



Flexible Planning Lowers Costs

The motto that guided Hilti during the successful refurbish of the compressed air system at its Kaufering plant, near Munich, was "Sensible Modernization"

Professional builders hold Hilti products in great esteem. They range from diamond drill and cutting equipment through direct fixing systems and special wall-plugs to fire protection products, installation, woodworking and laser-positioning systems. Hilti was founded in 1941 as a family concern and is now active in over 120 countries. Around two-thirds of the over 13,000 employees are directly involved with the customer in sales, engineering and service. They operate their own research and development centres and production facilities in Europe, America and Asia, and in 1999 their worldwide sales volume totalled 1,843 million euros.

The customer and quality - two inseparable commitments

According to Hilti, their key strengths are "outstanding innovation, highest quality, direct

Kaufering is the production centre and headquarters of Hilti Deutschland GmbH

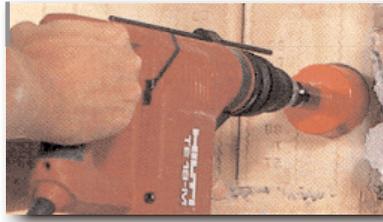
customer relations and modern marketing". In Germany, Hilti's direct sales force comprises approximately 600 consultants, over 100 "Hilti Centres" and a central customer service organization. Their quality system is certified to the highest verification class of the ISO 9001 norm. The headquarters of Hilti Deutschland GmbH are located in Kaufering, in the production facility founded in 1971. Production there includes composite wall plugs, drills and drives.

An air system that just grew

Kaufering has multiple uses for compressed air such as control,

conveying and drying processes. Typical applications are assembly lines for combination hammers, the production line for hammer drills and the composite wall-plug production line. The air demand fluctuates between 11 and 21 m³/min according to working shift. The compressed air system grew in line with expansion of facilities and finally ended with three compressor installations working in parallel. Two of these installations were directly next to each other and the third was located over two kilometers away in the production shop. This air system "grew with time" and worked without a master sequencer. The proportional





control and cascade switching system that was used instead was one of the culprits causing high power consumption, which finally resulted in Hilti's decision to modernize the factory's air supplies.

The goal – lasting cost reduction

The objective was an air concept for the complete works that reduced power costs and rising maintenance and repair costs permanently. The existing infrastructure was to be born in mind and continuity of compressed air supply guaranteed. Several concepts were compared and KAESER was awarded the contract. The first stage in completion of the project was an inventory. In the first installation there were four compressors with FAD's between 2.6 and 4.8 m³/min and in the second one with 12 m³/min. The third installation, which was separate, contained one 7 and one 20 m³/min compressor. A computer-aided analysis of the facility's compressed air consumption (ADA) provided a detailed evaluation of air demand and the running characteristics of each compressor. Various machine configurations and the respective relationship of operating expenditure to achievable cost savings were simulated and evaluated on the basis of the data available.

Hilti offers a comprehensive range of drill, hammer and fixing systems

A tailored concept

The calculations showed that the most cost-effective solution was a combination of the 12 m³/min single compressor in the second installation with the four in the first. Because of the acceptable capacity grading and the good condition of the machines, no compressor had to be replaced there. It was sufficient to install a VESIS 4 sequencing the four compressors. In the third installation, completely new plant was necessary because of the age and capacities of the machines. Three BS 51 screw compressors with a capacity of 5.3 m³/min each and a DS 141 SFC with 13.3 m³/min were installed. The DS

The modernized compressed air station

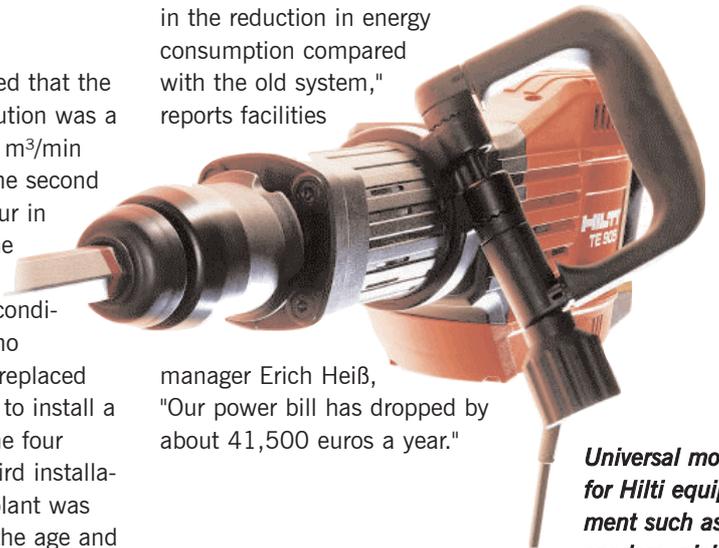


is a variable speed drive machine and functions as a peak load compressor. The advantage of the SFC system is to be found in its fine matching to the actual air demand. A VESIS controller that ensures even loading and efficient operation of the compressors was also included. To further improve energy balance, the BS machine was supplied with a heat recovery system providing hot water, for which there is an annual requirement of 600 cubic metres.

41,500 euros saved!

The modernization of the Kaufering compressed air system illustrates how much can be achieved with flexible planning and the introduction of correct control concepts, particularly in overall master control of plant. "Our greatest savings have been in the reduction in energy consumption compared with the old system," reports facilities

manager Erich Heiß, "Our power bill has dropped by about 41,500 euros a year."



Universal motors for Hilti equipment such as spaders, picks or diamond drilling machines, etc. are also part of the Kaufering facility's range of products

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