

## Hannover Messe: Focus on the NEXAIRA digital ecosystem

### Deutsche Messe AG Relies on Fans and AI Solution from ebm-papst

Deutsche Messe AG, organizer of Hannover Messe, relies on ebm-papst's NEXAIRA digital ecosystem to increase the efficiency of its technical installations and ensure the reliable operation of its buildings. At the ebm-papst booth (Hall 14, Booth H66), an initial retrofit project at the exhibition center as well as the NEXAIRA platform will be presented. The solution combines energy and digital retrofitting together with a range of digital services on a unified platform. With NEXAIRA.Systems, entire refrigeration circuits – such as those used in data centers – can be optimized in real time using AI, significantly reducing energy consumption.

#### Energy Savings for Deutsche Messe AG

In preparation for the 2026 Hannover Messe, the three central supply air systems serving the hall, conference rooms and bistro at Deutsche Messe AG's Pavilion 36 were modernized to improve energy efficiency and connected to the NEXAIRA digital ecosystem. The largest of the systems is designed for an airflow rate of up to 60,000 m<sup>3</sup>/h and operates continuously (24/7) due to its permanent use. In the first phase of the project, the existing belt-driven AC fans were replaced with highly efficient EC fans, digitally connected to the NEXAIRA AI platform, and a constant airflow control (closed-loop) was implemented. As a result, the electrical power consumption of the systems was reduced by around 11.3 kW, corresponding to annual electricity savings of approximately 100 MWh or a cost reduction of more than €20,000 per year (based on €0.23/kWh).

#### Digital Retrofit Unlocks Additional Potential

Building on this foundation, plant operation is set to be gradually optimized towards an even more demand- and load-dependent mode of operation. EC fans provide ideal conditions for this, as they allow continuous speed control. This makes it possible to deliberately leverage the physical principles governing fan performance: since power consumption is proportional to the cube of the rotational speed ( $P \sim n^3$ ), reducing the speed by 50 percent lowers power consumption by a factor of eight to around 12.5 percent of rated power. Further control strategies such as time schedules, load management and demand-based operating modes are intended to deliver additional energy savings. The first optimized system highlights the significant efficiency and scalability potential that NEXAIRA-based retrofit projects offer, particularly for existing buildings. The project will be presented at the trade show booth as part of a live demo, allowing visitors to experience the monitoring of this and other systems as well as selected digital functions of the NEXAIRA platform in operation.

#### AI-Based Cooling System Optimization: Efficiency for Data Centers

For data center operators, ebm-papst is also highlighting NEXAIRA.Systems. The solution goes beyond optimizing fan technology by enabling model-based, dynamic optimization of the entire cooling circuit – including components such as pumps, dry coolers, heat exchangers and chillers – in real time. Using digital twin technology, all cooling processes are modeled to calculate the most efficient operating parameters continuously. Through adaptive control, energy savings of up to 50 percent can be achieved across the entire cooling process. At the same time, more stable and efficient cooling operation enables a higher IT power density within the same footprint, supporting more resource-efficient and grid-friendly data center expansion. The on-premise solution ensures a high level of data security, while an integrated alerting system identifies potential issues at an early stage and enables timely countermeasures. The solution can also be applied to other refrigeration systems.

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**Further background information:  
More about the NEXAIRA digital ecosystem from ebm-papst**

#### Maximum Energy Savings Through a Digital Ecosystem

The digital ecosystem NEXAIRA optimizes the energy consumption of fans and cooling systems by fine-tuning the operating points of highly efficient EC fans. Through targeted analysis of system data, fan and system operations (e.g., fans in a FanGrid) are intelligently adapted to actual demand. This approach delivers substantial benefits in both retrofitting and new project planning. Replacing outdated hardware with modern, energy-efficient fans already yields significant savings. When combined with digital solutions such as 360° monitoring and intelligent control, fan energy consumption can be reduced by up to 70%.

