

#### Taking an ideal line

MOEDING design at Copenhagen's new underground stations

Seventeen stations, 15 kilometres of tunnels, and eight years of construction: the new Cityringen underground line in Copenhagen is now open. It extends the existing underground network and connects the city centre with the districts of Vesterbro, Nørrebro, Østerbro, and the city of Frederiksberg. Taking inspiration from the surroundings, each entrance was given a unique design. Ceramic panels made by MOEDING were used in the façade design of seven stations. The "Orange Peel" glazed surface, employed for the first time, emphasises the natural material and, thanks to its easy upkeep, is outstandingly suited to construction projects of this type.

Copenhagen has had an underground system since 2002. The two lines, M1 and M2, run between Vanløse in the west, Vestamager, and Kastrup Airport in the south-east of the Danish capital. The opening of the Cityringen line connects the inner city districts with Frederiksberg and the central railway station. It serves 17 stops that represent a new approach to urban and sustainable mobility: the stations are no longer simply the constructed result of building specifications but are also actively engaged in dialogue with their environment. As individually designed urban spaces, the station entrances present an array of different colours and shapes to assist intuitive wayfinding. This user-centric solution, designed by renowned engineering firm Arup, aims to provide passengers with clean lines of sight for a seamless street-to-platform journey and make the stations themselves pleasant civic spaces. At seven locations, the ultimate designs used were created in association with MOEDING. Almost 12,000 LONGOTON® ceramic panels coloured red, green, white, and grey



adorn the stations Frederiksberg Allé, Gammel Strand, Copenhagen Central Station, Østerport, Nørrebro, Poul Henningsens Plads, and Vibenshus Runddel.

#### Each station unique

The shade of red that recalls the colour used by Danish State Railways (DSB) always represents an interchange, while the other stations consistently reflect their surroundings at surface level. The four different, green glazed panels used at Frederiksberg Allé station are a reference to the lime trees that line the avenue above the station. Three stations, among them Nørrebro, were given white glazed brick panels, inspired by the numerous monuments at the nearby Assistens cemetery. Angular panels such as at Gammel Strand or colourful details on the bottom edges of the brick panels at Vibenshus Runddel station further highlight the diverse design possibilities of ceramic façades. Common to all of them is a glossy or silk matt surface, which for the first time was given an "Orange Peel" effect using a special application technique. During the baking process, a wave-like relief is created in the glaze, creating a vivid surface that changes depending on the viewing angle and reflections. In addition to individual designs, the developer specified the use of a natural building material and the need for a minimalist façade requiring as little maintenance as possible. The clay and loam brick panels are part of the LONGOTON® Rapid rearventilated façade system and can be installed and removed without the need to follow a specified assembly sequence. All glazed panels made by MOEDING are also lead-free.

For Anders Nøhr, architect at Arup, the requirements were met in full: "We chose ceramic panels from MOEDING because, when used on a large scale, they reveal a highly distinctive material and surface structure with a relatively low weight and are an extremely resilient, robust, vandal-proof and age-resistant cladding solution. Furthermore, the ceramic facade is a non-metallic cladding



that allowed us to install antenna cables for radio communication in the 150-millimetre cavity behind the panels."

The Cityringen underground line has helped the city of Copenhagen to take a further step forward to its goal of being climate-neutral by 2025 and, with the help of a smart façade concept, has made the underground civic space pleasant for people and an excellent way to navigate the city.

(4173 characters incl. spaces)

#### **Project information**

Project name: Cityringen, Copenhagen
Client: Salini Impregilo S.p.A.

Architect: Arup

Façade lining: MOEDING Keramikfassaden GmbH, Marklkofen

Completion: September 2019



## **Figures**

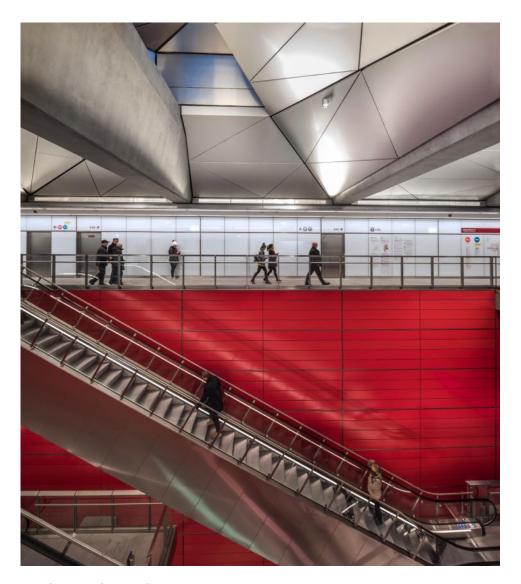


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One of the four architectural approaches on this construction project describes underground station design as successful if it reflects the character of the city. At Frederiksberg Allé station, a total of 2,400 panels in four different shades of green with a silk matt glaze measuring 343 x 1,358 millimetres were installed over an area of 1,100 square metres. The various shades of green aim to reflect the abundance of trees in the surrounding area.

