Powering the idiom

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The Vuoksi River in eastern Finland has supplied the hydroelectricity plant in the town of Imatra since the 1920s. Photo: Max Plunger

"Kolumba was crucial to the project because it is handmade, which gives a certain irregularity. The materiality and feel of the brick forge a link between old and new."
Tuomas Kivinen, architect

Powering the idiom

LIGHT-COLOURED KOLUMBA ZIGZAG AROUND THE ELECTRICITY SUBSTATION IN IMATRA, EASTERN FINLAND. THE ARCHITECTS HAVE CREATED A PERFORATED, LATTICE-STYLE SCREEN AROUND THE MAIN BUILDING BY OMITTING SOME OF THE BRICKS.

Around 10 kilometres from the source of Vuoksi River in Lake Saimaa in eastern Finland are the turbulent Imatrankoski rapids, a popular tourist destination since the late 18th century. Shortly after gaining independence in 1917, Finland decided to build a hydroelectric power plant at the site, which was completed in 1929. The project was carried out under close media scrutiny at a time when electricity was still a relatively new technology and the public considered facilities of this kind a major achievement.

The Imatra substation, along with five new power line structures replaced an ageing air-insulated switchgear. It extends the historic plant in a way that takes into account both the original architecture and the surrounding landscape. The substation resembles a rectangular box that lines up with the placement of the older buildings, forming a large courtyard facing the river. Its power line structures comprise two terminals, two pylons and a mast – the latter being the only element taller than the surrounding trees.

"We wanted the old buildings to retain their dominance in the landscape. That is why the lower floor of the substation is underground. The height of the cornice also corresponds to the height of the nearest of the old buildings," explains architect Tuomas Kivinen, partner and CEO of Virkkunen & Co Architects.

Another way the architects have fostered cohesion between the substation and the power line structures is by using a repeating triangle motif. The station has a double façade, the outermost of which features a zigzag pattern in Kolumba that wraps around the entire building. In the lower part, the wall is completely closed, while in the upper part, every second brick is omitted to create a lattice effect. The openings allow light and air to pass through.

The outer wall is supported by a steel frame attached to the prefabricated concrete façade behind it. Around the entrances at each end of the building, the lower part of the wall has been omitted, exposing parts of the main building, made of in-situ cast concrete. The white-painted steel power line structures also interpret the triangular motif in a variety of different ways. >

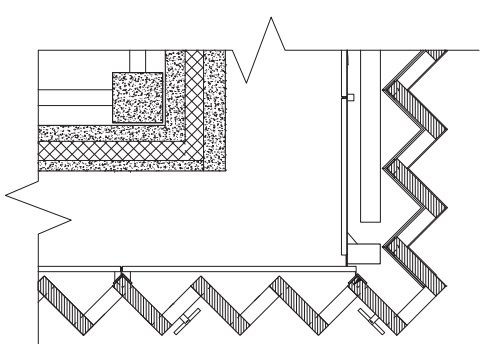
The area around the power station is of great importance in terms of both natural and cultural history. The substation and the new transmission structures have been considerately placed in relation to the original unit. Photo: Tomi Parkkonen

In terms of both scale and location, Imatra Transformer Station has been adapted to fit in with the power plant's existing buildings. Like the older buildings, it is built in brick, but the architects chose light-coloured stone to match the white-painted steel of the power line structures. Photo: Max Plunger

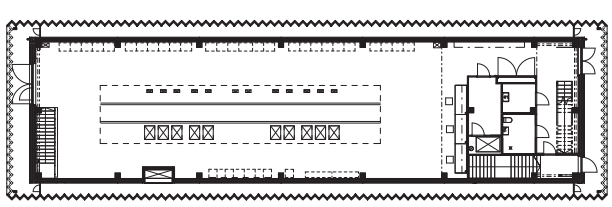
Imatra Transformer Station, Imatra, Finland
Client: Fingrid Oyj
Architect: Virkkunen & Co Architects
Construction: Rakennusliike Evälahti Oy
Engineer: Sweco Finland
Built: 2020
Brick: K91
Text: Martin Søberg, PhD, architectural historian
Photos: Max Plunger, Tomi Parkonnen, Tuomas Kivinen

The façade's brickwork consists of Kolumba in zigzag patterns, adapted to the length of the bricks. The handmade nature of the bricks prevents the surface from looking the same all over and gives it a dynamic, textural air. Photo: Max Plunger

Triangular shapes are a recurring feature of both the substation and the new power line structures. Photo: Max Plunger

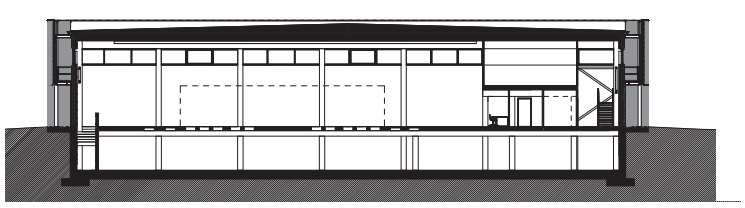


Detailed drawing of the construction a corner.



