COPPER ARCHITECTURE FORUM 34

DEUTSCH

KONTINUITÄT UND WANDEL

Zu Beginn dieser Ausgabe möchten wir uns von Lennart Engström verabschieden, der sich aus unserem Redaktionsteam zurückzieht. Vor 18 Jahren initiierte er das Magazin Copper Forum und war seitdem eine Schlüsselfigur in der Entwicklung des Magazins von der ersten vierseitigen Ausgabe, die sich an skandinavische Architekten richtete, bis hin zum heutigen 40-seitigen europaweiten Magazin, das in 13 Sprachen verlegt und mit einer Auflage von 25.000 Stück herausgegeben wird. Das gesamte Redaktionsteam schätzte seine Klugheit, seine Leidenschaft für Kupfer in der Architektur und seine sanfte jedoch überzeugende Art; das Arbeiten mit Lennart war jedoch auch immer mit Spaß verbunden.

Natürlich gab es während der letzten 33 Ausgaben auch Veränderungen, wie fortlaufende Verbesserungen sowohl beim Design als auch beim Inhalt des Magazins, um die aktuellen Interessen der Architekten zu berücksichtigen.
Die anfänglichen Grundwerte des Copper Architecture Forum bestehen noch immer: das Präsentieren von anspruchsvoller zeitgenössischer Architektur zusammen mit aktuellen Themen rund um Kupfer und seine Legierungen.

Wir nehmen diesen Wechsel zum Anlass, um unseren neuen Chefredakteur Robert Pinter und unseren neuen Redakteur, den Architekten Chris Hodson, vorzustellen. Beide sind seit einiger Zeit Teil unseres Redaktionsteams und besitzen eine Fülle an Erfahrungen mit Kupfer in Architektur und Konstruktion. Mit einem Architekten als Redakteur wird das Magazin die Interessen der Architekten in unserer Leserschaft noch genauer aufspüren und eine größere Einbindung entwickeln, insbesondere durch unsere Partner- Website copperconcept.org.

Bei der redaktionellen Arbeit am Copper Architecture Forum achten wir auf aufkommende Trends und auch Gemeinsamkeiten zwischen Projekten. In dieser Ausgabe sind einige Themen aus diesem Segment enthalten. Erstens werden an einigen Gebäudebeispielen die zahllosen Möglichkeiten der Nutzung von Fassadenelementen aus Kupfer zur Beschattung in Kombination mit Lichtdurchlässigkeit gezeigt. Lösungen reichen von perforierten Kupferblenden und – netzen bis hin zu profilierten Messinggittern und bildhauerisch gebogenen Rippen. Einige Beiträge beschäftigen sich mit Kupfer als modernem Material, das Architekten helfen kann, zeitgenössische und charaktervolle Ideen zur Umgestaltung älterer, historischer oft auch denkmalgeschützter Gebäude zu realisieren. Schlußendlich nimmt Kupfer oft eine Rolle als Bindeglied ein, wenn große Projekte dazu beitragen sollen, das städtebauliche Umfeld zu formen und zu prägen.

Wir hoffen, dass Ihnen die Vielfältigkeit und die Qualität des architektonischen Designs, die in dieser Ausgabe gezeigt werden, gefallen.

Die Redaktion

Lennart Engström, Gründer und ehemaliger Herausgeber des Copper Architecture Forum.

Die erste Ausgabe des Copper Architecture Forum umfasste vier Seiten.

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Copper Architecture Forum 34, Mai 2013

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Copper Architecture Forum

COPPER ARCHITECTURE FORUM 34

■ von Chris Hodson

IKONE IN KUPFER

Nach 20 Jahren Leerstand wurde das zentrale Drottningtorget Postamtgebäude in Göteborg in ein 500-Betten Clarion Post Hotel mit modernen Anbauten verwandelt, die das Potential und die Entwicklung dieser pulsierenden Stadt widerspiegeln.

Das Originalgebäude wurde zwischen 1918 und 1925 vom Göteborger Architekten Ernst Torulf in klassisch manieristischem Stil gestaltet. Hierbei wurden Ziegel mit Steinverzierungen und Mansardendächer aus Schiefer mit Kupferdetails, welche mittlerweile grün patiniert sind, benutzt. Das Postamt steht unter strengem Denkmalschutz. Der zunächst simpel anmutende Entwurfsansatz des Architekturbüros Semrén & Månsson sah vor, die Lücke in dem ursprünglich hufeisenförmigen Grundriss mit einem neuen Gebäudeteil zu schließen, welches in den Innenhof des Komplexes hineinragt, um so die Fläche des ehemaligen Verladehofs des alten Postamts mit nutzen zu können. Das bestehende Gebäude wurde restauriert und für die neue Nutzung ausgebaut, ohne jedoch den ursprünglichen Charakter, den Denkmalschutz und die historischen Details zu gefährden. Der Restbestand des Hofes wurde auch mit neuen Räumlichkeiten auf tiefergelegenen Ebenen aufgefüllt. Ein gläsernes Dach flutet die öffentlichen Bereiche mit Licht.

Eine neue Sehenswürdigkeit für die Stadt

Das Konzept, den Hof zu schließen, schafft eine neue offene Vorderfassade zur Ostseite des Gebäudes mit Blick auf den Åkareplatsen und die Odinsgatan. Der Lückenschluss ist horizontal zweigeteilt – ein Flügel ist mit Kupfer verkleidet, der andere mit Schiefer, die gleichen Materialien, die bereits beim alten Postamt benutzt wurden- und nimmt beiderseits die Höhenentwicklung der bestehenden Dachtraufe auf. Wo sich die Flügel treffen, steigen sie gemeinsam wie ein Paar monolithischer Formen auf, die mit einer Zäsur aus dem vertikalen Silber der Verglasung gegliedert werden. Der daraus resultierende 13-Stockwerke umfassende Turm schafft einen neuen Blickfang für die Stadt und betont den Nebeneingang des Hotels. Der Haupteingang, der mit einem opulenten goldfarbenen Mosaik eingefasst ist, wurde an der Westseite des bestehenden Gebäudes beibehalten, um den Drottningtorget, einen öffentlichen Platz, zu erschließen.

Die neuen Anbauten respektieren und reflektieren das horizontale Gitter der historischen Fassadengliederung, aber brechen die simple vertikale Anordnung der Öffnungen auf.

