Moscow’s Tsaritsino Palace restored • New Thermal Spa attracts tourists
The de Young Museum, a new San Francisco landmark • Skive central heating plant – a challenge for the architects
Bank building in Stockholm becomes the Architect House • Copper in Architecture Awards
Editorial

Welcome to a new issue of Copper Forum, where we will focus on architecture as art. We have in a previous issue talked about integrating the artist’s vision with the architect’s specialist knowledge. This time we will take this concept a step further and look at the building as a work of art itself, with copper as a means to reach that goal.

One example is the recently built de Young Museum in San Francisco, whose spectacular copper façade threatens to outdo the vast art collection it houses. The innovative and unique architecture has made the museum a new San Francisco landmark. Like an abstract work of art it blends into the lush surroundings, the thousands of embossed and perforated copper sheets on the façade filtering the sunlight, like the light shining through the foliage of the eucalyptus trees around it.

The Copper House, a former bank building in central Stockholm, entirely clad with copper, is today home to four groups of architects, one on each of the four floors. Alf Folmer, frequent contributor to Copper Forum, has visited the building that lives and breathes architecture, and talked to the architects about their relation to copper.

When designing the new central heating plant in Skive, Denmark, the architects’ goal was to achieve an elegant, graphic movement of colours in the facades, mirroring the sky and the surrounding nature. The solution was copper, about 60 tons of it, which turned the facility into a building with character that reflects the changing light and seasons.

We will also visit “the new pearl of Moscow”, the Tsaritsino Palace, built by Catherine II in 1775, but just recently getting its beautiful copper roof. Copper was also used for a new parish building in the town of Turku, Finland. The six-storey building is partly excavated in rock and the façade facing the street is clad with copper, giving the building a lively yet distinguished look.

Finally, we would like to give a boost to copper by lifting forward its important benefits to all life; plants, animals and humans. Much of the arable land in Europe has copper deficiency, which is a threat not only to the harvests but also to our health.

I hope that you will find this interesting and stimulating reading. As always, we welcome your thoughts and suggestions of what you would like to find in future issues of our magazine.

Lennart Engström, Editor
TABLE OF CONTENTS

4 Moscow’s Tsaritsino Palace restored
5 Warka Brewery Conference Centre
6 Copper deficiency – a threat to our health
7 Private house building trend in Russia
8 New Thermal Spa attracts tourists
10 Turku parish building excavated in rock
12 Extension to Aalto-designed Student House
14 The de Young Museum, a new San Francisco landmark
18 Multi-surface roof required masterly skills
19 Glass and copper adorn oceanography building
20 New library in historic milieu
22 Skive central heating plant – a challenge for the architects
25 Uncompromised design in suburban London apartments
26 Bank building in Stockholm becomes the Architect House
32 Copper in Architecture Awards
36 Waterfront development mixes residential and commercial space
38 Bold architecture in downtown Dublin
Tsaritsino Palace was built in Moscow by order of Catherine II. The work began in 1775. The architect Vasili Bashzenov began to design the project, while the main palace was designed by the architect Matvei Kazakov. Khlebniy Dom, the kitchen building, was built as part of the palace in 1784–1785, following Bashzenov’s design. The building frame was completed in the summer of 1783, when the funding was beginning to run out. The frame was roofed temporarily, and the permanent roof was completed after Bashzenov was replaced. Catherine the Great died in 1796, when the palace was still incomplete. A peasant hospital and school operated within the palace. At the turn of the century most of the buildings were rented out for summer. In practice, the palace buildings have been nearly empty most of the time they have existed. After the October Revolution the buildings housed many families until the 1970s. Tsaritsino was abandoned in its entirety. Khlebniy Dom with its deteriorating tin roof and the roofless abandoned palace were a depressing sight. Not until 2004 did Tsaritsino become city property and rebuilding work could start. It was decided that Tsaritsino should be restored according to Kazakov’s plans. Unlike the original three-floor project, there was only sufficient financing for two floors. Copper roofs were common during the era of Catherine the Great. When rebuilding the palace, it was decided the roof should be made of copper, due to its elegant appearance and technical features. The roof of the Great Palace was constructed according to the old design, while the roof of Khlebniy Dom has been through significant changes. The inner court of the building was covered with a translucent dome, made of glass and metal, which was a typical solution in such projects. In future the dome will be lit up at night. Despite the changes, the main elements of the roof were built of copper according to the original design. The copper roof was made using both modern construction engineering and traditional mechanical seaming. Almost 20,000 square metres of 0.7mm copper, prepatinated by Luvata Oy’s Nordic Green Plus method, was used in the roof. About half of the roof was made using the German Bemo-Roof system. The Bemo-Roof system enables the profiles to be made flexibly and efficiently, ready to be installed. The profiled panel used in this site was type 500, and the panes were up to 12m long. The prepatinated rain water systems were provided by Luvata Pori Oy. The traditional mechanical seaming work and the installation of the prefabricated products were handled by the Russian contractor, Elgad. The opening ceremony of the new ‘pearl of Moscow’ was held on 2 September to celebrate Moscow Day. Tsaritsino, restored and better than ever, is ready to face the vicissitudes of the coming centuries to delight future generations.
Warka Brewery Conference Centre, Warka

“Refinement of copper and solidity of granite” was the motto that inspired the investor while designing the interior of the Warka Brewery Conference Centre.

The two materials that dominate the interior decoration of the Centre are copper, which covers most walls, and granite, applied on the floor. Consequently, the primary colours of the interior are yellow – the colour of classic copper, and grey – the colour of granite. The combination of these two natural materials gives the building a truly elegant, fine look.