Architect: Arup



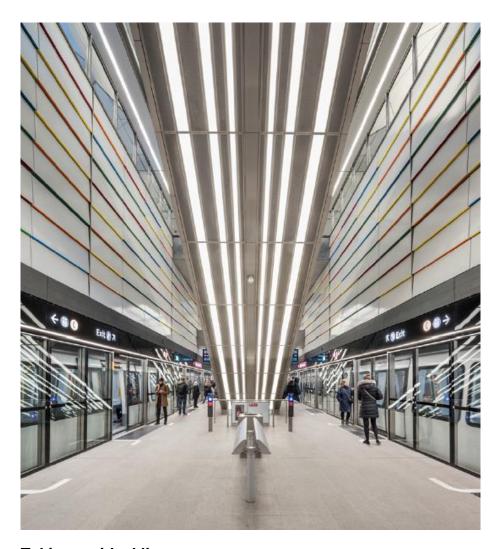


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The red glazed LONGOTON® ceramic panels measuring 343 x 2,847 millimetres adorn the three interchanges Copenhagen Central Station, Østerport, and Nørrebro. Thanks to the MOEDING Rapid systems, panels are simply hooked into place and are easy to remove if required.

Architect: Arup



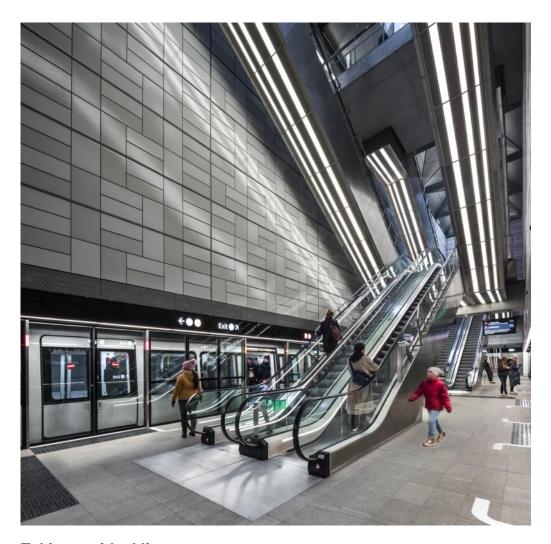


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In addition to the extravagant ceilings that reflect the artificial and natural light, Vibenhus Runddel station features a total of 800 shingle panels measuring 479 x 1,633 millimetres with a glazed white face. The colours blue, green, orange, red, and yellow at the base of each shingle panel highlight the club colours of the nearby National Stadium. A new glazing process was specially developed for the differently coloured glazed panels.

Architect: Arup



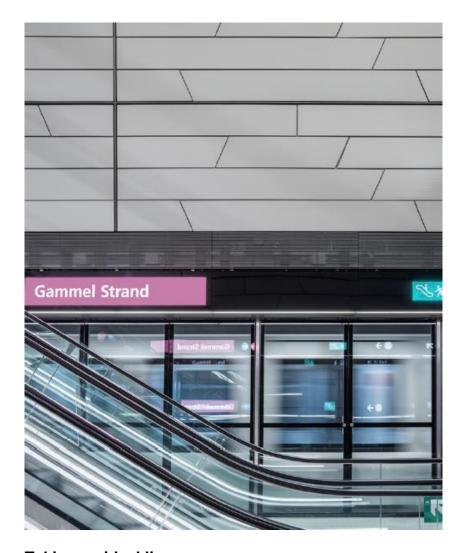


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Over a total area of approx. 1,020 square metres, a total of 3,300 light grey glossy panels in portrait and landscape format were installed at Poul Henningsens Plads station in the Nørrebro district. The height of the panels varies from 343 millimetres in landscape format to 686 millimetres in portrait format. At 1,124 millimetres, the panel length is considerably shorter than at the other stations.

Architect: Arup





### Taking an ideal line

Looking out to Christiansborg, Gammel Strand is one of the most popular stations for visitors to Copenhagen. From here, they can walk along the canal around the castle or pop into famous art galleries. The smooth and matt white glazing is intended to reflect the light in a similar way to the surface of the water. Another special feature of the façade are the 2,300 angular ceramic panels measuring 340 or  $352 \times 2,600$  millimetres.

Architect: Arup



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