

User report | Best practice



New POWERFLOW line for ZIEHL-ABEGG electronics manufacturing

ZIEHL-ABEGG SE
plant in Künzelsau.

Even more power for the Royal League!

ZIEHL-ABEGG is a leading international developer and manufacturer of products for ventilation systems, control engineering and drive technology. Fans made in Künzelsau serve the "Royal League" in ventilation systems, control engineering and drive technology as well as automotive applications. At three plants in

southern Germany, ZIEHL-ABEGG employs more than 2,000 people, with the global figure around 3,800. All signs point to further growth for the technological leader for fans – in order to achieve the set targets, ZIEHL-ABEGG has put its money on a new POWERFLOW e N₂ line from Ersa for electronics manufacturing.

Ersa POWERFLOW e N2 with directly connected placement station.



Fans from ZIEHL-ABEGG cover an almost endless application spectrum and fulfil their function in all kinds of possible and seemingly impossible places. ZIEHL-ABEGG products cool and provide climate control in large buildings such as the Allianz Arena in Munich, for example, as well as in computers, cooling devices, laboratories and transformers, and are even used in deep-sea applications. Motors from ZIEHL-ABEGG drive elevators transporting people and goods to heady heights, power generators or sensitive devices such as CAT scanners. Right from the very beginning, the core competence of the company, which was founded by Emil Ziehl in Berlin in 1910 and moved to Künzelsau in 1949, was the construction of long-lasting, efficient electric motors. Even if around 85 percent of the company turnover is now generated by fans – these only come to life and start their perfect movement when powered by a motor.

The company headquarters in Künzelsau is the linchpin for ZIEHL-ABEGG, the place where unique inventions are created and transformed into highly efficient emission-reduced products to the benefit of customers. The highest demands are standard for the company – and the fan business oriented towards growth in times of more stringent energy-efficiency directives, with demand for energy-efficient EC fans (EC being the abbreviation for “electronically commutated”) from ZIEHL-ABEGG increasing in particular.

In 2016, turnover was 484 million euros, in 2017 ZIEHL-ABEGG passed the half-billion euro mark. Despite its current size, ZIEHL-ABEGG is still a family-run company that is one of the top employers in the region and is one thing in particular: technology-driven – six percent of the turnover is reinvested in research and development. Which is no real surprise, since the Chairman of the Supervisory Board, Uwe Ziehl, is an out and out engineer.



Concentrated look at the peripherals of the POWERFLOW wave soldering line.

The aim is always to offer technological solutions which are absolutely top-class – the in-wheel hub motor or electric drive for buses which has been under development by ZIEHL-ABEGG since 1998 is just one example of this. It is without doubt the best technological solution, and such buses are already in serial use although market penetration has not been extensive so far. If we look at the dramatic increase in traffic in many metropolitan areas, it would seem the time is ripe for the in-wheel hub motor, but politics must play its part here too. Whichever way, this example admirably demonstrates that ZIEHL-ABEGG is among the technological front-runners. This spirit is also reflected in the world’s largest combined measuring and test bench for fans, which weighs 1,250 tonnes and can be used for measuring volume flows with

Infobox

ZIEHL-ABEGG

Turnover (2016)
484 million euros

Investitions
6 % of the turnover is invested annually in R&D

Workforce
3,800, of which 2,000 are in Germany/Hohenlohe

Products
Fans, electric motors and control engineering

Export share
75 %

The ZIEHL-ABEGG team in front of the new line (from left to right): Heiko Spohn, responsible for process optimisation for electronics manufacturing, Ersa Sales Engineer Philipp Haar, line operator Stefan Weiß and Production Manager Hermann Mütsch.



21 m long and 6.5 m wide: the new Ersa POWERFLOW e N₂ line in the ZIEHL-ABEGG electronics manufacturing department.

up to 100,000 m³ air per hour and pressures of over 3,000 Pascal under free-field conditions. The Künzelsau-based company sets great store by their own know-how, which is demonstrated by the impressive production depth.

Metal and sheet-metal working are not outsourced, for example, rather ZIEHL-ABEGG produces components itself: from housings through die-cutting to welding, with the training of its own specialists – with no fewer than 200 apprentices currently being trained at the company – being a natural part of the business. The concept of continuity based on organic growth from within is paying off: the manufacturer of fans for the “Royal League in ventilation systems, control engineering and

drive technology” achieved double-figure growth in 2017. There is a continuity to ZIEHL-ABEGG in terms of management, too – the CEO has been at the company for 18 years, while the CFO and CTO have been in office for more than ten years. Just recently, the board was expanded when Dr. Klaus Weiß joined as COO to focus on and promote the ever-present topics of Industry 4.0 and digitisation.