Copper sheet TECU® Classic of the thickness 0.5 mm has been fixed to the walls by gluing. This method required a lot of skill and patience of the contractor’s workers. To prevent the walls from getting stained by touching, their surface has been covered with a transparent protective lacquer.
Copper Deficiency in Arable Land

Copper exists in various quantities everywhere on earth, from low levels in the sea to relatively high concentrations in the bedrock, also called ore when extracted for mining. Copper is a metallic element that is necessary for all life; plants, animals and human beings are dependent on copper for their survival.

We expect agriculture to provide us with food, wholesome and abundant, and at the same time affect the environment in the smallest possible way. In the past, crop failure and starvation was a recurring problem worldwide. The soil became depleted of nourishment and new arable land was created, for example through burning the fields to add minerals to the soil.

The use of fertilizer gave the harvest a big upswing and more and more of the earth’s growing population had enough to eat. Fertilizers added mainly nitrogen, phosphor and potassium (NPK) but more seldom the so-called micro-nutritional substances: metals that are necessary for all life, such as iron, copper, zinc, manganese and chrome. The crops increased but the soil was depleted of the important metals. It has been discovered that the wheat kernels contain lower levels of iron, copper, zinc and chrome today than 40 years ago. The levels of trace elements in the grain are too low today for the animals’ needs. Subsequently, the fodder industry does not accept Swedish grain as animal fodder, without the feed being enriched with minerals. Copper deficiency in cows can be seen as loss of colour in the fur, especially around the eyes, the so called ‘eyeglass disease’.

The cows will lick stone walls or rocks to try to compensate for the lack of minerals.

When the lack of copper is too big, no kernels will develop in the grain spikes.
However, the same grain is used for human food without being enriched, which means that humans, too, are at risk of deficiency of life-necessary metals. In the past, iron was added to wheat flour to prevent anaemia. A number of years ago the enrichment was stopped in Sweden, and we can now see an increase in anaemia in women, especially teenage girls, with deficiency symptoms as a result. Copper is necessary for the iron’s ability to transport oxygen with the blood’s haemoglobin, and copper deficiency will therefore contribute to the lower blood values. Low blood values that will not improve with iron supplement only are often a first certain sign of copper deficiency. Disease of the heart and blood vessels has also been linked to a lack of copper. The copper’s role is to give strength and elasticity.

The natural level of copper in the soil varies greatly. In Europe, 19 % of the arable land has copper deficiency, in Sweden the number is 25 %, and the University of Agriculture in Uppsala states that the levels of copper keep decreasing. This is a threat against both the harvests and the health of animals and humans.

‘10-YARD’ HOUSES

Copper as part of exclusive housing area in Moscow

The ten detached houses built in the Moscow area are examples of the new private house building trend in Russia. The average floor area of the houses is approximately 400 square metres. The houses are built in stone, and the main contract has included the shell structures and basic installations. The interior of each house is built according to the needs and wishes of the client. The external surfaces are plastered and part of the facade and the roofing is in Nordic Brown copper. The free-form architecture of the houses emphasises their individual character.

Architect Elena Kochetkova, Moscow.
The Experience and Thermal Spa in Esztergom, Hungary, which was completed in August, handed over in November 2005, and is presently in operation, covers approximately 13,500 square meters with its building and connected territories. It is the tourist centre not only of Esztergom and its surroundings, but also of Budapest, and the neighbouring area of Slovakia. It can be a centre even of the Central European region, certainly together with other historic sights and monuments of the city. The medicinal and thermal water of the city have been known and acknowledged since the Middle ages, its use and curative effect has serious antecedents.

The building is situated on the Primás Island in Esztergom and the spa is separated from the ‘historic’ city only by the bank of the Small-Danube, planted with trees and bordered by passages. There is an excellent view of the Cathedral and its dome from the building.

Building the spa has started a considerable city development. Though the 1,000 year old history of the city, the reconstructed Castle, the Cathedral, the Christian Museum with its values of European standard, the rebuilt Danube-bridge, and of course the beautiful natural environment, and the Danube itself are attracting huge masses of tourists, the time period spent in the city is very short (1-1½ hours). The city authorities are planning to extend this tourist time with several new developments and entreat the visitors to stay longer with new hotels and high standard hospitality. The main point of designing the spa was to create compact, well operating floor plans in an attractive XXI Century building, which merges into the green area of the Primás Island with its unique form, excites the visitors with its interior, from where the Cathedral can be seen.

The TECU pre-patinated copper covering will complement the previously mentioned green environment, since the dome of the Cathedral is covered by naturally patinated copper. Besides, the pre-patinated copper covering is noble and attractive and can emphasize the public building function of the spa.

The complete facade of the building is covered by TECU sheets – except for the huge glass surfaces, of course. This material gives stress and expresses the exciting character of the house, this ‘body’, lying in its surrounding like an enormous crystal, growing up from the ground.
The Association of Turku and Kaarina Parishes acquired an old school building, complete with the plot from the Town of Turku. The operation of the school had ended years earlier, and various new uses for the building were investigated. At the first stage, however, a new building was realised in the unused part of the plot. The first three storeys were designed to meet the needs of the Turku Swedish Parish. The parish hall with various auxiliary facilities takes up the ground floor, and the next two storeys are reserved for offices, club activities, etc. The top three storeys are rented out as office space for different companies.

The courtyard was designed as a large assembly area, with the highest part of the plot, the slope that reaches the level of the adjoining property built in the shape of an amphitheatre. A three-storey parking garage under this upper courtyard has space for 131 cars, and is accessed through the school courtyard at the lowest level.