#### Industry-Specific Solutions

NEXAIRA offers various digital services, including demand-controlled ventilation (DCV), vibration analysis, and heat exchanger or filter clogging detection. These services can be tailored to meet the unique requirements of different industries. For retrofit projects, the focus is on easy commissioning, seamless maintenance, and optimal integration with remote monitoring capabilities. The ebm-papst Service App is a key component, which enables rapid commissioning, comprehensive functional tests, and seamless cloud connectivity. This not only simplifies the work of installers and service teams but also enhances long-term operational reliability.

Amid skilled labor shortages, NEXAIRA's specialized solutions for refrigeration and air handling systems stand out. The emphasis is on maximum energy efficiency, high operational reliability, and effortless system setup. To achieve this, ebm-papst leverages core functionalities such as 360° monitoring and cloud-to-cloud communication.

#### AI-Supported Cooling System Optimization: Enhancing Energy Efficiency for Data Centers

ebm-papst has developed a dedicated solution for data center operators that significantly reduces energy consumption across the entire cooling circuit. Using digital twin technology, all cooling processes are modeled in real-time to determine the most efficient operating parameters. Through adaptive control, energy savings of up to 50% can be achieved throughout the cooling process. Beyond cost reduction, this solution plays a key role in meeting sustainability targets and ensuring compliance with regulatory requirements. The on-premises setup guarantees the highest level of data security, while an integrated alerting system detects potential issues early, allowing for proactive countermeasures. Additionally, this advanced technology can be applied to other refrigeration systems, further expanding its benefits.

#### Award-winning energy efficiency

NEXAIRA has received numerous awards, including the Schwarzer Löwe business award and the Baden-Württemberg Environmental Technology Award. The digital ecosystem was also a finalist for the German Sustainability Award.

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Image 1: Old belt-driven AC fans are still widely used in existing buildings, but they require a lot of maintenance and consume a lot of energy.

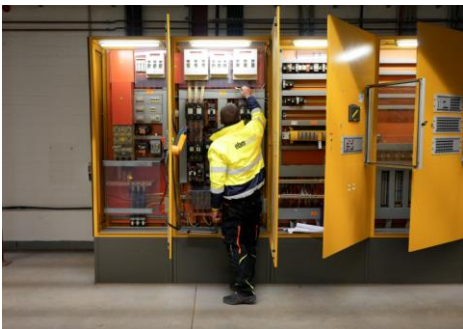


Image 2: An energy audit is conducted to determine the potential for energy savings. Using a digital twin, NEXAIRA can then be used to record, monitor, and further optimize the condition of the system. This increases operational reliability and energy efficiency.



Image 3: With the digital ecosystem NEXAIRA, ebm-papst emphasizes its ambition to lead air and refrigeration technology into a new era.

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Characters	approx. 3,500, including headings and sub-headings
Tags	NEXAIRA, Data Center, AI-supported Cooling System Optimization, Digital Solutions, Air Technology, Efficiency, Predictive Maintenance, Cloud, Digitalization, AI (Artificial Intelligence), Innovation, Technology Leader, SME (Small and Medium-sized Enterprises), Air Technology, Artificial Intelligence, Energy Transition
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#### About ebm-papst

The ebm-papst Group, a family-run company headquartered in Mulfingen, Germany, is the world's leading manufacturer of fans and motors. Since it was founded in 1963, the technological leader has set international industry standards with its core competencies in motor technology, electronics, digitalization, and aerodynamics. ebm-papst offers sustainable, intelligent, and tailor-made solutions for virtually every requirement in ventilation and heating technology.

In the 2023/24 financial year, the Group generated a turnover of EUR 2.408 billion. It employs just under 14,000 people at 30 production sites (including in Germany, China, and the U.S.) and in 50 sales offices worldwide. ebm-papst sets the benchmark in almost all sectors, such as ventilation, air conditioning and refrigeration technology, heating technology, information technology, mechanical engineering, intralogistics, and medical technology.

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