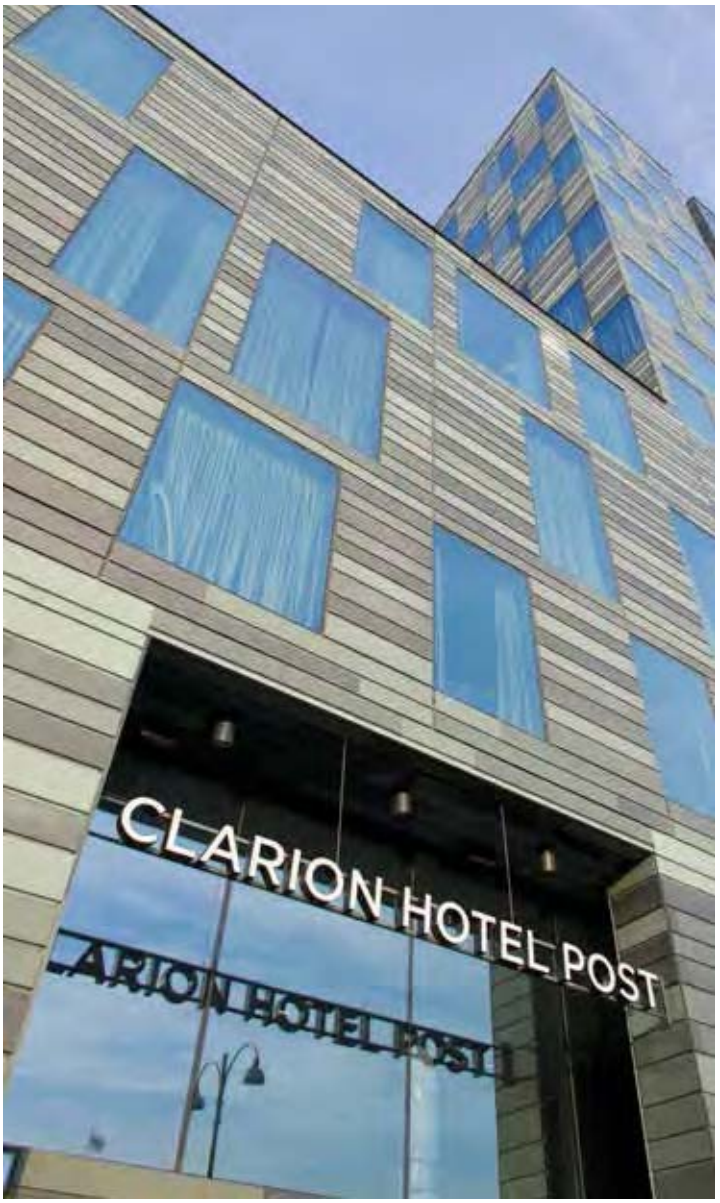


Foto: Lennart Hyse

Neue Fassadenteile werden als viereckige Paneele, jedes mit einem horizontalen Band aus Kupfer oder Schiefer und mit einer nahtlosen anscheinend zufällig bündigen Verglasung, wahrgenommen. Nach Aussage der Architekten wurde diese frische flach gestreifte Oberfläche zum Teil von der Lajasalo Kirche in Finnland mit ihren horizontalen Streifen aus vorpatiniertem Kupfer inspiriert.

Hier wird das Prinzip der Vertikalität bei den Paneelverbindungen wieder verwendet und von den Farbveränderungen bei dem Zusammentreffen mit horizontalen Kupferbändern hervorgehoben. Ecken werden mit einer modernen Interpretation analog zu den traditionellen vertikalen "Mauerecken" (wie beim ursprünglichen Gebäude) als dünner Streifen ausgebildet– die „Dicke" des Paneels- dargestellt. Manchmal wird auch die bündige Verglasung inmitten des Kupfers aufgenommen. Das Fassadengitter bleibt durchweg ununterbrochen abgesehen von einer Dachterrasse und einem offenen Pool, von wo aus ein schöner Blick über Göteborg möglich ist.

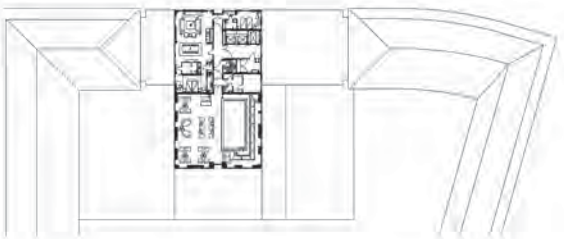
Foto: Krister Engström

Foto: Lennart Hyse

Bild: Semrén & Månsson

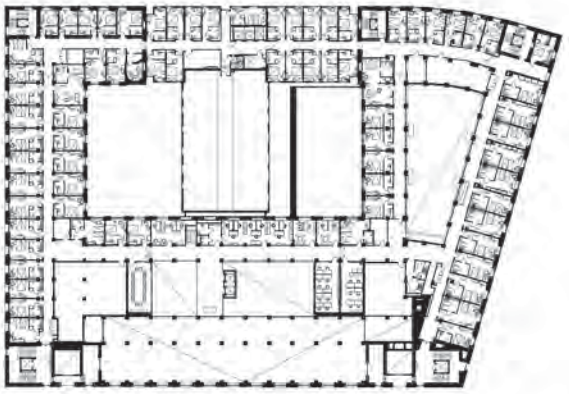
Die Fassade des Originalgebäudes und der auf einen öffentlichen Platz ausgerichtete Hoteleingang.

