

AAF Gas phase solution protects artifacts in Norway's New National Museum

CASE STUDY – MUSEUMS AND HISTORIC STORAGE

Customer and Project profile

Customer:

Statsbygg, Oslo, Norway
Statsbygg is the largest public real estate owner in Norway and the government's key advisor in construction and property affairs, building commissioner, property manager and property developer.

HVAC Contractor:

Caverion

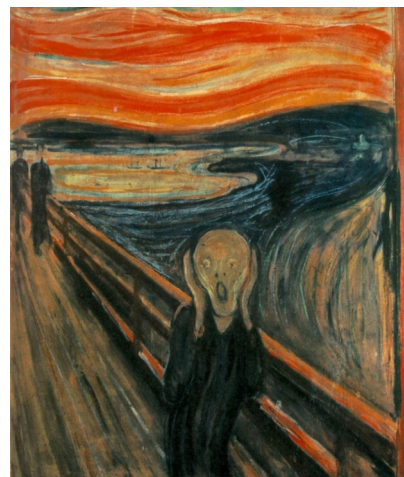
Technical Consultant:

Ramboll

Project:

New Nationalmuseum, Oslo, Norway

As the new museum is located in the center of Oslo, major concern is that air pollution will destroy the artifacts. Therefore the customer is looking for a high quality solution to remove gases and acids from the air before reaching the artifacts.



Edvard Munch,
The Scream,
1893

Initial situation

The Norwegian government is building a new museum for art, architecture and design in Oslo. Designed by Architect Kleihues + Schuwerk the new National Museum covers a total area of 54,600 m² and will become an important and dynamic arena for the general public to meet the visual arts.

A massive 130.000 objects have to be moved before the new National Museum can open in 2020. The National Museum's collections include paintings, sculptures, drawings, works of applied art, design objects, architectural models and installations.

The proposed building signals the museum's significance on a national and international level. For example the museum holds the world's most important collection of paintings by Edvard Munch (1863–1944), including such famous and iconic works as *The Scream*, which in terms of its fame rivals with works such as Leonardo da Vinci's *Mona Lisa* or Van Gogh's *Sunflowers*.

Key challenges and requirements

The project in total includes 55 air handling units with a total airflow of 650,000 m³/h. As Indoor Air Quality on molecular level is the primary concern, discussions and project planning exceeded by far scientific challenges present in standard Indoor Air Quality optimization projects.

One of the key challenges and requirements was that AAF should provide a full technical test report according to Din ISO 10121:2012 showing the test results and the catalytic properties of the micro granulated carbon used in all types of filters. Each filter must be tested for each gas like Ozone, acid gases like Sulfor Dioxide (SO₂), Nitrogen Dioxide (NO₂), Hydrogen Sulphide (H₂S), VOC etc. In general all gases present in urban environments, which can destroy valuable artifacts.

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The AAF solution

AAF proposed a two stage gas phase solution with planned delivery in 2018/2019.

Stage 1: SAAF Canisters SCR:24 RM02



25 mm functional layer of pelletized activated carbon media with main advantage of absorbing urban emissions like VOC and acidic gases.

Using SAAF Canisters as pre-filter units, followed by AAF VariSorb XL SAAF City filter units with special ion-exchange resin with dedicated functionality in the Ammonia chemisorption area, the combination will feature strengths in all areas of gas protection, with particular strength in the areas of its applicationspecific chemical impregnation.

Stage 2: Varisorb XL SAAF City



Single layer functional broadband activated carbon media to effectively remove urban emissions and alkaline gases.



The National Museum of Art, Architecture and Design, Oslo; Planned completion: 2020; www.nasjonalmuseet.no/en/



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