



Screw compressors in the Burda printing plant, Nuremberg

Flexible compressed air supply for high-performance gravure printing

The Burda printing plant in Nuremberg, Germany relies on highly efficient compressed air generation, which covers a range of different load cases with an optimum compressor combination. L series CompAir screw compressors are used to generate additional quantities of compressed air, which are required following a plant extension.

User

Burda Druck Nürnberg GmbH & Co. KG
www.burda-druck.de

The project

"There are no typical consumption profiles. All load cases occur, from 8 to 60 m³/min." Therefore, by 2012, the plant's central 7.5 bar air network was supplied by six oil-lubricated screw compressors, divided into two stations. "Of course, in theory, a few large machines are more efficient than several small ones. However, when there are highly variable load cases, there are efficiency gains to be had by combining the smaller compressors so that they are always operating within an optimal working range."

Burda-Druck also followed this principle when two additional compressors were installed with the post processing system, which significantly increases the compressed air consumption: three highly efficient 50/55 kW compressors, one with speed-regulation, take care of compressed air supply for post processing in the equipment room.

Millions of people throughout Europe read the publications printed daily by the 215 employees at Burda Druck GmbH & Co. KG in Nuremberg, Germany. Within the network of media group printing plants, Nuremberg is the classic "commercial printer". Or in other words: they mainly print publications that are published once or annually in very high numbers – on average around two million copies on a single day. This includes catalogues for mail-order companies, tour operators, and the IKEA catalogue in several languages. High circulation magazines are also printed in Nuremberg.

Success on the international market

These tasks are carried out by four enormous gravure printing presses, which each fill an entire hall. About a year ago, a post processing system was added so that the printing plant can now supply their customers with fully bound and addressed catalogues

with inserts, CDs, product samples, and so on. This allows them to compete on the fierce international market. Werner Isenmann, Project Manager at Burda-Druck: "The competitive pressure is huge. Therefore, we continually optimise our systems and processes. And our printing is of the



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Burda-Druck's Nuremberg site, which was set up in 2001, prints high-quality magazines and catalogues in high numbers. Their compressed air consumption is equally as high: many processes are controlled via pneumatic actuators.



The new post processing system also requires a large amount of compressed air.

highest quality. The EMAS certification of our environmental management system is another competitive advantage: even when it comes to environmental protection, we are leading the way."

All these factors help the Nuremberg site to successfully maintain its position on the global market. The printing plant, which was set up "from scratch" in 2001 has been continuously expanded since then. The same goes for the compressed air generation system. Initially, this consisted of a regulated speed 50 kW screw compressor and two 30 kW machines plus a treatment system. Since then, it has grown to nine compressors, two of which are regulated speed, which power the numerous pneumatic drives of the printing machines and the post processing systems. Even in the solvent recovery system, which is a part of every gravure printing operation, numerous valves and special fittings are pneumatically driven.

Highly variable compressed air requirements

The compressed air generation at the Burda site in Nuremberg is characterised by highly variable compressed air requirements. "There are no typical consumption profiles. All load cases occur, from 8 to 60 m³/min." says Thomas Oed, Electrician, who is responsible for the media supply.

As a result, his aim is to generate each consumption profile economically with an optimum compressor combination. Therefore, by 2012, the plant's central 7.5 bar air network was supplied by six oil-lubricated screw compressors, divided into two stations. "Of course, in theory, a few large machines are more efficient than several small ones." says Thomas Oed. However, when there are highly variable load cases, there are efficiency gains to be had by combining the smaller compressors so that they are always operating within an optimal working range. Our higher-level controller is programmed in this manner and takes into account all factors such as downtime and switching times. And by dividing them into three stations, we can ensure that the compressed air is generated close to consumers with smaller cable cross-sections and lower losses."

The search for the most economical machine

Burda-Druck also followed this principle when two additional compressors were installed with the post processing system, which significantly increases the compressed air consumption. In 2012, an additional 45 kW machine was purchased for redundancy purposes and the range of products available on the market were carefully scrutinized in advance. "The life cycle costs, and not just the cost of ownership, matter to us. Therefore we compared the performance and consumption

data carefully and we did the same with the replacement parts costs, maintenance costs and the ease of maintenance of the 50 kW machines." says Werner Isenmann.

L series: maximum efficiency screw compressors

Based on these requirements, the L series from CompAir came out on top. These oil-lubricated screw compressors were developed to achieve maximum efficiency and continually optimised. The detailed engineering solutions, which result in maximum efficiency, include the specially developed air end, the heart of the screw compressor, with very low speeds, which minimises energy costs. The lower rotational speeds also means that the compressed air is heated up less in comparison. This increases the efficiency. The amply dimensioned aftercooler also helps to ensure a low air delivery temperature.

"Honest power and consumption data"

The Delcos XL controller with touch screen continuously monitors all the relevant operating data of the compressors and provides service personnel with all the information they need, such as network pressure, motor speed and average volume flow for a range of periods. According to benchmark tests by CompAir, these compressors achieve energy savings of up to 7.2 % compared with models from other

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Thomas Oed, responsible for media supply at Burda-Druck Nuremberg

manufacturers. Managers at Burda-Druck have taken precise measurements and checked the performance data. Thomas Oed summarises the results: “The values specified in the catalogue are borne out in reality, they match our measurements.”

Full speed ahead for project implementation

Based on this, it made sense to purchase more machines from this series when the complex systems for fully automatic post processing were installed. In addition to saddle stitching and perfect binding, they also enable insertion of supplements, gluing of postcards, CDs and sample goods and individual addressing, for example.

To do so, it was necessary to pick up the pace in terms of project implementation. “The system manufacturer wanted to supply compressors, however these could not be integrated very well into our control concept due to their performance profile.” says Thomas Oed. “So we decided, at short notice, to plan the compressed air supply ourselves. We didn’t have much time and CompAir responded very quickly. Just 24 hours after our call, we received a detailed quote with several alternative proposals. CompAir also loaned us a compressor with treatment system, so that the lines could begin operation on time.”

Combination of machines with fixed speed and speed regulation

The third compressed air station at the plant is now fully equipped with CompAir compressors: An L55 with fixed speed and an L55RS with speed regulation were procured. The refrigerant dryer and the upstream and downstream filters were also supplied by CompAir.

Interestingly, the filters in the new station in hall 3 do not have a differential pressure display. Thomas Oed explains: “We continuously measure the differential pressure externally and call up the values in the control room as the displays on the filters are only instantaneous readings. This value is crucial in terms of costs, so we always keep an eye on it.” It goes without saying

The core component of a compressor is the airend. All CompAir airends are designed and manufactured in the company’s own facilities to ensure optimum harmonisation and maximum compressor efficiency.



that the new compressors were also integrated into the higher-level overall controller.

Compressed air costs kept low

Several months after installation of the compressors and the entire post processing system, the managers at Burda-Druck are pleased with the compressed air station. The efficiency of the new compressor helps to ensure that the compressed air costs, and thereby the overheads, are kept down: this allows them to remain competitive on an international scale. The reliability of the machines has also made a positive impression. The nearest CompAir service technician is not far away, but so far he has not been needed.

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Marco Gietl from CompAir in an interview with Thomas Oed, responsible for media supply at Burda-Druck Nuremberg.



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