Contracting out your air needs - a concept with a future

Cost-reduction is the rallying cry of the year in compressed air engineering. Compressed air plant manufacturers will be showing off their new products and services at this year's trade fairs, and most of them will be aimed at saving money. This isn't just a reaction to the current economical situation, but also a general trend that is developing in the interests of the user; global competition is dictating the rules and over the long term, only those companies will survive who make the most efficient use of the resources they need. In this connection, supply concepts such as puchasing compressed air as a utility are rapidly gaining in popularity.

What does each kilowatt-hour of power consumed, each cubic metre of water used and each kilometre over which goods and materials are transported cost? The answers to these questions are the fundamental factors of operating costs, and knowledge of these factors provides the basis for cost-cutting measures. In the case of compressed air, one of industry's most vital energy sources, only about one in ten decision-makers is able to state with any accuracy the cost of each cubic metre. This is hardly surprising as the cost of self-produced compressed air varies greatly with circumstances and is often very difficult to assess. Included in the calculation are not only hard fixed and operating costs but also less tangible factors such as a proportion of labour costs for personnel who are only partially or occasionally involved in the air supply system; though they work directly on the air system for only a small proportion of their time, they have to maintain a stand-by status, and cannot commit themselves fully to their proper jobs. Which is why industrial users are increasingly asking themselves whether a company-owned air system is always the easiest, cheapest and most reliable road to take. It is especially the high-volume air consumers in the chemical and petrochemical industries that are realising how important this question is.

A basic requirement - the competence of the contracting company

Today, compressor manufacturers offer comprehensive technical system solutions to user's compressed air needs, but they also frequently offer contracting models such as have long been known in the power supply industry. If the decision to contract out is taken it is advisable to turn to a supplier who not only has comprehensive know how in compressed air engineering but enough practical experience in supplying compressed air as a utility. Kaeser first signed contracts to supply air as a utility more than ten years ago. The company promotes its air contracting services under the trade name of "Sigma Air Utility"

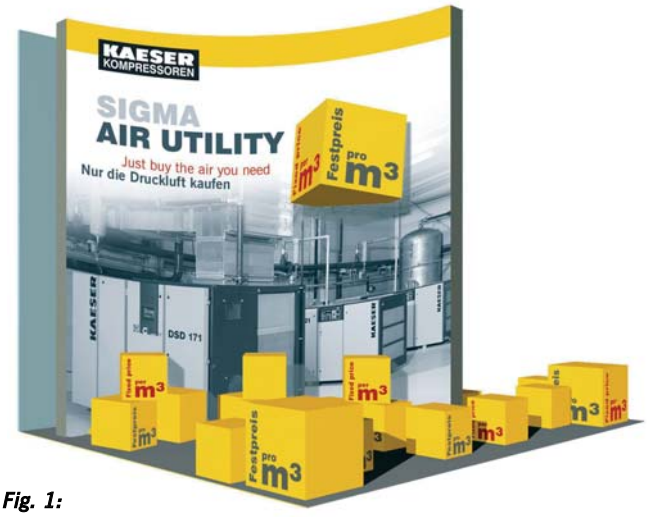

Fig. 1:
Kaeser's Sigma Air Utility provides a supply of compressed air in its most efficient form.

(fig. 1) putting this service in line with other utilities such as electricity, gas or water. This also expresses the aim of the contracting idea, i.e. to achieve the maximum possible economic benefit from the production and use of compressed air. In the meantime, the contracting business has reached about ten percent of Kaeser's total turnover. Over the long term, the company reckons with a further substantial increase in this field of operations. As Managing Director Thomas Kaeser said, "Contracting out compressed air will establish itself in the market as a real alternative to procurement."