The building is situated on the edge of the street, while the neighbouring building on the side of the slope is 3 m away from the street. The first two storeys of the new building have been extended onto this level, with their cladding adapted to that of the neighbouring building. The three upper storeys are on the street line, as is the old school building below the slope, and the cladding of these sections consists of green patinated copper. An arcade corridor with an entrance was created on the street side, following the level differences of the facade. The other facade sections of the building are plastered and painted.

The surrounding architecture represents contemporary building styles of different eras, from the turn of the 19th and 20th centuries to the 1960s.

The building project carried out in the town centre started with demanding excavations. The first three storeys were excavated in rock, over the entire area of the plot. The vertical rock surfaces are partly visible in the basement parking garage. Various frame solutions were investigated before choosing a cast-in-situ column and slab frame. The locations of vertical structures were determined by the parking garage, and stair halls and individual reinforced concrete walls serve as stiffening structures. Most of the external walls above ground level are brick walls. The outmost part of the facade on Aurakatu Street consists of copper cladding and facade glazing mounted with a ventilation gap on the external surface of the sandwich unit that serves as the background structure. The load-bearing wall line was built completely on two-storey tall, composite steel columns dimensioned for collision loads.

On the top floor, vertical structures were realised with composite steel columns, and the roof structures with hollow-core slabs mounted on HQ frames.
Architecture from

Austria Holland Belgium Luxenbourg

Spain Switzerland Czech Republic

Germany United Kingdom Finland

Greece Hungary Italy Norway Poland

Sweden Denmark Russia France

www.copperconcept.org
Extension of Jyväskylä Student House
Refined brick and copper facade, plus innovative interior with copper details

The Jyväskylä University campus area designed by Alvar Aalto introduced a message of contemporary architecture in the 1950s to an area dominated by seminar buildings from the late 19th century. Although Aalto’s buildings reflect the modern ideas of their time, they also contain references to the history of architecture.

Aalto also designed the Jyväskylä Student House, which is an excellent example of the practical architecture of the 1960s. Aalto made designs for the Student House plot at several different stages. The plans showed the house mainly as a venue for festive events and assemblies, but the Student Union had no need for facilities of that type. Only the first building stage was realised in compliance with Aalto’s designs.

An open architecture competition was organised in the autumn of 2000 for an expansion of the Student House, to include workrooms and assembly facilities. The design project was continued on the basis of the winning entry, ‘Accordion’.

The starting point for the architectural choices has been to design the right ambience. An awareness of Aalto’s architecture is deeply embedded in the core of every Finnish architecture. The essential can only be achieved by letting go, forgetting detailed knowledge, and assuming a relaxed, yet respectful attitude.

The extension is characterised by a supplementary sense. It plays an important role in the southern entrance of the campus. In order to enforce this gate theme in the townscape, the facade facing Keskkussairaalanantie Road has been lined parallel with the street facade of the building of the Department of Sport Sciences.

The building is conceived inside an acute-angled periphery formed by the force lines of the surrounding buildings. The objective of this somewhat aggressive impression is to render the Student House a suitable spirit of self-esteem.

An outdoor platform typical of the campus area was left between the Student House designed by Aalto and the extension part. The buildings create an inter-complementary, intentionally slightly contradictory entity.

The red brick facade of the building was built using a specifically defined mixture of three different red brick types, with some of the bricks laid with the inner surface out.

The space scheme of the extension consists primarily of workrooms. The largest common area, the library, is located near the entrance. The Student Union has its own facilities and a sauna department. The folded shape of the building makes it possible to break office corridors into sections of human dimensions. The floor spaces are united by the sculptured-like staircase in the centre of the building.

In terms of building technology, the extension represents the same technical level as Aalto’s buildings in their time – modern but not experimental.
Copper structure becomes a work of art

When designing the new De Young Museum in San Francisco’s Golden Gate Park, architects Herzog & de Meuron created an abstract work of art, where the impressive copper facade becomes one with the surrounding landscape.

Thousands of copper sheets, embossed and perforated with individual patterns, create the unique facade construction of the recently built De Young Museum in San Francisco. This is probably the most extensive and complicated copper facade cladding that has ever been attempted. The museum is an example of innovative architecture that has attracted the interest of visitors from all over the world. With its interplay of natural building materials such as copper, wood, natural stone and glass, the building has become a perfect complement to the surrounding Golden Gate Park. Embedded in luscious eucalyptus trees and ferns, the building has become one with the outside world.

The De Young was established in 1895 and originally housed an eclectic collection of exotic oddities in commemoration of the California Midwinter International Exposition. The museum’s collection is vast and varied, with work that dates back to the dawn of human history. It has remained in the same location and has become the principal museum in the Western United States, focusing on the art of the Americas, Oceania and Africa.

Herzog & de Meuron initially tested ideas based on a series of individual pavilions, each housing a different collection. This was soon rejected in favour of a completely opposite strategy; one that created a single unifying container. The basic structure is a simple, rigid orthogonal steel box, but with highly sophisticated and intricate spatial sequences. Few visitors are aware of the building’s rectangular plan and regular grid.

The most immediate characteristic that sometimes surprises unprepared visitors is the copper skin. The reddish-brown outer cladding consists of more than 420 tons of copper, manufactured by KME in Germany and processed by A. Zahner Architectural Metals in Kansas City, a recognised specialist for demanding architectural metalwork solutions. In cooperation with the project architects,
vice from KME, A. Zahner developed an individual system of copper panels that corresponded to the individualistic architecture of Herzog & de Meuron.

