

A global player in the polymer technology sector decentralises its compressed air station

Client-tailored energy

A mid-sized town at the southern tip of Sweden, Trelleborg is the departure point for ferries heading across the Baltic Sea to Germany and Poland. It also happens to be the home of a huge multi-national company bearing the same name: the Trelleborg Group. Originally founded in 1905 as the Rubber Factory Corporation of Trelleborg, the company has expanded and diversified over the years, transforming itself into a global player in the polymer technology sector.

Trelleborg AB – based in Trelleborg, Sweden – is the world's leading supplier of engineered polymer solutions used to seal, damp and protect critical applications in demanding environments. What started out as a small rubber manufacturer is now a global giant that employs 24,000 people in 51 countries, and counts amongst its products damping systems, sealing systems and vehicle tyres.

Anatomy of an economic miracle

Visit the Trelleborg works and you will be

able to sense the company's 100-year history all around you. The current headquarters of the Trelleborg Group stands proud amidst a sea of factory buildings dating from the 1950s, a decade that saw the company expand rapidly. Whilst fascinating to see the site's long heritage reflected in the buildings themselves, it was clear that the infrastructure here no longer met the energy requirements of a modern industrial powerhouse.

Lars-Göran Larsson is in charge of Trelleborg's Energy Excellence Programme. His

brief? To optimise energy consumption – not just in Sweden, but worldwide. Amongst many other aspects, one of his team's tasks was to address issues regarding the company's ageing compressed air station. Here, even the smaller of the two existing compressors was producing three times more air than was required by the entire plant. The consequent unnecessary energy costs were therefore bad enough, but even worse was the contract with an independent steam power plant (housed in one of Trelleborg's buildings), which demanded



efficiency



round-the-clock compressed air availability, even at times when Trelleborg's three on-site production areas were not operating.

Priority no. 1: Energy efficiency

In consultation with Trelleborg's onsite Managing Director Ronny Perdegård, Larsson and his team began developing their action plan at the beginning of 2018. The goal was to decentralise compressed air production and to install individual water-cooled compressors in each production area. Moreover, in order to avoid 24/7 operation, an additional compressor system would be provided for the steam power plant, whose compressed air needs could then be taken care of separately from the other production areas. Moving forward, they also wanted to recover the heat energy from the compressors for space heating purposes and thereby benefit from signifi-

cant heating cost savings.

In order to ensure essential redundancy and to accommodate potential emergency situations, the pipework from the original centralised design was retained and can be used, for example, when performing service work. Compressed air can therefore be diverted from one of the other decentralised stations to cover the compressed air demand of the system that is currently being serviced.

Perfect timing

To help transform this concept into reality, the Trelleborg team turned to the experts at KAESER KOMPRESSORER AB in Täby, who conducted a comprehensive air flow

Lars-Göran Larsson discusses compressor maintenance with Managing Director Ronny Perdegård.

Trelleborg is both the name and the location of this Swedish multi-national company.



Photo: Trelleborg Sealing Solutions

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Lars-Göran Larsson
discusses compressor maintenance with KAESER engineer Bengt Fristorp

and pressure analysis in order to determine the ideal compressor configuration. As well as meeting all of the specified technical requirements, the compressors needed to be of a similar size and design to make servicing and maintenance as easy as possible. "KAESER's measurement and con-

fluid-cooled CSD 105 T SFC rotary screw compressors – one for each production area – with variable speed control and a modular add-on dryer to help save space. In addition, a BSD 65 T rotary screw compressor featuring an add-on dryer was chosen for the Mixing area, whilst an ASD 50

Significant energy savings

By December 2018, all five compressors were installed and operating as planned. Two months later, KAESER's technicians returned to perform a KESS (Kaeser Energy Saving System) analysis. The results were nothing short of astounding: Trelle-

KAESER's measurement and configuration expertise was very impressive.

figuration expertise was very impressive", beams Lars-Göran Larsson. "As a result, we were able to identify which machines with precisely the right capacity margins were perfectly suited to meet our needs." The decision was made to go with three energy-saving,

T SFC with variable speed control and an add-on dryer was provided for the steam power plant. These new units were all delivered in October 2018, which turned out to be perfect timing, as one of the old compressors coincidentally decided to give up the ghost at exactly the same time!

borg was saving an incredible 280,000 kWh/year compared to the previous year's energy consumption figures. That equates to a CO₂ reduction of 168 tonnes and an improvement in energy efficiency of 1.52 kW for every cubic metre of compressed air produced. Furthermore, 90% of the heat energy from the cooling water, which exits the compressors at a temperature of 70°C, is now being recovered and helps boost efficiency of the plant's heat pump. Larsson sums up his thoughts with evident satisfaction: "These are results that we can build upon and further develop."