Plan 13. Etage

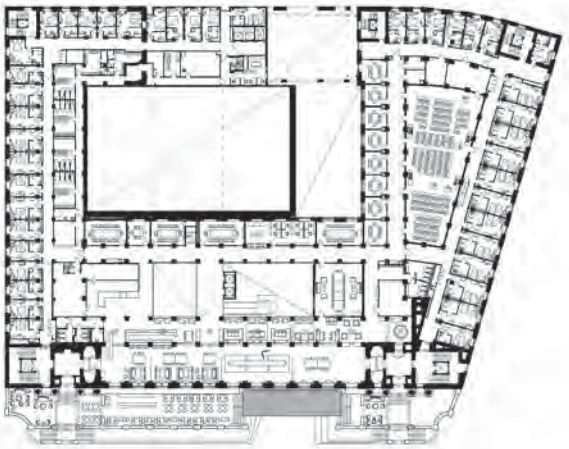


Plan 9. Etage

Plan 3. Etage



Plan 2. Etage



Plan 1. Etage
Straßenniveau

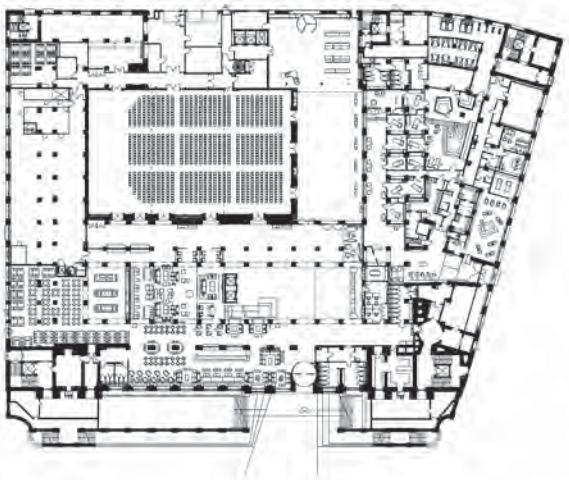


Photo: Lennart Hyse

Photo: Chris Hodson

Reiche lebendige Kupferoberflächen

Von Anfang an antizipierten die Architekten die neuen Fassaden als dünn konstruierte Blechverkleidung. Die Lösung wurde mit vorgefertigen Einzelpaneelen realisiert, um eine "Vorhangfassade" unabhängig von den strukturellen Stockwerken zu formen. Dies ermöglichte bereits vorab eine exakte Projektierung der Vielschichtigkeit des Designs und der einzelnen Paneele innerhalb des Layouts der Gesamtfassade mit verschiedenen Größen von bündiger Verglasung und unterschiedlich gestreiften Kupferoberflächen. Die Varianz entsteht durch Kupfer in drei Streifenhöhen – 200, 250 sowie 300 mm – und drei verschiedene Intensitäten von vorpatiniertem Kupfer mit einer jeweils variierenden Intensität von Grüntönen vor dem dunkelbraunen Hintergrund erreicht. Die Kombination dieser Elemente ermöglicht die Schaffung von gut strukturierten und lebendigen Kupferoberflächen.

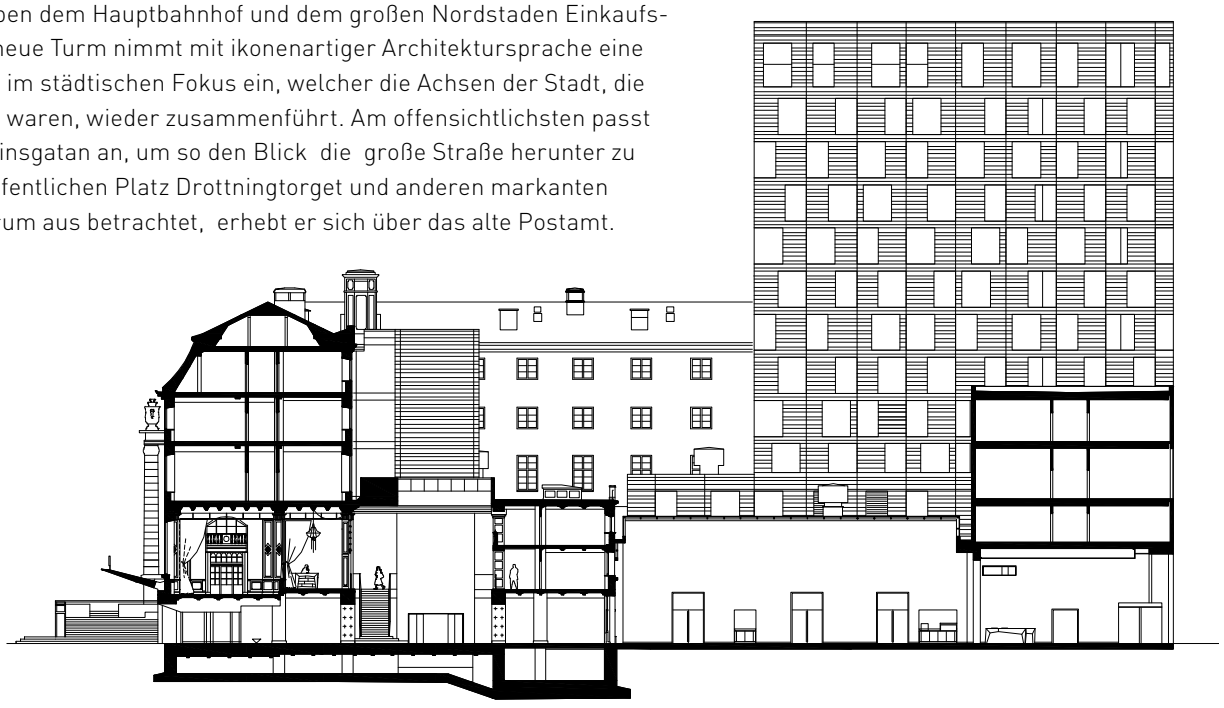
Architekt: Semrén & Månsson
Verarbeiter: Skandinaviska Glassystem AB
Kupferprodukt: Nordic Green™ Living

Foto: Chris Hodson

"Kupfer war wichtig für unser Design"

Bindeglied

Das Clarion Hotel Post befindet sich in zentraler Lage im absoluten Zentrum Göteborgs, neben dem Hauptbahnhof und dem großen Nordstaden Einkaufszentrum. Der neue Turm nimmt mit ikonenartiger Architektursprache eine Solitärposition im städtischen Fokus ein, welcher die Achsen der Stadt, die lange getrennt waren, wieder zusammenführt. Am offensichtlichsten passt er sich der Odinsgatan an, um so den Blick die große Straße herunter zu fassen. Vom öffentlichen Platz Drottningtorget und anderen markanten Orten im Zentrum aus betrachtet, erhebt er sich über das alte Postamt.



Abschnitt

INTERVIEW

Chris Hodson spricht über das Clarion Post Hotel mit Professor Magnus Månsson, Inhaber des Architekturbüros Semrén & Månsson.

CH: Wie wurden Sie in das Projekt Hotel Post einbezogen?

MM: Ich wurde von einem Bauunternehmer gebeten, einen Platz für ein großes Hotel hier in Göteborg in der Nähe vom Hauptbahnhof zu finden. Ich war gerade dabei, ein anderes Hotel zu planen und war daher ohnehin mit der Anatomie dieser Gebäudetypologie beschäftigt. Das Gebäude des Postamts war in den späten 80ern in ein Bürogebäude konvertiert worden, aber als ich es mir ansah, dachte ich: das ist kein Büro, das ist ein Hotel- allein schon durch die Fenstergestaltung. Der Bauunternehmer war mit meinem Vorschlag für ein spektakuläres Projekt, das neu und alt kombiniert, einverstanden – das ist 8 Jahre her.

CH: Was waren die Herausforderungen bei der Arbeit an einem so herausragenden, geschützten Gebäude?

MM: Natürlich gab es zuerst Diskussionen mit den verschiedenen Behörden. Das Gebäude ist geschützt durch die höchste Denkmalsklassifizierung in Schweden und wir waren nicht nur mit den lokalen Behörden konfrontiert, sondern auch mit der nationalen Organisation In Stockholm, das war schon recht anstrengend. Tatsächlich durfte man an der Außenseite nichts verändern, das war einer unserer Ausgangspunkte.

CH: Obwohl Sie noch drei andere Büros haben, sind Sie in Göteborg lokal tätig. Gehen Sie an ein Projekt vor Ihrer Haustür anders heran als an eine Arbeit andernorts?