Floor plan, ground floor

The façade is closed at the bottom. At the top, every second brick is omitted to create a lattice effect. The jagged profile facilitates a delicate and changing play of light and shade. Photo: Max Plunger

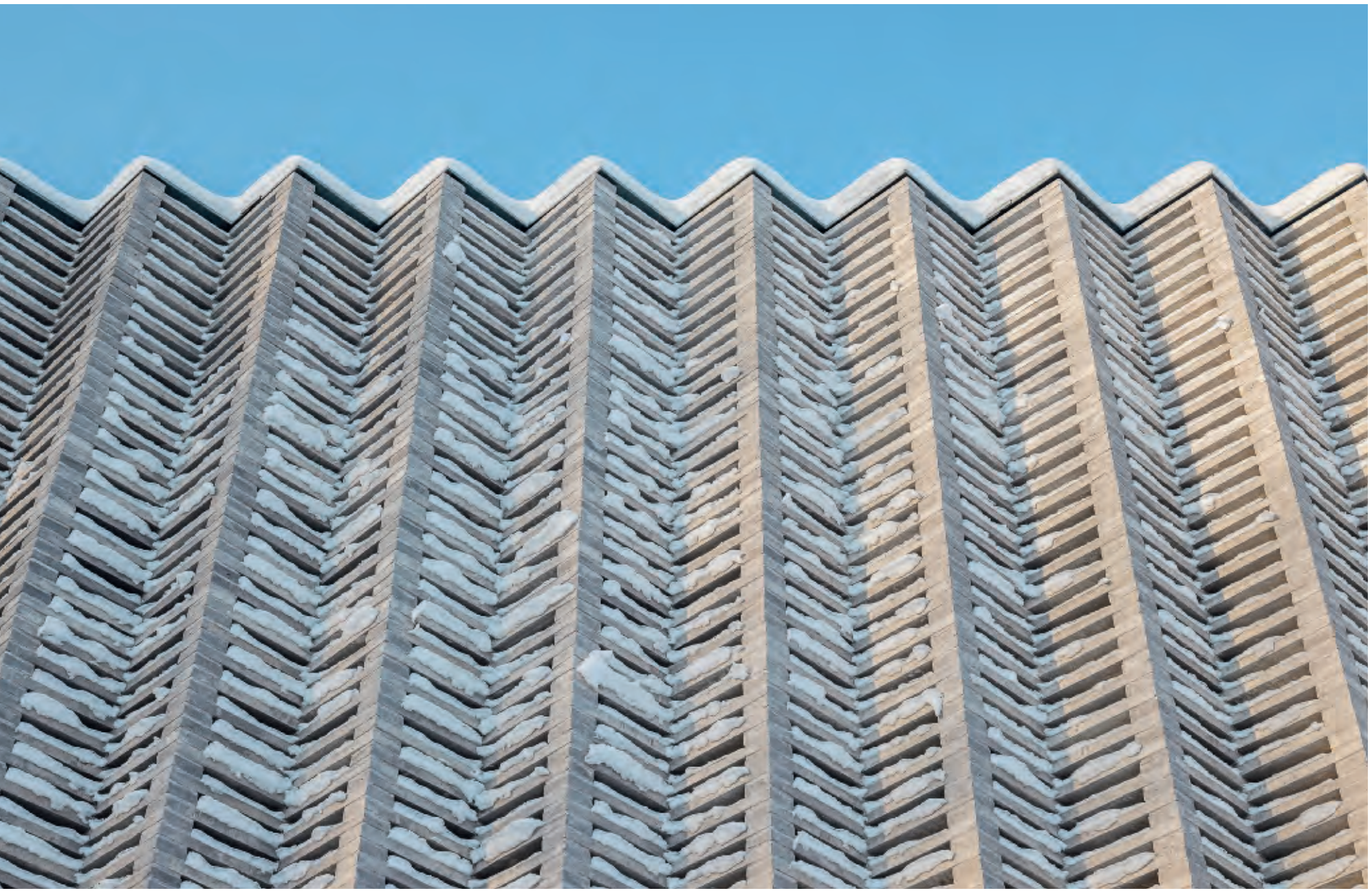


Longitudinal section

"The light shade of the Kolumba enhances both the reflections and shadow effects so that the profiling stands out clearly. The bright monochrome also connects the building to the white power line structures."
Tuomas Kivinen, architect

A clear and frosty winter day. Snow has settled like small pillows in the holes on the brickwork. Photo: Tuomas Kivinen

The coupling system is in the main switch room on the ground floor. High clerestory windows provide daylight and a view of the brick lattice. Photo: Max Plunger



The 1920s power plant buildings have classicist features and feature concrete frames, red-brick façades and concrete detailing. The regular placement of doors and windows inspired the rhythmic repetition of the shapes in the new substation and power line structures.

"We first considered using red brick, like in the existing buildings, but instead chose to emphasise that the new building adds a new, contemporary layer. The light shade of the Kolumba enhances both the reflections and shadow effects so that the profiling stands out clearly. The bright monochrome also connects the building to the white power line structures," Kivinen recalls.

Imatra is not just a technical facility but a living work of architecture that looks alive and constantly changing. The light casts delicate, ever-changing shadows over the relief of the facades, and in winter the snow settles in the holes of the lattice.

"Kolumba was crucial to the project because it is handmade, which gives a certain irregularity. The materiality and feel of the brick forge a link between old and new," the architect adds.

The substation houses a gas-insulated switchgear that converts the power plant's output into a high-voltage current for the grid. The ground floor houses the main process equipment. A staircase leads up to an engine room, while cables run up from the basement into the main process equipment room where they connect with the switchgears. The concrete elements are exposed in the interior, which consists primarily of technical installations. To make working in the main switchroom more comfortable, the architects added high clerestory windows, through which daylight can be seen filtering through the brick lattice.

"Finnish substations usually have no windows, but we have added them and received excellent feedback from the users," Kivinen concludes.

As darkness falls, light seeps out between the Kolumba bricks, revealing the porous nature of the façade. Photo: Tuomas Kivinen