

MAXIMUM COMFORT FOR THE ELBPHILHARMONIE

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The Elbphilharmonie concert venue opened its doors on 11 January 2017. When designing Hamburg's new landmark, architects **Jacques Herzog and Pierre Meuron** drew inspiration from three main sources: the ancient theatre in Delphi, sports stadium architecture, and tents. On the existing structure of the brick Kaispeicher A building, a former warehouse, they have erected a glass form that features a curving roof and an unmistakable silhouette. The façade consists of more than a thousand double-glazed elements, many of which bend and swell in a variety of ways – lending the Elbphilharmonie the effect of a giant crystal. Each one of the panes, numbering approximately 2,200 in total, is marked with its own individual pattern. The idea behind this, according to the architects, is to reflect the sky, water and city in ever-changing ways.

The room air conditioning equipment for the concert halls had to satisfy the very highest standards of **air quality, air comfort** and, above all else, **acoustics**. The aim was to prevent visitors from feeling or seeing the room air conditioning system – and under no circumstances were they supposed to hear it.

The four HVAC contractors entrusted with installing the Elbphilharmonie's equipment largely opted for TROX products in aspects such as fire protection and ventilation systems. For example, approx. 400 [Fire dampers](#) and 90 [Smoke control dampers](#) in the periphery of the large concert hall ensure a smoke-free environment in emergency situations. Swirl and displacement flow diffusers were also installed in order to provide a noise-free supply of air in Saal 3, the venue's third hall. [TROX variable control units](#) of types TVR, TVJ and TVT-Easy are used for the air distribution.

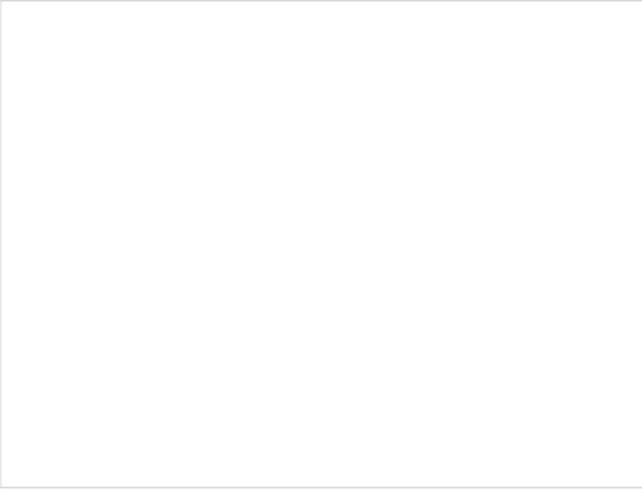
Things are more intimate in the small hall. With roughly 550 seats and its elegant wood panelling, it offers the ideal setting for extraordinary listening experiences. Not a single ship from the nearby Elbe disturbs the acoustics here. The built-in air terminal units, the fire dampers and air terminal devices from TROX also work noiselessly.

The "Sky Foyer" on the 20th floor offers a perfect view of the roof of the Elbphilharmonie. Here, VIPs can enjoy a glass of champagne during the intermission. The [TROX swirl diffusers from the type DCS range](#) are specially designed for such comfort zones.

The consistent quality monitoring and acoustic testing performed on new and existing TROX products is another reason why TROX is chosen to equip spaces with acoustically sensitive requirements such as the Elbphilharmonie. TROX has **2 reverberation chambers** in its own acoustics laboratory. They meet the recommendations for reverberation chambers in accordance with ISO 3741 (Determination of sound power levels of noise sources using sound pressure - Precision methods for reverberation rooms). In the acoustics laboratory, sound measurements are taken. These measurements are indicative or supportive in the development of new products.

Furthermore, measurements are taken for the regular quality control of existing products and product modification as well as for project-related special products according to customer requirements. Measurements on sound attenuators are a special form of acoustic measurement. A special sound attenuator test run has been set up for these measurements. These meet the requirements of ISO 7235.

Ralf Joneleit, member of the extended Board of Management and Head of Technology, TROX GmbH: "For TROX, working on such an ultra-modern building as the Elbphilharmonie is both confirmation and an incentive. Projects such as these affirm that TROX is delivering services of the very highest quality and they motivate the company to keep spurring on the development of its products and systems."



TROX. The art of handling air.

Numerous TROX products are installed in the Elbphilharmonie, where they ensure good indoor air quality and safety (Photo: © Oliver Heissner / TROX GmbH)

All products manufactured by TROX are tested in TROX's own reverberation chambers, both during the development phase and before they are launched on the market. The aim is to provide customers with correct and reliable acoustic data via catalogues and design programs.

TROX is a global leader in the development, manufacture and sale of components, units and systems for the ventilation and air conditioning of internal spaces. With 34 subsidiary companies in 29 countries on 5 continents, 20 production facilities, and importers and representatives, TROX is present in more than 70 countries. The TROX GROUP currently has around 4,600 employees and generates revenues of roughly 600 million euros.

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