ZIEHL-ABEGG AND ERSA – DOING BUSINESS SINCE 1983

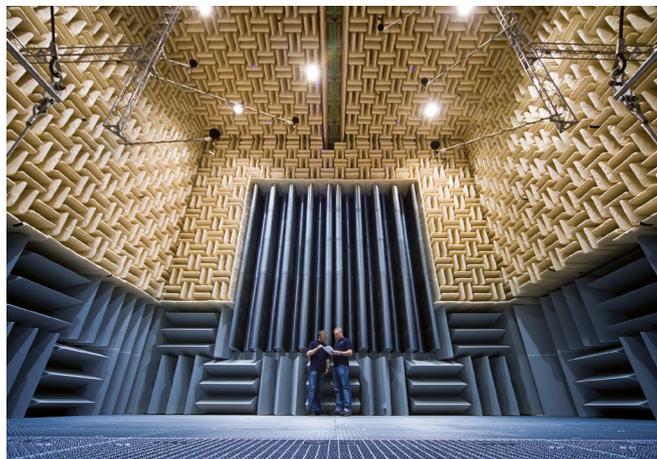
Continuity on the inside, continuity on the outside – something Hermann Mütsch, Production Manager for electronics manufacturing, can confirm first hand. He has been at the Künzelsau-based company since 1989 and accompanied the procurement of four Ersa wave soldering lines directly. In all, five lines have been delivered from Wertheim am Main to Künzelsau. The first of these – as far back as 1983 – was an EST 350 for the soldering of PCB for transformer-based control units. As electronics manufacturing grew, an EWS 330 was added in 1998; this was already equipped with a transport system and coding for soldering programs. Seven years later, a second EWS 330 followed in a lead-free design, the feed section moved from the first to the second machine. In July 2015, a POWERFLOW e N₂, the first nitrogen-supported full-tunnel wave soldering line was put into operation, followed by a second POWERFLOW e N₂ in September 2016 – but this time completely integrated in an EC-THT placement line with 21 metres of peripherals and transfer of the soldering programs by the master computer at the line.

“With the latest THT line we knew we wanted to rely on the same Ersa system as two years ago, because we are familiar with the results of the POWERFLOW and the products it was being purchased for had already been running on our first system,” says Heiko Spohn, process optimiser in electronics manufacturing

PCB experts amongst themselves:
ZIEHL-ABEGG Production Manager Hermann
Mütsch and Ersa Sales Engineer Philipp Haar.

at ZIEHL-ABEGG. Soldering quality had already been significantly improved under nitrogen with the first POWERFLOW thanks to better wetting and passages, fewer solder bridges and scum, and throughput increased thanks to the enhanced pre-heating of the soldering modules. The special features of the new line: The manufacturing line is completely concatenated, has moved away from individual workstations – the line is set up in three identical strands so that every product can practically be produced at every strand. Heiko Spohn continues, “The line has mainly been designed for our EC PCBs – a strongly growing segment. PCBs can be equipped separately at each strand and sent to the testing station – making independent work possible. Work can go on even if there is a colleague missing.”

It was just as important for implementation for ZIEHL-ABEGG that employees should have optimum conditions at the workstation, such as ergonomic height-adjustable worktables, for example. Another objective was the consolidation or further development of the high quality standard – which is where “der Schlaue Klaus” (Clever Klaus) came into the picture, a software-supported system that checks the manually equipped boards for completeness and correctness. The quality of the first POWERFLOW e N₂ was already very high and Schlaue Klaus would have led to a further increase in quality, saved a significant amount of time, reduced placement errors to almost zero despite mixed operation. Production Manager Hermann Mütsch retraces the latest development in electronics manufacturing at ZIEHL-ABEGG: “We are constantly changing our product spectrum towards energy-efficient EC fans to comply with future ErP directive – it was clear from the very beginning that we needed intelligent electronics for this.” The electronics manufacturing production department had originally been designed for end products – manufacturing control devices for ventilation system applications

