

Press

Sustainable and efficient: Messe Düsseldorf supports resource conservation with stringent masterplan for its premises



When the Düsseldorf exhibition centre in Stockum went into operation in September 1971, it was considered to be the most modern and pioneering exhibition centre in Europe. In order to maintain this standard and live up to their reputation, the Düsseldorf trade fair organizers have continuously invested in their site ever since and kept it at the cutting edge of technology. The focus has been not only on the demands and needs of customers but also on sustainability and resource efficiency. With the construction of the new Hall 6 punctually at the turn of the millennium, the implementation of the master plan "Messe Düsseldorf 2030" began, which includes the modernisation of the entire exhibition centre and also the energy-related renovation of all halls.

Construction and modernisation of halls and technical facilities

Since then, twelve of Düsseldorf's eighteen exhibition halls have been newly built or completely renovated as part of this master plan. In addition, the North Entrance was completely redesigned back in 2004 and now offers, among other things, a direct light rail connection to the city centre and Düsseldorf's main train station. All of the new buildings have also taken into account the qualitative changes in trade fairs in recent years, which have led to an increased demand for high-quality rooms for conferences and congresses of all sizes. The latest new building on the Düsseldorf exhibition grounds, Hall 1, with its adjoining conference area, the foyer in front, and the completely redesigned, generously roofed south entrance, combines the requirements of modern trade fairs in a special way.

In parallel with the construction projects and modernisation of the buildings, Messe Düsseldorf has also modernised the technical provisions and energy supply of its entire premises. The aim was to reduce energy consumption at trade fairs by over 20 per cent. One essential element was the construction of a combined heat and power unit, which went into operation in 2010, and the installation of two photovoltaic units since 2008. Numerous organisational innovations and a customisable control system ensure flexible, needs-focused air conditioning in the halls, conference

and seminar rooms and event areas.

Renovation of the power control centre and energy distribution

Improvements in energy efficiency are only feasible with a well-thought-out strategy that approaches the relevant challenges in a variety of ways: the level of heat insulation in a building envelope, the standard of systems engineering, the efficiency of the energy network and the flexibility of the controls. All these elements need to accommodate an exhibition centre that has grown organically over several decades and was originally designed at a time when oil was still cheap and energy savings unheard of. Over the years, all the legacy heating systems have gradually been replaced by state-of-the-art equipment, and the entire network has been totally redesigned. One of the main aspects in reaching the relevant efficiency goals was to change the controls from a multilevel system to an individually adjustable system. Today, four cooling and two heating systems are in place, serving the entire exhibition centre via a network structure that can be flexibly activated and modified. About one third of the entire heat is delivered by a combined heat and power unit with a thermal output of 770 kW, while the remaining heat is generated by boilers using fossil fuels (gas and oil). However, there is a much greater and therefore more important need for cooling, at 220 W/sqm. This is provided by an automated cooling system with 14 turbo cooling units. In all, 58 MW are generated, ensuring comfortable air conditioning and optimised ventilation in all 18 halls.

Efficient air conditioning through an ingenious control system

As the exhibition halls are extremely large, the various trade fairs and other events require air conditioning that is well thought out, with a fast and responsive control system. Furthermore, the entire exhibition centre is rarely booked out in its entirety and events can differ in type and size, so the aircon can be turned on and off separately and at different times in each building. 85 per cent of an air conditioning system depends on the internal heat load, and although there are important empirical values, the variables are so diverse that there can never be a rigid control pattern: During setup and setdown phases, when gates are wide open for long periods of time, neither heating nor ventilation is required, yet on cold winter days a minimum temperature still needs to be ensured. At the opening of a trade fair, on the other hand, a comfortable basic temperature is necessary in the mornings. As the number of visitors rises, and depending on changes in internal heat load, there needs to be some transition to a cooling mode, to keep the air in the exhibition halls fresh. Moreover, the conditions at the centre of a hall may turn out to be entirely different from

those along the outside walls or in the entrance areas. The ventilation system has been designed and scaled to take this into account. Also, trained and experienced staff are available, who can respond to sudden changes and requests from visitors and exhibitors, overriding the set controls at any time.

