

Erwin Ruppelt; Kaeser's expert - "Optimisation can reduce costs by half"

"Worldwide Teleservice gives transparency to compressed air systems"

Web technology is now forcing its way into compressor engineering, for example, via Sigma Air Manager, Kaeser's new master controller. Erwin Ruppelt, from Kaeser Kompressoren, Coburg explains its effect on compressed air systems and the compressed air field.

■ *Mr Ruppelt, together with 18 industrial partners you have started an 'Efficient Compressed Air' initiative and at the same time introduced a novel compressor controller. Was this year an important one for the compressed air field?*

Yes, it certainly was. The 'Efficient Compressed Air' initiative is not really anything new as far as Kaeser is concerned as we have been working on minimising power consumption during the production of compressed air for years now. Our system innovations have completed the building blocks needed for an efficient and economical air system. Nevertheless, we are totally in favour of 'Efficient Compressed Air'. With the support of "Save II" (Specific Actions for Vigorous Energy Efficiency) a multi-annual programme for the promotion of energy efficiency in the European Community, attention is being directed toward saving power at last.

■ *Which of your innovative products are specifically aimed at saving energy?*

We are now offering directly coupled compressors with drive powers from 30 to 450 kW. They consume up to 3.5 percent less power than gear driven or belt driven designs. In addition, we have changed over to low-loss EPAct motors and have expanded our range of packaged variable frequency drive compressors with powers from 18.5 to 450 kW. Optimising measures such as these can, on average, increase efficiency by 10 percent. Sigma Air Manager, the new air system controller brings further savings; it can sequence up to 16 compressors related to air demand within a pressure control range of only 0.2 bar. Normally, maximum system pressure is reduced by at least one bar, which, in turn reduces losses caused by leaks. Looking at overall energy consumption, this is a reduction of around 10 percent.

■ *What, in your opinion, is the most important improvement?*

Without doubt Sigma Air Manager, or, for short, SAM. It offers a range of functions that, up until now, were only available to a few very large production concerns. SAM can record more data

than we can acquire with data loggers at our trade fair campaigns, and it makes possible the visualisation of data on a standard PC. As the air system can be interfaced with a modem into our service network, service technicians worldwide are able to log in to our compressed air installations.

■ *How will this change servicing?*

Our servicing will be more precise and more effective. A technician will be able to get an online picture of air system status before going on site. And experts can give accurate tips remotely. That saves time and money, both for the customer and Kaeser. But that's not all, anticipatory maintenance is possible as the air system informs per email and SMS when and what maintenance is to be carried out.

■ *Did you design this air management system so that you could improve your Utility Air service?*

Sometimes there is a misunderstanding here; SAM is well suited to Utility Air, but that is not the reason why we created the master controller. In fact, it is intended far more to ease servicing generally. If there is a malfunction, technicians can search in the operational data for the cause. Thus, Teleservice makes air systems transparent - worldwide. Admittedly, we have tested this form of Teleservice mostly at customers with Utility Air agreements because we alone are responsible for the installations there.

CV

Erwin Ruppelt was born in 1955, is Senior Project Engineer at Kaeser Kompressoren in Coburg, an expert in his field, seminar lecturer and technical author. Since qualifying for his mechanical engineering degree with specialisation in energy management at the University of Applied Sciences at Coburg he has been employed by Kaeser Kompressoren GmbH, and has held the position of Senior Project Engineer there since 1989.

He is publisher and co-author of the third edition of the Compressed Air Handbook (1996), the author of the Compressed Air Technology pocket book (both published by the Vulkan Verlag), and numerous other technical publications.



■ *What significance will Air Utility agreements have now and in the future?*

Already 10 percent of Kaeser's turnover is achieved with Air Utility, and recently, demand has risen steeply. This development started in 1999 when Mohn Media Mohndruck in Gutersloh wanted to outsource its compressed air supplies. In the meantime, a number of other large corporate customers have extended their initial agreements with us.