Air as a utility improves cost transparency and liquidity

Users who reject the idea of purchasing a compressor system in favour of just buying compressed air according to their quantity and quality needs greatly improve the cost transparency of their operation; instead of complicated costing they are presented with a contractually agreed, long-term fixed price per cubic metre, a reliable basis for calculating operating costs. This basic price is fixed for the duration of the contract and covers plant, operational costs and the acceptance of a basic quantity of compressed air. A unit price for air consumption exceeding this base quantity is also contractually agreed. Precise metering guarantees that only air which is actually taken from the net-

Fig. 2:
Buying compressed air "from the socket" enhances cost transparency and strengthens your company's liquidity.

work is actually invoiced. Compressed air coming "out of the socket" **(fig 2)**, so to say, is good for the company's liquidity, because there is no investment in a compressed air system, with the exception of having to provide a suitable compressor room. Another advantage is that there is no purchased plant to write off over years either. Instead, the sums paid for utility air are fully and directly deductible as operating costs.

Concentration on core business

The "Sigma Air Utility" offer is a comprehensive one; experienced Kaeser engineers supervise and coordinate the whole project - from establishing the user's requirements through the assessment of the actual air consumption and economical air supply variants to the design, installation and servicing of the air system. As well as investment costs, the user can discard almost all personnel costs for the air system. No staff are tied to extraneous tasks, and the company can concentrate on its core competency **(fig. 3)**.

Flexible supplies with "automatic savings"

As well as offering cost transparency, long-term optimisation of air costs and availability are the main objectives of the Sigma Air Utility concept. Utility air not only reacts flexibly to a fluctuating air demand, it also contains "automatic savings"; Kaeser operates and maintains the air system installed on the users premises on its own and upgrades it, if necessary, to meet changed operating conditions and the latest technological standards **(fig. 4)**.

Whether you contract out or buy your air system; master controllers and remote monitoring make for efficiency

Modern controllers and remote monitoring technology have a decisive influence on the availability and economics of modern compressed air systems, whether they are operated conventionally or under the conditions of a utility air contract. Air management systems making use of Internet technology and acting as a master controller and web server all in one package, such as the Sigma Air Manager **(fig. 5)** from Kaeser, can optimise air system operation and minimise power consumption. The Sigma Air Manager achieves this by automatic selection of the right compressor configuration, minimisation of off load/idling time and reduction of maximum system pressure. To reduce maximum pressure the Sigma Air Manager uses an efficient pressure band control to coordinate up to 16 compressors with a pressure swing of only + 0.1 bar. Without too much effort, the system is also capable of adapting the performance of the compressed air installation to changed air demands.

