

Greater efficiency and operational reliability: FanGrid instead of belt-driven fans

Retrofit at Munich Airport

After more than 30 years, Munich Airport modernizes the ventilation systems of two connecting tunnels. A technical upgrade that significantly increases the energy efficiency and operational reliability of the systems has been achieved by using highly efficient RadiPac C EC centrifugal fans from ebm-papst.

Munich Airport is one of Europe's busiest airports. Since the airport opened in 1992, two ventilation systems have been used to ventilate the north and south tunnels. Both tunnels connect the car parks with the terminal area and must be continuously ventilated to ensure air quality and to remove smoke in the event of a fire. The two systems consist of an intake and an exhaust air system, each equipped with a large belt-driven fan.

In the fall of 2024, one of the four fans failed, resulting in a complete shutdown of the affected system and consequently an insufficient air supply. The energy management team at Munich Airport had to act quickly, with the most economical and sustainable solution being to carry out a comprehensive retrofit of both systems. Removing the old fans was particularly complex, as each of the four fans had to be dismantled on site and carried out in individual parts due to their size.

Increased operational reliability thanks to redundant system

Four prefabricated FanGrid units were then installed, two for each system: one for the intake air and one for the exhaust air. In a FanGrid, several fans are arranged next to and on top of each other and operated in parallel. This ensures a more even air flow, resulting in a more efficient through-flow for sound attenuation baffles and heat transfer. In the case of the airport's systems, the focus was primarily on increased operational reliability due to redundancy, while saving energy at the same time: if one fan in the FanGrid fails, the speed of the others increases automatically so that the air performance always remains constant, thereby guaranteeing good air quality. Operating several fans at partial load also reduces the power requirement of the system. All in all, the retrofit of the two systems included 34 new, highly efficient RadiPac C centrifugal fans. Installation took place within a day and the entire retrofit project was completed between the end of October and the beginning of December 2024.

The result: Annual consumption reduced by 252,000 kilowatt hours

According to the calculations of the airport's energy management team, retrofitting the two systems with four FanGrid units will save around 252,000 kilowatt hours per year in future. Assuming a gross energy price of 29 cents per kilowatt hour (kWh), this corresponds to an annual cost saving of around 50,000 euros. The investment will therefore pay for itself within three and a half years.

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Fig. 1: The old fans were too large to be removed from the plant room in one piece and had to be dismantled into individual parts beforehand.



Fig. 2a: A FanGrid with several fans running in parallel provides a high level of operational reliability.



Fig. 2b: If one of the fans fails, the speed of the others is increased so that the air performance always remains the same. This makes this solution particularly reliable for critical applications.

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Images ebm-papst (photos by Lukas Zwiessele)
Characters approx. 2,900, including headings and sub-headings
Tags retrofit, RadiPac C, EC fans, FanGrid, redundancy, operational reliability, airport, ventilation
Link www.ebmpapst.com/retrofit

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 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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