MM: Ich hoffe nicht. Aber natürlich komme ich täglich auf dem Weg von meinem Zuhause dort vorbei, deswegen ist es besonders vertraut für mich.

CH: Sehen Sie das Post Hotel aus städtebaulicher Sicht in einer wichtigen Bindegliedfunktion?

MM: Oh ja, das ist so. Als die schwedische Regierung das Postamt baute, hat es tatsächlich zwei Blöcke eingenommen, obwohl es ursprünglich eine durchgehende Straße geben sollte. Dies stoppte die natürliche Ausdehnung der Stadt in Richtung Osten. Es gab nur noch eine enge Straße voll mit Straßenbahnen, die sich sozusagen neben das Gebäude quetschte. Deshalb symbolisiert der neue Kupfer- und Schieferturm aus der Sicht des alten Zentrums die neue östliche Stadt. Aber er wird auch als ein Fokuspunkt dienen, der die große Straße und einen neuen Platz, der derzeit in Planung ist, abschließt.


Photo: Semrén & Månsson

Foto: Chris Hodson

Ein neuer Platz östlich des Hotels, mit dem Turm als Fokus für die große Straße dahinter, ist geplant.

CH: Gibt es eine Symbolik in den gepaarten Kupfer- und Schiefertürmen?

MM: Nicht direkt. Das ursprüngliche Designkonzept sah einen höheren Turm vor, welcher von den lokalen Behörden limitiert wurde. Als Antwort darauf kam ich mit der Idee, das Ganze aus zwei Materialien zu machen, um dem Turm bessere Proportionen zu geben. Und es gibt Unterschiede in unserer Herangehensweise an die beiden Materialien. Wir planten kleinere und weniger Fenster im Schieferturm, was ihm eine monolithische Anmutung gibt. Der Kupferturm jedoch hat ein weitaus filigraneres Materialgefüge. Dort gibt es viele kleine Zeichen, die Ihnen zeigen, wie man die Unterschiede interpretiert.

CH: Gab es noch andere Gründe Kupfer und Schiefer zu verwenden oder wollte man sich nur auf das ursprüngliche Dach des Gebäudes beziehen?

MM: In den 1920ern war alles sehr lokal orientiert und es war sehr natürlich und wir waren stolz, dass wir Materialien wie Kupfer hatten. Wir wollten dieses Erbe weiterentwickeln mit einer Materialsprache, die neue Teile hervorhebt, aber mit Kontinuität. Ich sehe das neue Gebäude als einen jungen Verwandten mit der gleichen DNA. Kupfer war wichtig für unser Design.


Foto: Chris Hodson

CH: Sie haben Kupfer in verschiedenen Bandbreiten und Patinierungen genutzt. Was waren Ihre Absichten bei dieser Herangehensweise?

MM: Ja, und ich bin sehr zufrieden mit dem Ergebnis. Es war eine ausgezeichnete Art und Weise, die Kupferoberflächen so zu gestalten. Tatsächlich legten die Schieferabmessungen eine ähnliche Herangehensweise nahe, um die Kupferbänder zu strukturieren und um ihnen eine ähnliche Textur zu geben. Die Horizontalität spiegelt die des traditionellen Ziegelmauerwerks, das man überall in der Stadt findet, wieder.

CH: Neben dem Betrieb eines erfolgreichen Architekturbüros mit vier Niederlassungen, unterrichten Sie auch. Wenn Sie die Gelegenheit haben, wie entspannen Sie sich?

MM: Es ist ein Jonglierakt und es gibt nicht viel Freizeit. Aber wenn ich kann, male ich.


Foto: Chris Hodson

Der neue Kupfer-und Schieferturm symbolisiert aus der Sicht des alten Zentrums die neue östliche Stadt.

Das gesamte Interview mit Professor Månsson kann auf www.copperconcept.org gelesen werden.

AUTOMOBILE ARCHITEKTUR

Die Metamorphose eines unansehnlichen sowjetischen Gebäudes, das in der Mitte des 20. Jahrhunderts errichtet wurde, mittels einer Vorderseite aus perforiertem Kupfer entdeckt eine architektonische Typologie wieder, welche das Automobil feiert.

Zu Beginn erklären Pavel Khegay und Amir Idiatulin von IND Architects ihr Designkonzept.

Euromotors bat uns, ein neues Image für ihr Autoservicezentrum zu schaffen, das die wichtigen Leitbilder der Firma widerspiegelt: Beständigkeit, Zuverlässigkeit und qualitativ hochwertiger Service. Das Gebäude steht an einer vielbefahrenen Straße. Dies hat unser architektonisches Konzept inspiriert. Die Dynamik der vorbeifahrenden Autos – ihre Bewegungen, Lichter, glänzende metallische Karosserien – alle diese Bilder sind auf die Gebäudefassade projiziert worden. Knapp am öffentlichen Bürgersteig entlang verlaufend musste die Fassade als eine zweidimensionale Oberfläche entstehen, aber gleichzeitig die dritte Dimension und die horizontale Bewegung andeuten.

Als Material wurde voroxidiertes Kupfer gewählt. Dieses edle und zuverlässige Material betont den Status von Euromotors und seine Servicegesinnung bei der Pflege qualitativ hochwertiger Autos. Der Einsatz von Paneelen aus perforiertem Kupfer bereicherte das Gebäudedesign und erweckt von außen den Anschein einer wechselnden Oberfläche. Aufgrund des Spiels von Licht und Schatten geben die Perforierungen tagsüber der Fassade eine besondere Tiefe. In der Nacht wird der dynamische Effekt von der Rückstrahlung der Autoscheinwerfer auf der Oberfläche verstärkt – zudem scheinen Spezialleuchten in horizontalen Mustern wie Autoscheinwerfer durch die Paneele.

Die leblose weiße Fassade des ursprünglichen Gebäudes wurde durch eine dynamische, lebhafte Außenhaut aus perforiertem Kupfer ersetzt.

Foto: Andrey Marshal

Andrey Kulagin von den Planern und Verarbeitern der Pacific Stroy zur Realisierung des Designs.

Das war das erste Projekt in Russland, das eine vorgehängte Fassade aus perforierten Kupferpaneelen mit Hintergrundbeleuchtung verwendete. Es stellte uns vor einige Herausforderungen bezüglich der technischen Ausführung, der Auslegung der Architektenzeichnungen und 3-D-Visualisierungen – insbesondere das Verdecken der Leuchten, Stützen und anderer Gegenstände im Hohlraum der Fassade. Das Arbeiten mit natürlichen Materialien wie Kupfer lässt einen immer eine besondere Verantwortung und Inspiration fühlen. Probleme während der Installation wurden vermieden, indem jedes Detail durchgeplant und in einer technischen Dokumentation beschrieben wurde.