The impressive facade comprises 7,200 individual cassettes, each with a different shape and size. In the entire construction, no two cassettes are alike. The sheets are embossed with constantly changing patterns, based on digitally enhanced photos of trees in Golden Gate Park. This gives the facade a multifarious surface that is rich in nuances. The intention of the embossing and perforation is to give an impression of light filtering through treetops. Apart from the first, long-lasting impression of the copper cladding, the building itself is a fascinating example of innovative architecture. Large, spacious bands of windows neutralise the borders between the inner rooms and the rich, natural environment outside. The museum has four inviting entrances that can be reached by walking along different paths in the park. This is a museum that is transparent, open and inviting to all sides. The main entrance consists of a nine metre wide opening, behind which a copper-covered passage leads to the central atrium; a magnificent room where the Italian limestone floor seamlessly leads to the neighbouring galleries. A long flight of stair takes visitors to the floor below and stretches over a 60 metre-long inner courtyard terrace surrounded by ferns. Visitors are guided through the beautiful garden via glass-covered bridges.
On the north-eastern side of the building there is an approximately 44 metre-high rectangular tower, home to the museum’s teaching and seminar rooms. There is also a viewing floor that can be accessed by visitors, and that provides a beautiful view over the entire bay area around San Francisco.

Visitors to the De Young Museum often can be seen stroking the copper facade with their hands. They want to feel the texture of the copper, examine the perforations with their fingers and look closely to see how the patterns change. The copper facade is the strong point of the building and it works both up close and at a distance. The patinated copper makes the building blend into the colour scheme of the surrounding landscape. The light filtering through the many perforations resembles the light filtering through the foliage in the park. Through the amazing new technique, the museum has become a work of art in itself.
The multi-surface roof of the residential building built in Kazimierz Dolny has a very interesting but complicated structure. The overall roof surface of 400 sq metres has been clad with 5,700 prefabricated diamond-shaped copper tiles.

This method of roof cladding creates an airy but at the same time solid look, which is a huge advantage when the roof consists of as many as 18 different surfaces and eyebrow windows. The elements of the roof covering have been prefabricated from 0.55 mm-thick copper sheet in the shape of 68 cm-wide copper strip.

The building is also equipped with a prefabricated gutter system, assembled by sections that are up to 6 metres in length. The complex structure of the roof and the four eyebrow windows required masterly skills and craftsmanship of the roofers. The complicated roof assembly went on for two months. A ten-year guarantee period is provided by the contractor.
The Institute of Oceanography
BUILDING OF THE UNIVERSITY OF GDANSK IN Gdynia

The building of the Institute of Oceanography at the University of Gdansk exemplifies a modern style of architecture, in which both look and function are adjusted to meet the requirements of the building’s didactic and research purposes.

The facade is a combination of soft, light-green glass panels and intense turquoise-coloured elements covered with patinated copper sheet TECU® Patina. The arrangement of the glass panels on the facade of the building gives the impression of sea waves. Glass and copper elevation makes the heavy body of the building appear much lighter.

The top part of the building resembles a wheelhouse of a ship, while the hanging passageway linking the faculty buildings resembles a gangway because of its lightweight construction of glass and patinated copper.

The 1300 sq metres surface area of the facade has been covered with copper sheet TECU® Patina with a thickness of 0.7 mm. Patina has also been used to decorate the interior of the building.
New library in historic milieu

The main library forms the cultural campus of Lohja town centre together with the Church of Saint Lawrence, the school centre, the Laurentius Hall, the West Uusimaa Music Institute and the Hiisi Institute. As suggested by the name of the winning entry, the library building acts as a preface, with its architecture leading the flow of people from the direction of the town centre to the cultural campus and to the library itself.

The Town of Lohja organised an open architectural competition in 2002 to design a main library. After the competition, the design project proceeded swiftly on the basis of the design used in the winning entry, called PREFACE. The main library was opened in January 2006.

The central location of the building in the town creates an excellent starting point for the activities of the library. However, the plot chosen for the library, partly inside a town block, posed many challenges to the total solution. The longitudinal two-storey building, with selected openings to the environment, is adapted to its location through folded wall lines.

With red brick as the primary facade material, the library is integrated into the existing public building stock, while in interior spaces the red brick walls collect the openly inter-connected...
spaces into an entity, and emphasise the main viewing directions toward the town centre and the old church.

The evident horizontality of the building, created by the mainly two-storey design, has in spatial terms been opened upward with conic roof light structures. These 'Hattifatteners' also play a role in the townscape.

The objective of the selection of materials based on red brick, copper, glass and maple surfaces, the intentionally broad-minded, folded division of masses and the pseudo-random facade openings has been to create the aesthetic purposefulness characteristic of cultural buildings.

The main library of Lohja is literally built-on-site, with its cast-in-situ post-stressed concrete frame and red brick walls.
Copper adds warmth and depth

The new central heating plant in Skive has been built close to a residential area and is visible from the approach to the city. For aesthetical reasons, copper is used as facade cladding because of its unique patination qualities, giving the very distinct building beautiful colour variations and depth.

“We chose copper sheet for the facade, so that the copper surface gets the warm, reddish brown tint already from the time of the assembly”, says architect Søren Askehave at C.F. Møllers Tegnestue in Aalborg, who won the competition for the heating plant. “With its elevated location, the facility is highly visible in the urban landscape, and therefore the aesthetical grounds carry especially great weight.”