■ *Does it always have to be Utility Air agreements?*

It doesn't always have to be, but there are good reasons in favour. If all the costs of running a production facility are added up then the conclusion is often reached that buying air as a utility is cheaper than running a compressed air system. Sometimes up to 50 percent of costs can be saved, because not just power costs, servicing and maintenance costs are reduced as well. This is why a lot of companies buy the compressed air system themselves and then let Kaeser run it.

■ *The 'Efficient Compressed Air' initiative was triggered by a EU study in which it was found that the high proportion of leaks in compressed air networks of 16 percent represented the highest savings potential by far. Doesn't this work out to be a disadvantage for Kaeser?*

■ *What is the best thing for a user to do to improve the efficiency of a compressed air system?*

The first important step is an analysis; this will provide all the data necessary to evaluate the system, for example a profile of system pressure and air consumption, or leaks, too. When this has been done, a decision can be made on measures to be taken.

Our editing staff member Olaf Stauß held this interview.



The heart of the compressors is still the rotary screw. Whether or not it is put to use efficiently though is the job of the control system (illustrations by permission of Kaeser Kompressoren)

In this project we are involved with the development of more efficient compressed air supplies and are not interested in a short-term increase in turnover. There is definitely a need for renovation as far as air distribution networks are concerned. In the course of an analysis we have always advised users of this fact when we have come across air mains in need of renovation. In the end, the users decide themselves as to whether they want to modernise or not. Normally, lowering maximum system pressure by even one bar - for example by using a well-designed controller - is sufficient to reduce leaks by 4.5 percent without even plugging up a hole somewhere.

Sigma Air Manager (SAM): Standard Controller with Web Interface

Diagnosics in the Service Centre at Coburg for a compressed air system in Peking

For Helmut Zähler, Service Manager at Kaeser, SAM's 'pressure range control' has rung in a new era; it not only sequences differently sized compressors in relation to air demand, it can transfer all the operational data via a web browser as well.

Kaeser has been marketing Sigma Air Manager (SAM) since January and Helmut Zähler expects that it will have penetrated the compressed air market successfully within 18 months. The reason why he evaluates the chances of success within the market so optimistically is SAM's functionality and procurement costs. "Sigma Air Manager can offer standardised control centre techniques and similar functions at a very interesting price." Depending on the number of compressors, it only costs between 10 and 20 percent of the cost of a conventional sequencer and control technology solution that is tailored to requirements.

Sigma Air Manager is the logical continuation of Sigma Control, the internal compressor controller that Kaeser introduced in 1998 as the 'computer in the compressor' and which is now performing sterling work in several thousand compressors worldwide.

Implemented on the basis of a PC, SAM takes over several functions that are new as far as normal compressor controllers are concerned:

- SAM sequences up to 16 compressors of different capacities within a pressure range of only 0.2 bar,
- records all air system data such as air consumption, pressure fluctuations or filter condition and visualises these data on a PC,
- transfers such data over an Intranet and Internet using a standard browser,
- allows updates via Internet
- and can be interfaced to a Kaeser service centre.

Helmut Zähler explained how much this new technology has changed compressed air servicing so: "The air supply system reports in itself when something happens. For example, it tells you by SMS that in around 200 operating hours some servicing is due. If there is an alarm, it sends an email or informs the duty service technician in the night with an SMS. The technician can then assess the operational situation online.

In Helmut's opinion, SAM's greatest advantage is the fact that specialists at Kaeser headquarters are able to log in to a com-

Helmut Zähler, Manager, Service Support at Kaeser



pressed air system online at any time to offer valuable assistance to the technicians onsite. This pattern of operation functions excellently with the well over 50 companies that have signed a full-service agreement or a utility air outsourcing agreement with Kaeser.

Only the long-distance data communication from some extra-European countries needs to be improved somewhat.

In reply to the question regarding the most frequent type of alarm to date the Service Manager had the answer immediately: "Clogged condensate drains, caused by dirt in the piping." But there are also come very odd faults (somebody had pressed the emergency stop button), or tricky ones, for example the drive motor reported an overload because some components of the customer's power transformer were defective.

"We're not interested in having a look at the machine onsite as a matter of routine any more. If anything happens, the system should report in itself."