Die Perforation von Metallpaneelen beeinflusst die Festigkeit und wir trugen dem Rechnung, indem wir die Löcher als Schachbrettmuster machten, und die Stärke des Kupfers anpassten. Die Paneelkanten wurden unperforiert gelassen, damit die Paneele dort mit Kupfernieten an den Edelstahlstutzen befestigt werden konnten. Die daraus resultierende Fassade repräsentiert Euromotors' Geschäftsansatz und schafft Assoziationen mit Automobilen und qualitativ hochwertiger Technik. Das Perforationsmuster sieht aus wie die Heizung eines alten Autos. Die genieteten Verbindungen erinnern an die Außenhülle eines Flugzeugs.

In Russland und anderen Ländern sind Autoservicezentren normalerweise in faden Industriegebäuden untergebracht – aber Euromotors sticht mit seiner einzigartigen in Kupfer interpretierten Architektur hervor.

Architekt: IND Architects
Planung und Installation der Kupferverkleidung: PacificStroy (KrovExpo™)
Kupferprodukt: Nordic Brown™

Foto: Andrey Marshal

Foto: Evgeniy Golytkin

■ von Chris Hodson

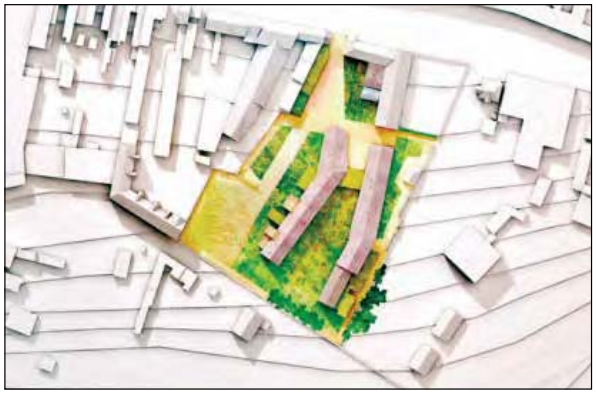
DIE WIEDERENTDECKUNG DES LOKALEN

Das neue Kultur- und Medienzentrum in der ländlichen Stadt Gournay en Bray in der nordfranzösischen Normandie besinnt sich in seinem typologischen Ursprung auf die Formen der einheimischen Gebäude. Aus dem Materialmix von Schiefer, Glas und ausdrucksstarken Kupferblechen bilden sich charakteristische moderne Formen.

Das Projekt besteht aus zwei markanten Flügeln, die über einen zentralen Eingangsbereich verbunden sind. Der 65 Meter lange Ostflügel bietet Raum für eine multimediale Bibliothek für Erwachsene und Kinder, der Westflügel ist mit 75 Metern länger, und beherbergt sowohl eine Musik- als auch eine Tanzschule. Die Architekten suchten nach einer zeitgemäßen architektonischen Umsetzung, welche die Beziehung zu ihrer natürlichen Umgebung (Gärten, Gassen, Steinmauern) und dem bebauten Umfeld (traditionelle Gebäude und Schuppen) neu definiert. Sie entwarfen einen Plan von unterschiedlichen kulturellen Räumen, die wie ein Rhizom, welches im Empfangsbereich seinen Ursprung hat, „gewachsen zu sein" scheinen. Die Vollverglasung taucht den Besucher in eine grüne Umgebung, welche unterstrichen wird durch eine Wildblumenwiese zwischen den beiden Flügeln.

Das steile Satteldachprofil des bestehenden Gebäudes wird im Neuen widergespiegelt, allerdings mit einer modernen Kontinuität aus purpurfarbenem Schiefer, welcher von semitransparenten perforierten und voroxidierten Kupferblechen über den großen verglasten Bereichen unterbrochen wird. Der Eingang zu dem Komplex wird von der Straße aus angekündigt durch eine quasi entmaterialisierte Verhüllung des teilweise mit Kupfernetzmateral bekleideten regionaltypischen Baukörpers.

Architekt: AAVP ARCHITECTURE / Vincent Parreira Architect
Chef de projet (Project Manager) Marie Brodin Architect
Kupferprodukt: TECU® Oxid
Fotos: Luc Boegly



A Platform
for Arts & Creativity

A thoroughly contemporary intervention is at the heart of the regeneration of the ancient centre of Guimarães, one of Portugal's most important historical cities and a UNESCO World Heritage Site. Locally based architects Pitágoras discuss their vision and the key role played by brass profile facades in its realisation.

The buildings that make up the municipal market and the space contained by them – commonly referred to as "the square" – together form the urban character of the city of Guimarães. Before being relocated, the old municipal market enjoyed a privileged and very central location with excellent access, very close to the Toural Square and the historic centre.

MULTIFUNCTIONAL SPACE

Now, the transformation of the marketplace into a multi-functional space dedicated to artistic, economic, cultural and social activities appropriate to the city's European Capital of Culture 2012 status, has reintegrated the area into the urban fabric, so recovering a key area of the city. In addition, the project extended out to adjacent building plots, enabling the regeneration of the interior space of the block – previously a characterless area used for marble processing.

The program provided a clear concept and defined the objectives to be achieved, listing a series of activities and spaces which defined the functions of both new and existing buildings, as well as the adjacent plots of land. Three major program areas were identified:

- **Art Centre – which houses the permanent Collection of José Guimarães, a temporary exhibition area, a multi-purpose space for additional activities, performances and shows, and complementary services.**

- **Creative Labs (business support offices) – for the reception and installation of activities related to creative industries, allowing the development of business projects.**
- **Workshops to Support Emerging Creativity – consisting of workspaces for young creators in various areas, hoping to develop projects on a temporary basis.**

The program also sought to recover the existing building on the eastern side by trying to promote the installation of additional multidisciplinary commercial activities. The whole structure, according to the program, would complement existing facilities in the city, as well as those under development as part of the European Capital of Culture.

When interpreting the program, we aimed to allow for the possibility of each one of its components functioning independently and simultaneously, by creating accesses to each of the various services and support areas, as well as to the outdoor square and garden.

We opted for a methodology of intervention that involved the rehabilitation of the existing building to the east – keeping the materials and textures but redoing the entire interior at level 0. With the north building, the façade towards the Avenue – which characterises the building – was renovated but its interior and façade facing the square were the subject of almost complete demolition and redesign. Although it was intended to maintain the scale and the existing formal relations, we proposed a new solution for the building that promotes a strong relationship with the square and emphasises the relationship of this structure with the outer space.