The facility was built as an expansion and rebuilding of an existing plant. Both the new and the old buildings were clad with copper sheet mounted in large horizontal blocks, which match the scale of the plant. The shiny copper will preserve its warm tone for a few years, after which it will patinate to a more greenish tone with beautiful colour variations.

Søren Askehave: “Copper is a slightly more expensive solution than traditional painted steel plates that naturally don’t have the same patination qualities as the copper. Our goal is to achieve an elegant, graphic movement of colours in the facades, which reflects the sky and other surrounding colours, and gets more character with the shifting light and seasons. Furthermore, as the plant is situated so close to a residential area, we had the obligation to make the new building blend in with the surroundings.”

60 tons of copper in place
Building designer Thomas Bech at C. F. Møllers Tegnestue says that the building process itself is coming to an end. “The construction work is going as planned, and we are finishing up our part of the project. However, now follows a running-in period, as this is a sophisticated biomass-based facility, which in fact harmonizes nicely with the use of the natural material copper. Regarding the facade enterprise, we have worked together with AE Stålmostage, who will be able to supply more information.”

It turns out that AE Stålmostage a/s in Støvring has for more than a quarter of a century been specialising in roof covering and facade cladding. The project leader, engineer Casper G. Jørgensen, tells us that approximately 60 tons of copper was used for the Skive project.

“The project involves 1.5mm copper, bent into 30cm-wide and 3m-long cassettes in our workshop. The cassettes are assembled with visible screws in the horizontal sections. We have had on an average six to eight workers on-site from Christmas time until the final work in May in order to carry out the assembly work.”

As mentioned earlier, AE Stålmostage has several years of experience with roof and facade work; the firm has been responsible for the facade cladding of numerous sports buildings and other facilities, central heating plants and residential buildings. Usually the material choice is aluminum or steel. “It is very exciting to work on an assignment that involves such large quantities of copper, as it is such a nice material to work with and the results are so beautiful,” says Casper G. Jørgensen.
With wood as fuel
It is not a traditional facility that is planned to be built in Skive. It is a biomass-based plant, which means that it will be ‘fed’ with wood chips. The chips are transported by boat to Skive harbour and transported from there to the plant’s warehouse, which by the way also is clad with brown-oxidized copper lamellae. The facility in Skive is a full-scale pilot project within the new biomass technology and will therefore also be used for demonstrations.

C. F. Møllers Tegnestue in Aalborg won the architect competition with a proposal that signals power plant through its simple, architectural composition that creates a hallmark for both Skive and the new technology. The monumental form takes off with three building elements – the foundation, the frame and the tower that together form the design of the building.

“From the residential areas to the south and west, the building will be seen as a calm surface, where the material will reflect the sky and other changing colours around it. From the approach to the city the building with its boiler tower is a landmark. The building lacks the usual features like doors, windows and floors, and appears as a timeless and distinguished facility – naturally adapted to the landscape and scaled to the surroundings,” says architect Søren Askehave.

There have been many challenges for the architects, as they not only had to integrate the new buildings with the existing ones. The technology itself had requirements, and the project includes office buildings, meeting facilities, administration building, boiler tower, accumulation tank and warehouse. With skillful, superior architectural methods they have brought together the different elements to a successful entity, where the copper facade convincingly contributes to create coherence and character.
Aura is an outstanding new apartment building overlooking Peckham Rye Park and Common in the London suburb of Peckham. The development consists of 68 apartments, 50 of which are privately owned and 18 are owned by a housing association.

This building makes a clear statement regarding the pleasure of living with beautiful design and architecture. The shell of the building consists of flowing pre-patinated copper around the penthouse ‘pod’ with a slender prepatinated copper central facade flanked on either side by cedar planking. The interior design is similarly uncompromised with state of the art kitchen and bathroom fittings and the possibility to specify networked entertainment systems throughout the apartment.

The design premise for the penthouse was that the standing seams should be vertical on both opposite sides of the pod and continuous across the roof. This proved to be problematical as the plan of the penthouse is trapezium in shape, which would naturally result in the vertical seams ‘kicking out’, the very tight radius for the curves would push the roofing material near to the limits of formability without damage to the patina. However, a solution was engineered that made the design possible and it is reasonable to assume that the complexity will go largely unnoticed.

**Aura Peckham Rye**

Developer and Builder: George Wimpey PLC
Original Concept Architect: Steve Jelley - Clague Architects/George Wimpey
Technical Consultants and Construction Design: Simon Glenister - BHD (Barret Haskins Designs)
Structural Engineers: Eastwood and Partners
Steel Structure: Watts Construction
Roofing Contractors: All metal Roofing
Photo: Luvata UK
The Copper Building

BANK BUILDING IN COPPER BECAME THE ARCHITECT BUILDING

Around 1958, architect firm OAS was commissioned to design the Swedish Savings Bank building, Sparbankernas Bank, to be built in central Stockholm, on the corner of Södermalms torg at Hornsgatan 5. OAS consisted of three young architects, Magnus Ahlgren, Torbjörn Ohlsson and Sven Silow.

It was a difficult task. The bank would be built next to an existing bank, built in 1913 and designed by famous architect and professor Ivar Tengbom.

Tengbom was at his time one of Sweden’s foremost architects. In 1912, only 34 years old, his proposal won the contest for the new head quarters of the Stockholm Enskilda Bank, and following that he was commissioned for many more bank buildings, among them the bank on Hornsgatan, where the building still brightens the urban landscape with its red granite and Helsingborg brick in a national-romantic style. On top of the building is an impressive tower in copper with Baroque-style elements. The tower was added to make the building visible in the urban landscape. Half a century later it was decided that a new bank building would be built next to the old one. Old and new would lie side by side and create a harmonious entity. It was a difficult task.

