meteoviva

ENERGY MANAGEMENT AT DÜSSELDORF AIRPORT

CASE STUDY



Central Building - © Andreas Wiese, Düsseldorf Airport

Cleared for Take-Off

meteoviva has been in use at Düsseldorf Airport since 2012. Starting with the Central East Building, meteoviva technology is now in use in 13 buildings at the international hub, including all 3 terminals.

Düsseldorf Airport DUS

~6,000 tons CO_2 saved per year

ca. 20% energy savings per year

~14,800 MWh of energy saved per year

The goal:
Climate-neutral operation of the entire Düsseldorf airport by 2035.

The solution:
Predictive control and grid-friendly infrastructure with meteoviva technology.

Implementation:

Since 2012, nearly all of the airport's buildings have been gradually equipped with meteoviva solutions. The active, predictive control of individual buildings is supplemented by overarching demand-side management.

Predictive control:

Predictive control enables a building to anticipate the future and act proactively, rather than merely reacting. The building is modelled as a digital twin, which processes essential data such as weather forecasts, building physics, building systems, climate profiles, and usage data to simulate optimised operation. AI-supported processes feed the optimised setpoints back into the building, which in turn reports the actual measured values.

Demand Side Management:

Thanks to the airport's advanced technology, many buildings can not only be actively controlled but also operated in a way that benefits the grid. Demand side management builds on predictive control and incorporates additional factors—such as load and consumption forecasts, grid signals, and electricity prices—and balances these with the facility's internal heating, cooling, and electricity generation. Processes are optimised so that affordable, sustainable energy is prioritised, and the supply-side systems are controlled optimally based on cost, efficiency, CO_2 emissions, and availability. This allows, for example, the self-consumption of self-generated PV electricity to be maximised. At the airport, buildings and grids also serve as storage for thermal energy.



Thanks to meteoviva, we've been able to drastically reduce energy consumption in our buildings. This brings us a big step closer to our goal of becoming climate-neutral by 2035!

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