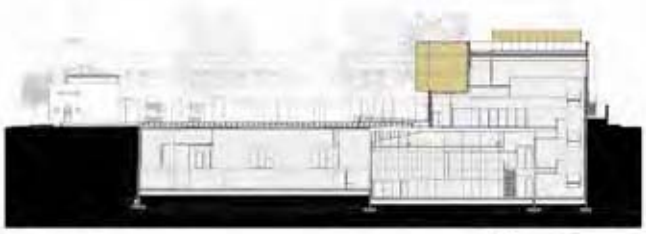
Architects: Pitágoras
Copper Fabricator/Installer: Casais-Engenharia Construção, S.A. / Combitur S.A. / C.C.Lobo e Filhos
Photos: João Morgado - Architecture Photography

RADICALLY DIFFERENT APPROACH

The new building takes a radically different approach to its surroundings, both from the standpoint of architectural language and image: discrete, repetitive, as well as by the succession of volumes, with full and empty, marked by the juxtaposition of contrasting surfaces. The external coverings – a grid of brass profiles and tinted glazing over ventilated façades – accentuate a range of textures changing from dense and opaque on the majority of surfaces, to transparent when partially concealing the building's few openings.

This series of dissonant elements resulted from the need to create a variety of different spaces in the exhibition area. It creates a tension manifested in the volumes of the building and the relationship with the space of the square, making it the main feature of its design.

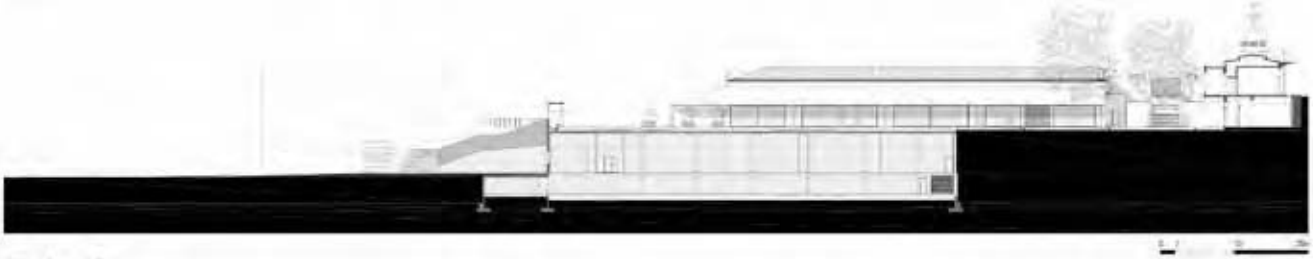
For the square, we formulated a design significantly more clinical, using large concrete slabs which act as a counterpart to the surrounding buildings. It is conceived as a large multifunctional meeting area – and obviously a public space by its very nature. It will remain intentionally sparsely equipped, with large trees to the east preserved and planting introduced along the north building, but leaving most of the space free for spontaneous or organised activities on the Platform.



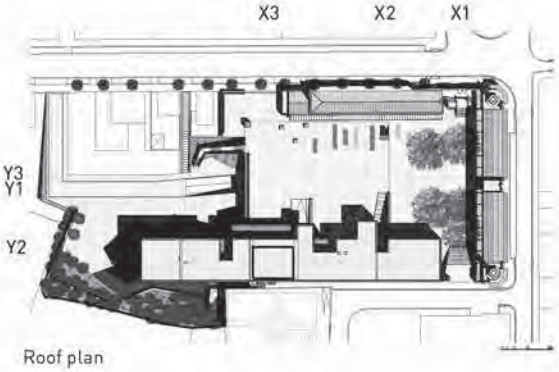
Section X3

Section X2

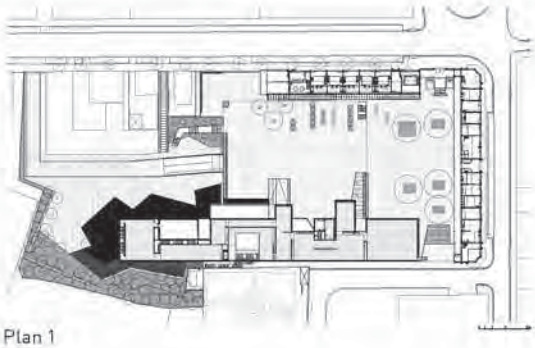
Section Y2

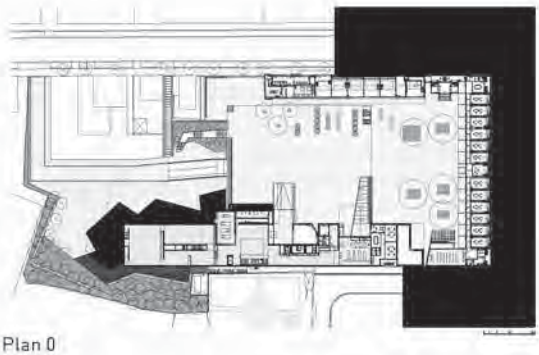


Section Y3



Roof plan


Plan 1


Plan 0

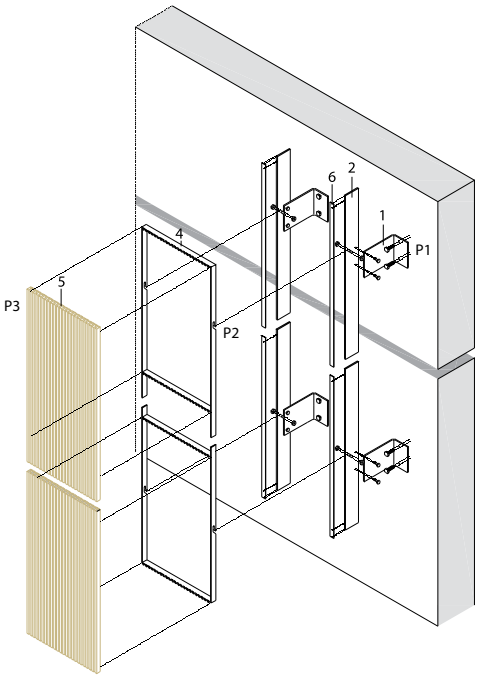

Plan –1

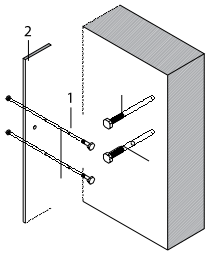

Plan –2

A TRANQUIL BACKDROP IN BRASS

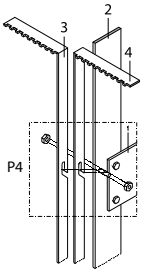
The architects' choice of brass for the facades of the new building was informed by the material's ancient heritage, sustainability credentials and ability to deliver a cost-effective solution to the complexities of the program. Brass profiles, in conjunction with exposed glazed areas, effectively dematerialise the massive geometric forms of the new building – which is 150 m long and stands 8 m high – softening its relationship to the public square.