Magnus Ahlgren had the ability to lead the project with great objectivity and personal authority. Torbjörn Ohlsson contributed with his vivid imagination and boundless creativity. Sven Silow impressed with his analytical mind and precise formulations. The architect-trio was perfect.

In order to create flexibility in the design the architects decided to use a concrete frame and joists for the construction of the building. The trim of the roof was levelled with the neighbouring building. Here, a break between vertical and slanted facades would elevate some levels up to the same plus-height as the neighbouring house.

The question of façade cladding
The old bank building was dominated by red granite and dark-brown brick. The architects discussed different materials. Glass mosaic was a popular material at the time and was used by many architects. Plastic was an untested material, and to simply paint the surface was inexpensive but required continuous maintenance. Torbjörn Ohlsson was responsible for this project. He got the idea of covering the entire building with copper after he and architects Lars Carlbring and Göran Streijffert had studied the old bank building and concluded that the material that best harmonized the granite and brick façade was copper. One of the characteristics of copper is that it is easy to shape, and by forming it some of the structure of the old building’s façade could be transferred to the new building. Another quality of copper is that its beauty increases with time. There was a total consensus among the architects, and also the commissioner and proprietor agreed that cladding the entire building with copper was the perfect solution.

Bank building completely clad in copper
To cover a concrete structure in copper is a dream job for a sheet metal worker. It was soon obvious that the copper façade with its deep relief created a very expressive structure. Insulation glass was placed between the copper-clad structures. External white awnings to protect from the sun were placed in copper boxes, mounted free from the façade to create...
The old bank tower in copper and Baroque style.

The large copper façade, expressive with its relief structure.

Expressive relief effect.

The old bank tower in copper and Baroque style.

With consideration to the height of the older building’s façade, the façade leans on the upper levels of the Copper House.
ventilated air pockets to lead away the heat. By placing the awnings in various positions, different patterns were created in the façade. The white awnings, with their harmonious and playful rhythm, became like a musical score with variations that stimulated the eye; an unexpected esthetical effect that enriches the appreciation of the building. The architects had successfully brought together construction, materials and appearance in an unusual way. The exciting façade can be seen and enjoyed by the approximately 85 000 people who pass the building every day.

Ivar Tengbom, who was 82-years old at the time, followed the project with great interest and saw the new building as a perfect match to his old building.

The bank building was inaugurated in 1962. The building’s architecture was described as one of the best of its time, and it was considered to be one of Stockholm’s most interesting buildings. It was popularly called “the copper house on Hornsgatan”.

The copper house becomes the Architect house
After 15 years the bank went through a reorganization. The copper house was taken over by the Swedish Association of Communes. At first, the old interior with small, individual offices for bank personnel remained. Then, open-plan offices became popular, with large open areas where everyone could see, and be seen by, everyone else. Dividing walls were torn down and a large sea of floor space emerged.

This was what the modern architect firm wanted; the copper house was perfect as architecture offices, and at the same time it represented the best of Swedish architecture.

Today, four entire floors house architecture firms, one on each floor. They are Hans Murman, Ahlqvist & Almqvist, Lindberg & Stenberg and Hederus-Malmström-Widegren. I visited each of them to get their view on architecture and copper.

The copper house as a building for architects has many advantages. It is easier for the different offices to cooperate when they are only a few flights of stairs apart, and a world-encompassing knowledge is gathered under the same roof. At times, projects are too big to be handled by one firm alone, or two offices may decide to work together for a contest. Occasionally, both husband and wife work as architects in the building, but on different floors. The building, profession and individual have become one, a kind of architect integration.
Inside the Copper House
The Copper House can be seen at a great distance in the urban landscape. When approaching the building you are met by the expressive copper façade. At the main entrance there is a heavy glassed-in copper door. You enter the architect office through a lighter glassed-in copper door. Inside, sunlight filters through the awnings along the external wall. The large office is flooded by light. Below the ceiling, the slender copper armature shines down on a model, a drawing or photo showing the firm’s latest project.

HANS MURMAN ARCHITECTS
Hans Murman Architects with 26 employees has office space on the two top floors of the copper house. Hans Murman is the sole owner of the firm. The office, like most architecture firms, designs everything, small and big, from armature and furniture to parks and cities. Murman is seriously committed to build environmentally friendly houses, so called ecological architecture. Sånga Säby educational training facility in Stockholm is such an ecological building. In 2006 it earned the firm the Stockholm City Environmental Diploma for environment-friendly work, policy, goals and activity program.

The sunlight filters through the office windows’ copper-green awnings, framed by the copper on the façade. As we talk, Hans Murman proudly shows me a small model. – This is the winning proposal for “Sametinget” in Kiruna. The proposal is very unusual. The building is half-moon-shaped and the convex façade in the back leans 45° towards the sky and ends in a pointed arch. The proposal has received much attention. A larger model is now shown at the International Architect Trienal in Venice.

– What is your relation to copper? I ask. Hans Murman laughs. – I come from Dalarna and was practically born in the Falu copper mine. I have copper in my blood. I use copper in my buildings whenever possible, as the material has so many good characteristics. I wouldn’t hesitate to design an entire building clad in copper.
ARCHITECT FIRM HEDERUS–MÄLMSTRÖM–WIDEGREN
The firm is owned and lead by architect trio Per Hedenius, Björn Malmström and Palle Widengren and has 16 employees. The office has a wide range of assignments. From city planning and formation, new buildings, rebuilding, interior decorating and exhibition architecture. Per Hedenius is specialized in “wood architecture”. The architects have a network for wood with the premier specialists in wood techniques. The network also serves as a forum for exchanging ideas.