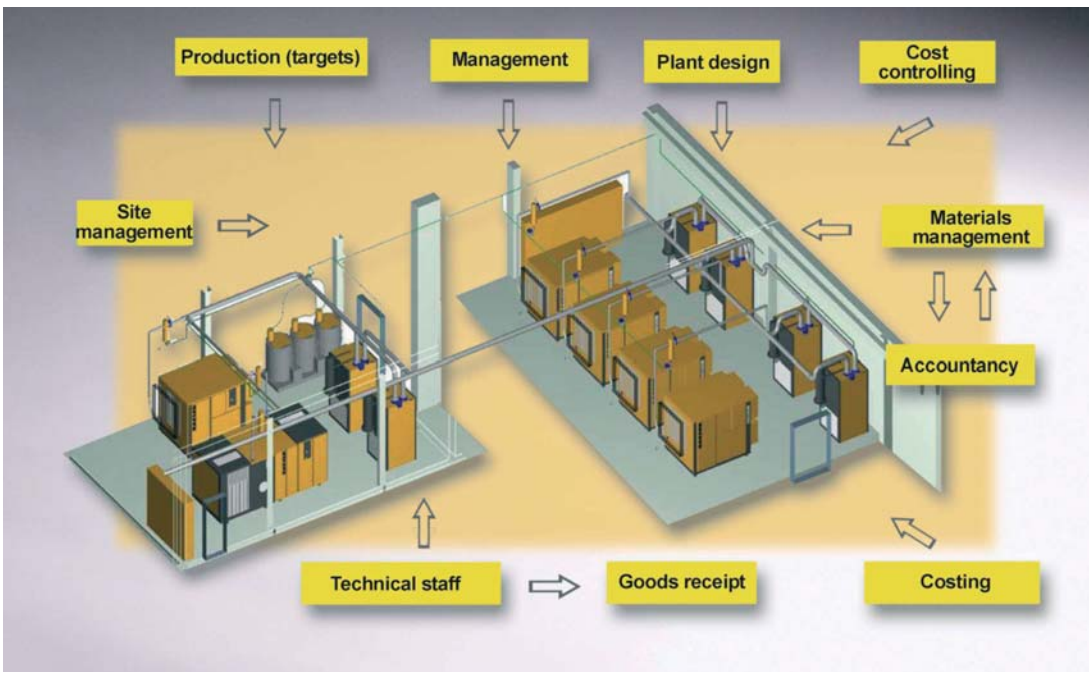

Fig. 3:
More jobs than generally supposed are involved in the production, treatment and use of compressed air Using compressed air "straight from the socket" can release previously tied up human resources for other tasks.

Then there is Sigma Air Control plus, an optonional long-term analysing tool, which any PC equipped with a standard browser and access to Internet can use. It provides a password-protected list of the current compressor operating states, a profile of system pressure over the latest period of operation and service or alarm messages. More importantly, the HTML pages

Fig. 4:
By taking advantage of a Sigma Air Utility contract one can be sure that the compressed air is always produced and treated by air systems that are at the forefront of technology. And if it is technically and economically appropriate, important components are being swapped for the latest version to keep it that way.

Fig. 5:
With its comprehensive operational monitoring of all functions and effective cost controlling of the compressed air production, the Sigma Air Manager, Kaeser's master controller (the illustration features the small and large versions for four or 16 compressors respectively), facilitates optimum interplay of all components of a compressed air system.

generated by Sigma Air Control plus can display and graphically illustrate an abundance of data from the Sigma Air Manager's long-term memory, thus enabling the user to trace back load and idling characteristics, system pressure profiles, power consumption and compressor utilisation for a period of up to one year. Which means that the operational status and the trend of costs for the compressed air system are being constantly at hand.
Significantly however, this management system unfolds its full potential for efficiency in its interaction with modern remote control. For example, all the Sigma Air Utility contracting systems are linked via Teleservice with Kaeser's service centre; this ensures maximum efficiency and air availability using latest energy-saving technology, cost-effective remote diagnostics and preventive maintenance all in one package. In this way, Sigma Air Utility takes into account the fact that electricity costs are by far the biggest cost-factor (around 70 to 80 percent) in the production of compressed air.

Contracting out your air supply covers costs and saves money

Thomas Kaeser summed up the advantages of utility air as follows "On the one hand cost-coverage is important; for example, the user can calculate production costs using fixed costs for compressed air. On the other hand, practically no human resources need to be sourced for the production of compressed air - even though maximum availability is assured. Furthermore, the latest technology with its corresponding savings is employed without being limited by the handicap of amortisation periods. Achievable cost-savings of up to 30 percent are quite common depending on the state of the old, existing compressors and the profile of air consumption.

Utility air from the user's point of view

So far, users who have already worked with Kaeser compressors on a utility air basis have reported in a positive vein, like, for example, Reinhard W. Ennen, Works Maintenance and Engineering Manager at BASF Coatings, in Münster, Westphalia, Germany, "Strategic and economic aspects tipped the scales at BASF Coatings in favour of utility air on a contract basis. We also want to concentrate our maintenance activities on our core production processes, which is why we took advantage of the imminent replacement of our compressed air supply system by changing over to Sigma Air Utility. An important aspect for us was that Kaeser could guarantee stable air delivery, pressure and quality. Permanence in power consumption over the whole of the contracted period is of vital importance. As another positive effect the results of the analysis and the predictions made in the preceding project study with regard to cost savings in comparison with the old and new air systems have been confirmed in full."

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