

Climate-neutral urban district with an intelligent ventilation system

Fresh air at urbanharbor in Ludwigsburg

Europe's first climate-neutral urban district is being built in Ludwigsburg. Instead of constructing new buildings, old manufacturing facilities are being transformed into new offices. One of Europe's first semi-centralized ventilation systems ensures that rooms are supplied with fresh air. Fans and the cloud-based Building Connect platform from ebm-papst ensure fresh air in urbanharbor, efficiently and based on demand.

The halls of the 200,000-square-meter industrial area in Ludwigsburg's Weststadt used to house facilities including production lines for refrigerators. Today, they play host to modern offices for local start-ups. A "building within a building" concept is being used in urbanharbor; it produces 75 percent less CO₂ than a comparable new building. It creates an air cushion between the inner and outer façades, which provides an additional level of insulation.

First semi-centralized ventilation system in Europe

Hall 8 went into operation in the summer of 2021; this hall boasts 10,000 square meters of space. The supply of fresh air to the rooms is ensured by the new semi-centralized ventilation concept, which includes fans from ebm-papst and the cloud-based Building Connect platform developed by ebm-papst neo. Around 300 RadiCal fans supply the air to the individual operating zones as required, and do so extremely quietly. They are located in sound-insulated housings where the air flow controllers usually were. The "building within a building" concept left only 30 centimeters of space between the inner and outer façades for the supply and exhaust air. Thanks to GreenIntelligence, the fans also emit an error warning if their temperatures deviate too far from the target values. This level of reliability is important, as the supply of fresh air is only ensured by the fans.

Sensors supply data to the Building Connect platform

The cloud-based real-time data platform obtains data from sensors in the office buildings, processes it in the ebm-papst cloud, and then issues commands to the fans. In addition to the temperature, humidity, TVOC (chemical compounds), and fine dust levels, the sensors also measure the CO₂ content in the air – and it is this that determines how the ventilation system responds. The algorithms working in the background learn from user behavior, building characteristics, and environmental conditions so as to continuously improve the entire building ecosystem.

First climate-neutral urban district by 2030

In future, all data will be sent to the urbanharbor cloud so that the site can be managed holistically, taking into account all areas of the energy ecosystem. This is how the cooperation is creating the climate-neutral urban district of tomorrow. In addition to efficient ventilation and building technology, quick-charging stations for electric cars, heat pumps, and a photovoltaic system on the roof will all play a part in making urbanharbor the first climate-neutral urban district in Europe by 2030.

Katrin Lindner
Trade press coordinator
Phone: +49 7938 81-7006
Fax: +49 7938 81-97006
Katrin.Lindner@de.ebmpapst.com

Corinna Schittenhelm
Trade press coordinator
Phone: +49 7938 81-8125
Fax: +49 7938 81-98125
Corinna.Schittenhelm@de.ebmpapst.com

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Press office contact
ebm-papst Group

Phone +49 7938 81-7105
twitter.com/ebmpapst_news
facebook.com/ebmpapstFANS
youtube.com/ebmpapstDE
www.ebmpapst.com

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Fig. 1: In Ludwigsburg, one of Europe's first semi-centralized ventilation systems is running with around 300 ebm-papst fans, which supply the modern offices with fresh air.



Fig. 2: The certified sensors constantly measure the air quality and send their data to ebm-papst's cloud-based Building Connect platform, which processes it further.

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About ebm-papst neo

Started in spring 2018 as think tank, the focus of ebm-papst neo GmbH & Co. KG today is on developing, supporting and launching data-driven solutions on the market. These can be used for monitoring air quality in buildings, for instance. ebm-papst neo is located at the Technologiezentrum Dortmund.

About ebm-papst

The ebm-papst Group, a family-run company headquartered in Mulfingen/Germany, is the world's leading manufacturer of fans and drives. Since the technology company was founded in 1963, it has continuously set the global industry standard with its core competences in motor technology, electronics, digitization and aerodynamics. With over 20,000 products in its portfolio, ebm-papst provides the best energy-efficient, intelligent solution for virtually every ventilation or drive-engineering task.

In fiscal year 2020/21, the "hidden champion" generated revenues of € 2.129 billion. The group employs roughly 15,000 people at 29 production sites (in Germany, China and the USA, to name but a few) and in 51 sales offices worldwide. ebm-papst sets the benchmark with their fan and drive solutions which are used in almost all industries, such as ventilation, air conditioning and refrigeration, heating, automotive, information technology, mechanical engineering, household appliances, intralogistics and medical engineering.

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