Per Hedenius feels that wood is a material that people are very familiar with. Most of us have at some point shaped a piece of wood. The reason for the success and development of the office is the many winning contests that have lead to interesting assignments, good results and a good reputation. And one job leads to another.

One of the biggest assignments is the city plan for the town Changsha in China. Because of the extent of the assignment it is carried out in cooperation with architects Ahlqvist & Almqvist in the same building. Conveniently, only one flight of stairs separates the two offices.

The firm has a variety of assignments, such as schools, museums, conference facilities and traffic planning. Some of the most interesting are the design of the Marine Museum in Landskrona and the planning of Slussen in Stockholm. Residential areas is also a big part of the production, not only on land but also on the water, like the recently designed Marine City in Nacka—a small town on the water, with service facilities and a town centre.

Per Hedenius shows me the plans and models for the project. I ask about the use of copper in the buildings. –We use copper in many of the details, says Björn Malmström, managing director at the firm. –We consider it an excellent material and would like to use it also for larger surfaces. However, completely unnecessary environmental requirements have become an obstacle. I show them a few issues of Copper Forum and the architects admire the photos of copper architecture from all over the world. –It is amazing what can be done with copper, says Björn Malmström. –Wood and copper were meant for each other, says “wood architect” Per Hedenius.
LINDBERG & STENBERG ARCHITECTS AB

The firm is owned and operated by Anette and Dag Lindberg and has 20 employees, among them a network technician and an economist. Their projects include everything from city planning, residential buildings, commercial properties and architecture contests.

The office was recently given the Stockholm City Award for environmentally adapted buildings. An exciting project is the proposal for a high-rise building, “Klara Tower” in Stockholm City. The winning entry, “Kista Residence Tower”, a high-rise building in the high-tech centre of Stockholm and Sweden, received great attention. Another proposal is Nissavarse, a residential area in Halmstad, a bold and innovative proposal that shows the office’s ambition to strive and search for new and daring architecture.

The office wants to aim big for architecture contests. To participate in contests creates new knowledge and increased creativity. The competition is tough, but prize and assignment can secure work for a long time to come. Dag Lindberg considers it important be updated with new computer-based equipment and methods. Modelling for visualization of still images and film, 3D, is important. The office should be a place where the employees can develop and grow through stimulating discussions. Continuous work training through courses and study trips is also necessary.

To develop the competence and utilize the experience in the office is elementary and will increase each individual’s sense of involvement and commitment. When passing through the large office you can sense the activity. –It is important that the staff is informed about all ongoing projects, says Dag Lindberg. –But what about the use of copper for the various projects? I ask. –Copper is a fantastic material and part of most of our projects. We do our utmost to use copper where it is suitable. Copper is superior in many connections. Prepatinated copper has a great esthetical value. We always follow the latest news in Copper Forum.

AHLOVIST & ALMQVIST ARCHITECTS AB

The firm is owned and operated by Bengt Ahlvqvist and Britt Almqvist. The office has 18 employees: architects, city planners, landscape architects and graphic designers. The commissions are to a large extent international. One of the largest projects is a master plan for Changsha in China, a town with 25 000 inhabitants. Here, apartments, a business centre and offices are planned. The goal is to create ecological and energy efficient buildings. The project is done in cooperation with Hedenius, Malmströhm and Widegren, with offices on the next floor. The firm works internationally with projects in Belgium, Holland, Spain, Germany, England and China. Recently a big residential area was inaugurated in Madrid, “Carabache 10”, and got unusually big publicity. The firm is a member of EEIG-PERSPECTIVE, a European network for architecture and cooperation. The firm recently won a prize for their proposal for the Bosnia railroad, an example of typical traffic- and infrastructure planning.

Bengt Ahlvqvist, like Per Hedenius, belongs to the group of “wood architects” with an office on the next floor. He sees the future of wooden buildings as massive wood in different shapes. –Wood has excellent characteristics that should be made use of, he says. –What about copper? I ask him. –Copper has the same good qualities, maybe even better. Wood can be destroyed with time while copper lives on for ever. Do they use a lot of copper in their projects? –We do, says Ahlvqvist, but it is easier abroad where there are fewer restrictions.
Rewarding Design in Copper

The European Copper in Architecture Campaign (ECAC) has just launched its next major Awards programme – including a special award for the best European architectural projects. This will be the 13th Copper in Architecture Awards, a design-led competition which started in the UK but has developed to include a special award for the best recently completed buildings in European countries participating in the European Copper in Architecture Campaign.

Winning, commended and short-listed projects for both the European and UK Awards will benefit from extensive international press coverage, including a special supplement in The Architectural Review - a leading magazine read by architects worldwide. Local ECAC offices representing the copper industry will also circulate press material amongst publications within the winners’ own countries.

To be eligible, all entries must incorporate copper as an essential part of their design, such as cladding, roofing or other architectural elements. Entries are not restricted just to copper sheet but can include other forms such as perforated and expanded sheets and even woven wire mesh. Metal alloys that predominantly consist of copper, such as bronze or brass, are also eligible. Entries should represent the very best in contemporary architecture, irrespective of the size, style or type of building project. Winning or commended projects from previous Awards – a few examples of which are illustrated on these pages - range from internationally renowned landmark projects by world-famous designers to much more modest but nonetheless innovative buildings which have not yet been well-publicised; some designed by young architects. Essentially, it is the quality of architectural design that matters.