Energy management system as a motivating factor

In addition to constructional changes, the Messe Düsseldorf energy management system also makes a substantial contribution to ensuring sustainability and energy efficiency. It covers all buildings in the exhibition grounds as well as the vehicle fleet and all other energy sources. Messe Düsseldorf has been certified under ISO 50001 since 2014, and since that time – though probably for longer – has met certain legal requirements which are checked at annual intervals. Essentially, the standard concerns electricity and heat consumption as well as ventilation, cooling, compressed air and water. The energy management system has been designed to reduce consumption and at the same time to improve the production and distribution of energy and to make it more energy-efficient.

Messe Düsseldorf joined ECO PROFIT as early as 2011, a scheme which forms part of Düsseldorf's climate protection programme. It supports businesses in saving energy and in making the most efficient use of resources. Recognition as an ECO PROFIT enterprise means that Messe Düsseldorf has undertaken to implement environmental standards and to take specific steps to save energy. The ECO PROFIT programme also promotes participation in workshops and an exchange with other companies recognised under the scheme. One major element in obtaining successful recognition is the so-called "traffic light list", a new system that covers all recommendations, errors and initiatives and which documents their implementation.

Success through perseverance and single-mindedness

Messe Düsseldorf's energy management system is one of many criteria to measure its voluntary commitment to sustainable action, its single-mindedness in achieving energy savings and its implementation of resource-friendly solutions. Apart from the company's technical facilities, its most important potential lies of course in the workforce. Without their help, it would be impossible to save carbon emissions and achieve climate protection goals. What has made a major difference, for instance, is the implementation of suggestions by staff members, such as turning off lights and ventilation at night and installing timers and motion detectors by mid-2018. These measures have saved Messe Düsseldorf 968,517 kWh of electricity – roughly matching the annual power consumption of 240 households*.

Acting responsibly

Thanks to many different initiatives, both big and small, Messe Düsseldorf has succeeded in reducing the power consumption of trade fairs by up to 20 per cent over the last 10 years and – despite an increase in exhibition space – reducing the use of heat by up to 30 per cent and therefore saving between 4,200 and 5,000 tonnes of carbon dioxide each year. Even though the "Messe Düsseldorf 2030" master plan, with its total investment volume of EUR 650 million, is currently on pause due to the pandemic and is far from being completed, almost all exhibition halls already meet the latest technical standards.

* Calculation basis: annual electricity consumption of 4,000 kWh for a 4-person household, status 2020

Further details of Messe Düsseldorf's environmental responsibility can be found at www.messe-duesseldorf.de/environment

The Messe Düsseldorf Group:

The Messe Düsseldorf Group generated a turnover of EUR 136.8 million in the COVID year 2020. At the seven events in Düsseldorf 5,422 exhibitors presented their products to 534,367 trade visitors. Messe Düsseldorf has developed a ground-breaking hygiene and infection protection concept, which was successfully employed at CARAVAN SALON, the first major German trade fair held since spring 2020. Düsseldorf Exhibition Centre hosts around 40 trade fairs in five sectors of expertise: "Machinery, Plants & Equipment", "Retail, Crafts & Services", "Medicine & Health", "Lifestyle & Beauty" as well as "Leisure", including 20 international No. 1 trade fairs as well as, currently, 15 robust partner and guest events. In addition, there are more than 1,000 congresses, corporate events, conferences and meetings organised by the subsidiary Düsseldorf Congress. Furthermore, the Messe Düsseldorf Group organises 75 of its own, joint and contracted events in other countries and is one of the leading export platforms in the world. The Group runs a global network of 77 international offices for 141 countries, including 7 international subsidiaries.

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