The consistent grid, made up of 20 x 10 mm rectangular brass profiled sections, matches the scale and proportions of the surrounding buildings without overwhelming them. Despite the regularity of the brass grid, it provides a tranquil backdrop to the square, constantly changing with the light – then transforming from opaque to transparent at night.

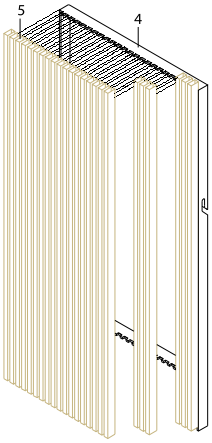




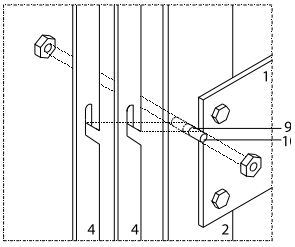
Detail P1



Detail P2

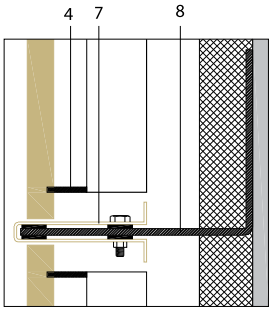


Detail P3

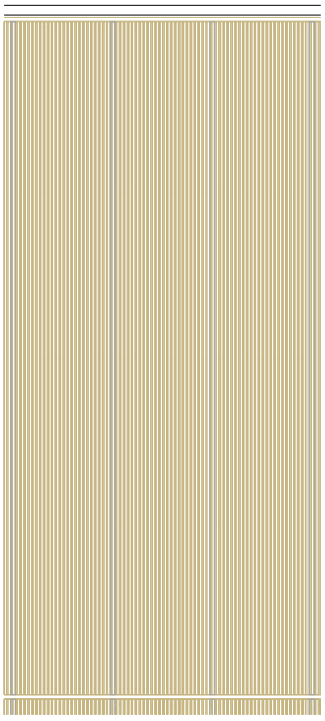


Detail P4

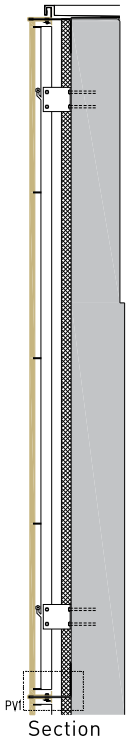
Assembley and fixation of the facade panels



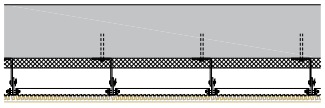
Vertical detail P1



Elevation



Section



Plān

0 0.1 0.5 1m

Brass section detail

1. ROUNDED IRON SHEET 5 mm, TO BE METALLIZED AND PAINTED
2. IRON BAR 70 x 6 mm, TO BE METALLIZED AND PAINTED
3. BRASS BAR 25 x 4 mm
4. TOOTHED BRASS BAR 4 mm, FOR FITTING THE TUBULAR BRASS, WELDED TO THE VERTICAL BARS
5. FACADE COVERING IN BRASS PANELS
6. BRASS BAR 20 x 2 mm
7. ROUNDED BRASS SHEET 2 mm
8. ROUNDED IRON SHEET 5 mm, TO BE METALLIZED AND PAINTED
9. NEOPRENE WEDGE
10. THREADED ROD OF IRON 8 mm IN DIAMETER, WELDED TO THE IRON BAR, TO BE METALLIZED AND PAINTED

OPENING UP HISTORY

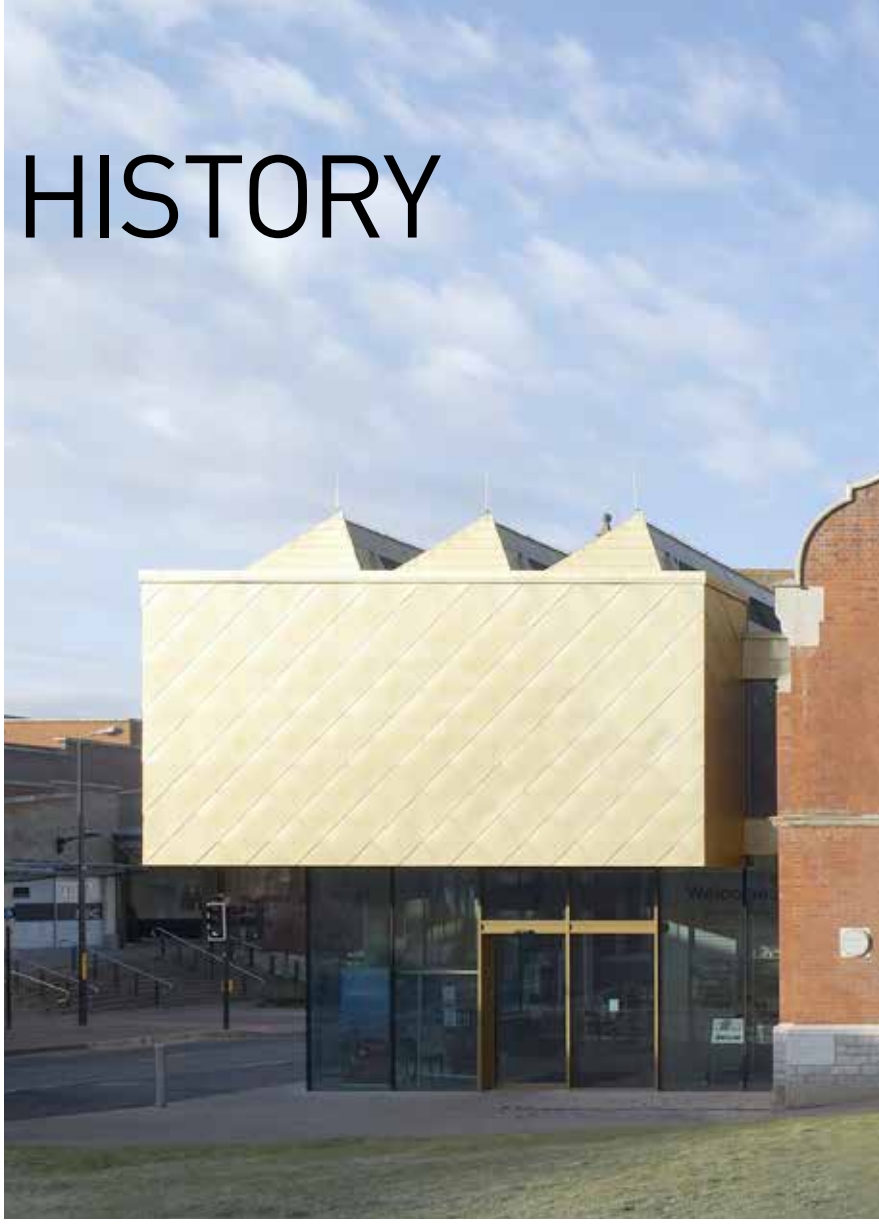
Hugh Broughton Architects explain the project for the upgrade of Maidstone Museum, a protected historic building in the South-East of England, dating back as far as the time of King Henry VIII. Their thoroughly contemporary design involves crisply detailed golden copper alloy and glass rectilinear forms, interweaving amongst ancient buildings to create new vistas from both inside and out.

