the highly competitive automotive market. Glaverbel Czech is a leading supplier to the Volkswagen-Škoda group.

Essential to these improvements in both quality and capacity has been Glaverbel Czech’s relationship with industrial gas supplier Air Products. The partnership, which began in 1994, encompasses the supply of nitrogen, hydrogen, compressed air, oxygen and other gases, as well as technology and know-how.

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Oxy-fuel: careful planning brings results

In 1998, with the guidance of Air Products, Glaverbel Czech began trials with oxygen to increase furnace pull, improve glass quality and reduce natural gas consumption. Since the original float glass line using Pilkington technology was installed at Retenice in 1969, expectations of glass quality have continued to improve — and defect-free float glass demands high-quality nitrogen and hydrogen for the protective atmosphere above the tin bath. In keeping with their new philosophy of outsourcing wherever possible, in 1994 the management team prepared to shut down the existing on-site gas facilities and looked around for an independent gas supplier.

Of the companies they approached, Air Products had the most comprehensive offering, says Pavel Sedlbauer. The first contracts for nitrogen and compressed air were signed in 1995. The following year Air Products installed a new cryogenic air separation plant next to the production line at Retenice, and in 1997 Glaverbel Czech signed a new longer-term contract for nitrogen and hydrogen.

The new air separation plant provides 3,200 m³/h of nitrogen. During periods of low demand, excess nitrogen is stored on site as liquid nitrogen, which can then be vapourised to meet peak requirements. The gas quality is excellent,” says Petr Mazolini, plant manager at Retenice. “For instance, our nitrogen contract says that the oxygen concentration must be less than 10 ppm — but most of the time it’s down in the range 0.1 – 0.5 ppm.”

The existing compressed-air system was in good condition, so Air Products was able to take this over on an operations contract, freeing Glaverbel Czech from the responsibility of looking after a big capital investment. The compressed air — 10,000 m³/h of it — supplies the air separation plant, operates lifting equipment, and is also used in pneumatic conveying systems handling soda ash, fluor spar and other raw materials that arrive by rail. Hydrogen is brought in by tanker and stored in high capacity tanks, replacing the old electrolysis plant that used to supply Retenice. Other gases supplied by Air Products in smaller quantities include argon and sulphur hexafluoride for double glazing.

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"The transformation of energy to useful work is very efficient and it has increased the output of the furnace by 5–7% and the bottleneck has shifted to the glass forming equipment. And the melting stability is much improved.”

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The pace of change has been rapid, and it says a lot for Czech flexibility that both managers and workers were able to adapt to the new way of working, says Pavel Šedlbauer, Václav Harant, Air Products General Manager Czech and Slovak Republics. "It’s an easy way to work, and everyone is happy.”

"The staff at Glaverbel Czech are some of the most innovative and dynamic people I have met within the Glaverbel group,” he says.

Good gas for good glass

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On Line 2 at Retenice, which produces clear glass, the use of oxygen in the most sensitive furnace zones has produced significant benefits, according to Petr Mazzolini. "Previously, on Line 2 was limited by the melt rate of the furnace,” he says. "Oxygen has increased the furnace pull by 5–7% and the bottleneck has shifted to the glass forming equipment. And the melting stability is much improved.”

On Line 1 the benefits of oxygen combustion are less clear, because this line is used to make coloured glass and its throughput is limited as much by the changeover time between campaigns as by furnace capacity. Without oxygen, changing from one colour to another required up to four days. "Oxygen has definitely reduced this time, though we are not yet sure by how much,” says Petr Mazzolini.

Air Products has been supplying oxy-fuel technology to the glass industry since the mid-1970s, and its Cleanfire® burner has been a recognised leader since its introduction in 1991. By increasing the proportion of radiation emitted in the visible and near-infrared parts of the spectrum, the Cleanfire® burner is ideal for boosting purposes and transmits more energy deeper into the melt than is possible with conventional oxy-fuel burners. Air Products’ Cleanfire® HR™ burners are also available, and with their high radiation and flat flame shape, are much more suited to full oxy-fuel furnace conversions where no air-fuel burners are used.

Air Products has always emphasised the importance of technical expertise and long-term relationships with its customers. "The average length of our gas supply contracts is 15 years, so the relationship between Glaverbel Czech..."
and Air Products is a real ‘marriage’,” says Václav Harant. More recently, Air Products has been strengthening customer relationships even further through its MEGASYS® gas service offering.

Originally developed for the semiconductor industry, MEGASYS® transfers responsibility for gas management from the customer to Air Products. For both on-site generation and tanker or cylinder deliveries, Air Products assures gas availability and quality, as well as technical service levels—typically including a permanent Air Products staff presence on the customer’s site.

“Back in 1994, the idea that Air Products could offer Glaverbel Czech global solutions for glass technology as well as gas supply was a new one to them, but within six months they had embraced the idea of a partnership with us and were very open to the new technology.”

Václav Harant, General Manager, Air Products, Czech and Slovak Republics.

Now Air Products is expanding the MEGASYS® concept to cover the glass industry. “We want to take on more responsibility for gas supplies and equipment, and to have Air Products people closer to the melting process,” says Václav Harant. “Currently we have one person full-time on the Retenice site, and we are talking to Glaverbel Czech about increasing the number to three.”

“As plant manager, I’m very pleased with the way the partnership has worked out,” says Petr Mazzolini. “Our collaboration has developed step-by-step each year, and the co-operation at management level has been excellent. I’m sure we made the right choice with Air Products.”
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