The awards will be judged by a panel predominantly of practising architects at the forefront of design in Europe, chaired by the editor of ‘The Architectural Review’ magazine, Paul Finch. The judges will not visit the projects and entries should consist of display boards with photos, descriptive text, drawings and other images. In addition to the design prizes, there is also a discretionary award for innovation in specific areas of relevance today, such as sustainable building, economical construction, prefabrication, conservation or new uses of the material. Entries must be submitted by 31 May 2007 and the winners will be announced at a special presentation event held in London, UK in September 2007.

The 12th Copper in Architecture Awards attracted over sixty entries in total, including a wide range of different projects from around Europe. The Winner of the 2005 European Award was the Laajasalo Church, Helsinki designed by Kari Jarvinen Ja Merja Nieminen. The judges
described this project as: ‘a beautiful church where copper has been used in ‘strata’, almost like a cliff face, with soft colours and controlled tones that will develop over time, adding to the harmonious relationship with its natural landscape setting.’ In addition, the Service Centre, Munich designed by Staab Architekten received a Commendation. The judges said about this project: ‘a bold, monolithic building, forged from a perforated copper screen, which could be considered as a bar of gold in the landscape – a rigorously executed abstract statement.’

Four other very different and particularly interesting projects were also shortlisted: Popstage Mezz, Netherlands, by Erick van Egeraat; Debrecen University building, Hungary, by János Megyik; St Henry’s Ecumenical Art Chapel, Finland, by Sanaksenaho Architects; Ice Hockey Federation building, Switzerland, Tilla Theus und Partner.

"This modest group of three houses in the Republic of Ireland was designed by architects de Blacam and Meagher. It beat off stiff competition from other major public buildings to win the 10th Copper in Architecture Awards."

The participating countries are:
- Austria
- Benelux
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- Italy
- Norway
- Republic of Ireland
- Spain
- Sweden
- Switzerland
This Ian Ritchie Architects design is for a structure to accommodate ventilation equipment for rail tunnels. It was the winner of the year 2000 Awards for its sculptural use of copper on what could otherwise have been a purely utilitarian building.

Highly commended in the 10th Awards was the Urbis building in Manchester, UK - an important landmark project with a distinctive use of copper roofing.
For the UK Category there were two contrasting joint winners: the Spiral Café, Birmingham designed by Marks Barfield Architects and Queen Mary College Student Village, London by Feilden Clegg Bradley Architects, with Maggie’s Highlands Cancer Care Centre, Inverness, Scotland, designed by Page & Park Architects, receiving a Commendation. The 2005 Awards resulted in over 30 pages of editorial coverage for the winning projects in architectural magazines throughout Europe and were covered in Copper Forum issues 19 and 20.

Entries are now invited from project designers for the 13th European Copper in Architecture Awards. Entry forms and details are available from the websites www.cda.org.uk/arch and www.copperconcept.org, or phone +44 1442 275705, fax +44 1442 275716 or e-mail helpline@copperdev.co.uk. Copper in Architecture is part of the European Copper in Architecture Campaign and full details on the Awards can be found on the www.copperconcept.org website which also contains numerous project references from around Europe.
Copper Adorns New Buildings in Dublin’s Longboat Quay Development

**Project** Longboat Quay Mixed Use Development  
**Address** The Dublin Docklands Development – Site 3, Dublin 2
Dublin’s Longboat Quay Development

Strategically positioned, south of the Liffey River and north of Grand Canal Dock, Dublin, is the new Longboat Quay mixed-use development. The area, with its excellent waterfront location and sunny orientation, is experiencing an intense level of public interest. The Longboat Quay project consists of two buildings of mixed use, with a total of 295 apartments and 3,000 square metres of retail and commercial space, with central courtyards and basement car parking. A great deal of thought and consideration has gone into the project, which has been designed and constructed by Michael McNamara & Co., Dublin, Ireland.

Externally, the retail and commercial parts of the buildings and the stair towers are finished with stone cladding, while insulated brick panels are applied to the residential accommodation. Raised-seam, Nordic Green Plus prepatinated copper cladding is utilised for the setback top storey and penthouses. The windows of the commercial areas and the stair towers are low-profile, framed aluminium curtain walling, while the residential part has wood-frame, aluminium-clad casement windows with mild-steel, deep box-frame surrounds.

Flat insulated concrete roofs with roof gardens surrounded by parapet walls utilise wood planters, with varietals planting and wood benches to create the rooftops. The exteriors of the buildings are highlighted at their tallest points by large, curved standing-seam copper roofs on the penthouse towers.

Architect Michael McNamara & Co., Dublin, Ireland Roofing contractor Gilbree Roofing, Dublin Material supplier Metal Processors, Dublin Photo Luvata UK
Exciting new copper building in the heart of Dublin

In addition the many monuments and museums that chronicle Dublin’s rich heritage, the Dubliners can now enjoy a new exciting building, situated in the heart of the city’s central business area. On the south side of the Liffey River, at the junction of Townsend Street and Princes Street, the green-patinated copper facades of newly built St. George’s Court attracts the attention of people visiting the City Quay area. In the heavily developed city of Dublin, the building stands out with its bold architecture and beautiful colour. Nordic Green Plus prepatinated copper have been used for both facades and roof covering.

**Architect** Gary O’Hare - KMD Architecture  
**Copper Facade by** AME Facades  
**Longstrip Roofing contractor** Reid Roofing - Mulligan  
**Longstrip Material supplier** Metall Processors - Dublin  
**Photo** Luvata UK
Email: <www.copperforum.co.uk>

www.copperconcept.org