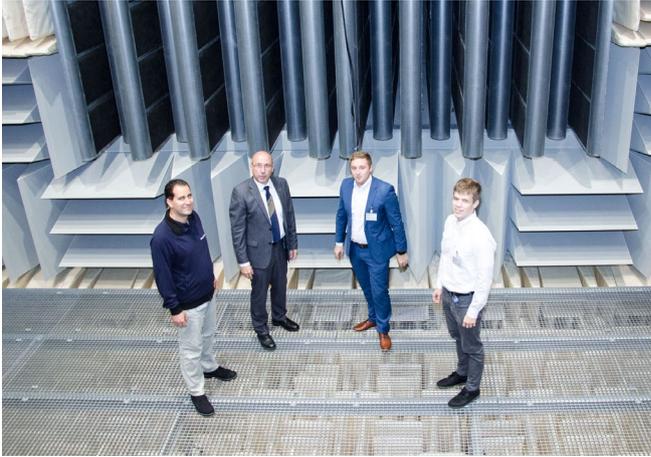


The 1,250 tonne air and noise test room, where volume flows up to 100,000 m³ air per hour and pressures of more than 3,000 Pascal can be measured.

and to trigger elevator motors. “Now, the task is to produce PCBs that we can install in our fans. Suddenly, we are talking about a quantity of 400,000 – enormous growth potential.

This was not possible with the previous capacity despite changing to 2-shift operation, so that we had to buy in external PCBs at first. The new building for drive technology left us with production space that we were able to use,” Hermann Mütsch explains. The electronics manufacturing department presented the Board with a suggestion for setting up a separate THT production line – with much fewer types, much less variance and increasing unit figures. An increase in capacity for manual placement was also necessary, as well as the increase

Business partners ZIEHL-ABEGG and Ersa in the 1,250 tonne air and noise test room.

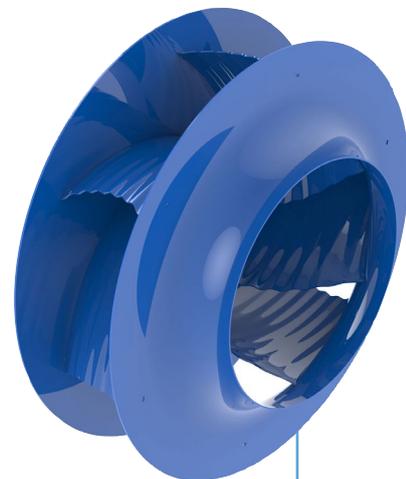


Purchased in July 2015: the first POWERFLOW e N₂ at ZIEHL-ABEGG.

in capacity in SMD production. Throughput time, stock reduction, raising production to a new level – buzzwords often used in theory and discussions, but what about practical day-to-day business? “With these PCBs, we typically work with a batch size of 300 – whereas we used to calculate four or five days in total for these, we now need less than eight hours on the new line with two placement staff. An extremely important factor for sales – not to mention connection to the master computer, which we use to control our systems such as soldering line and line technology, and the traceability and recording of assembly-related data,” says Hermann Mütsch. ZIEHL-ABEGG electronics manufacturing will have achieved the targeted figures by 2019 – proven

in August 2017 when more than 18,000 boards were produced on the new line. A 17 percent reduction in time allocation has been achieved compared with the old production line, with single-type placement this figure was even 20 percent – for the same product. This exceeded the expectations of even the ZIEHL-ABEGG experts.

“Throughout our business relationship, we have always received outstanding support from Ersa Sales, who were extremely committed to us. The same applies to Ersa Service, which always responds quickly – Ersa has been the right partner for our business for almost 35 years now, and will be in future too,” predicts Production Manager Hermann Mütsch. Even if the project phase for the new line did take somewhat longer and stretched over three or four years – first basic sketches were prepared in 2013, then initial meetings and discussions took place with Ersa and peripherals expert Pacha to explore the implementation options. Many approaches were discussed and rejected, in order to achieve the best technological solution together at the end of the day. ZIEHL-ABEGG has achieved its objective: Capacity up, unit production up, quality up, throughput down, costs down, stable line, reliable partners all round! ■



Centrifugal fan ZAbbluefin (ventilation systems): latest generation of free running impeller with backwards-curved blades.

Ersa GmbH
Leonhard-Karl-Str. 24
97877 Wertheim
Phone: +49 9342 800-0
info@ersa.de
www.ersa.com

Kurtz Ersa, Inc.
usa@kurtzersa.com

Kurtz Ersa Mexico
info-kmx@kurtzersa.com

Kurtz Ersa Asia Ltd.
asia@kurtzersa.com

Ersa Shanghai
info-esh@kurtzersa.com

Kurtz Ersa Vietnam
Company Limited
info-kev@kurtzersa.com

Ersa France
info-efr@kurtzersa.com