Minimising energy consumption at Porsche's Zuffenhausen plant

No Air, No Porsche

The products of Porsche AG not only speak for themselves; they more or less sell themselves, too. This, coupled with the productivity of the employees, has turned Porsche into one of the most profitable companies in Germany. To maintain this desirable state, the production resources have to be 'right'.

One of these, compressed air, indispensable in the automotive industry, has to be of exemplary reliability and efficiency, which is why the European Union's 'SAVE II' study on the power consumption of compressors installed in industry found attentive readers in Zuffenhausen, Stuttgart.
SAVE II discusses ways of saving up to 30 per cent of the costs of supplying compressed air through system optimisation. This goal cannot be attained, however, by implementing quick measures such as are promised by some less serious air product suppliers. It can only be achieved with a specific system solution designed and agreed upon by experienced professionals.

The road to lower air costs

When Porsche decided to renew the compressed air system in its No. 2 works a few years ago, KAESER's project engineers found a well-serviced and maintained installation consisting of a water-cooled rotary screw compressor delivering 22.2 m³/min and four water-cooled reciprocating compressors with a delivery of 15 m³/min each. The maximum working pressure was 8.7 bar. Kaeser's specialists made a ten-day analysis of the air demand (ADA) and recorded consumption fluctuating between 15 and 65 m³/min. The data collected served as the basis for the proposed optimisation of the air system during discussions with members of the Porsche production resources department. With the help of the KAESER Energy Saving Service (KESS), a concept for a new energy-optimised air system emerged, which was implemented in two stages. The new system uses air-cooled rotary screw compressors from KAESER. Three BS 61 machines (5.62 m³/min) run in Dual mode to cover peak loads while four DSD 171 compressors (with 16.4 m³/min each) run in Quadro mode to cover the base load. The seven compressors are under the master control of a VESIS load monitoring air manager.

Well-maintained, but not the last word in compressed air supply plant

Significant savings:

The optimisation of the compressed air system has brought about significant savings. Because of the higher utilisation of the compressors with fewer cost-intensive idling phases, and the lowering of maximum system pressure from 8.7 to 7.5 bar, the overall specific power requirement of the air system sank from 8.19 to 6.19 kW/m³/min. This corresponds to an annual saving of 483,000 kW. Added to these savings are cooling water costs of almost € 55,000 per year. All in all, the optimisation of the air system was a highly rewarding operation. So rewarding, by the way, that in all of Porsche's production plants KAESER's optimised compressed air systems are now helping to keep the productivity and profitability of the sports car manufacturer at a high level.

The new air supply system in the Zuffenhausen works...

...is under the careful control of a VESIS air manager

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