In the summer of 2006 Maidstone Borough Council launched an exciting and ambitious scheme to open up Maidstone Museum's collections and transform its services and facilities for visitors. The East Wing project forms the second phase of the Museum's re-development programme, following the renovation of the West Wing in 2003. The Museum's core is a Tudor manor house dating from 1561. It was acquired by Maidstone Borough Council in 1855 and opened as a Museum in 1858. The Museum is a Grade II* listed building protected by law.

More Public Involvement

The collections of over 600,000 artefacts and specimens are outstanding in their diversity and quality, forming the largest mixed collections in Kent and one of the largest in the South-East of England. Some elements such as the Japanese Art Collection are of international significance. The East Wing project's key aims were the long-term preservation of the collections, more public involvement and increased use of the Museum and its collections.

The new interventions allow greater public visibility of the collections and also the Museum's historic buildings. There is now a visual reconnection to Brenchley Gardens, as originally intended by the Museum's Victorian founders, and better views of the Museum from the town centre. Public facilities, ease of visitor flow through the building and accessibility for all have also been substantially improved.



Architect: Hugh Broughton Architects
Copper Installer: NDM (Metal roofing & Cladding)
Copper Product: TECU® Gold
Photos: ©Hufton+Crow
Drawings: Hugh Broughton Architects

"Over time the shingles may loose their shine – but not their beauty"

The Japanese Art Collection

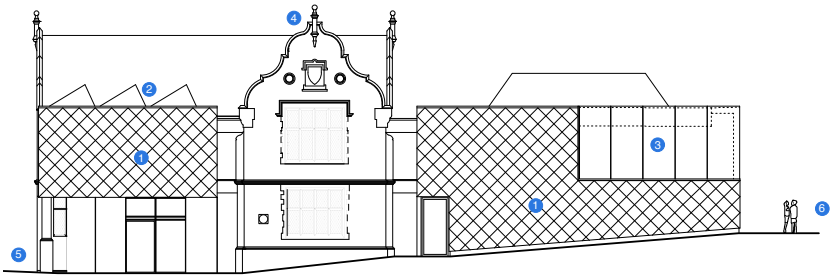
Winning Design

Our competition-winning design is a direct response to these key objectives. At the lower levels of the revitalised East Wing, a new entrance and orientation area face Maidstone's High Street and welcome visitors. A gallery created between an improved shop and the refurbished stores provides a home for a Solomon Islands War Canoe – the only example of its kind outside the Islands. Views from this gallery reveal a public courtyard and Tudor façades unseen by the public for over 40 years.

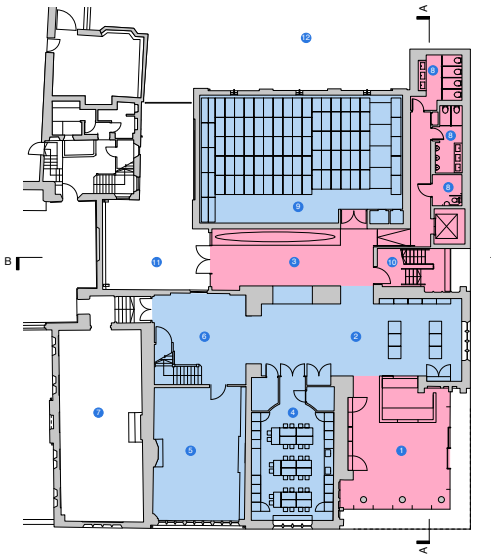
A young learners' education room is complemented at first floor level by a glazed meeting room, creating dramatic views of St. Faith's Church and visually re-connecting the museum with Brenchley Gardens. A dynamic new gallery space above the reception, lit by curvaceous, north facing rooflights, provides a permanent home for the collection of Japanese Art. The extensions were complemented by refurbishment and reorganisation of the existing galleries at the east end of the Museum, increasing display space by 30 %.

New elevations combine frameless glazing with a diagrid of golden copper alloy shingles, creating a contemporary counterpoise to the existing brick façades. Over time the shingles may loose their shine – but not their beauty.

1 Reception / Visitor Information Centre
2 Shop and Orientation
3 Japanese Gallery
4 Upper Bearsted Gallery
5 Escape stair
6 Corridor
7 Glass room
8 Plant room
9 WCs



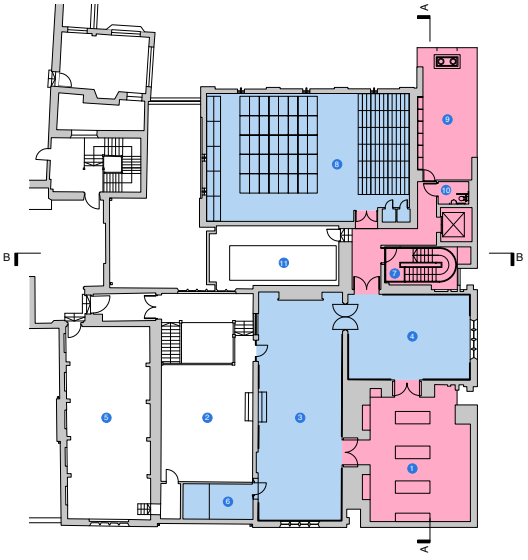
1 Gold copper alloy cladding system
2 Skylights to Japanese Gallery
3 Glass room
4 Bearsted Wing
5 St. Faith's Street
6 Brenchley Gardens



Extension

Refurbished Areas

1. Reception / Visitor Information Centre
2. Shop and Orientation
3. Canoe Gallery
4. Education room
5. Library
6. Vestibule
7. Queen's Own Royal West Kent Regimental Room
8. WCs
9. Lower Store
10. Escape Stair
11. Tudor Courtyard
12. Brenchley Gardens



Extension

Refurbished Areas

1. Japanese Gallery
2. Bentlif Art Gallery 1
3. Bentlif Art Gallery 2
4. Upper Bearsted Gallery
5. Charles Gallery
6. CCTV Room
7. Escape Stair
8. Upper Store
9. Glass Room
10. WC
11. Air handling unit

COPPER CONTEXT

Chris Hodson discusses the University of Warsaw's new Linguistics Department building with its architect, Professor Ewa Kuryłowicz of Kurylowicz & Associates.

The new Linguistics building faces the Library across Dobra Street, continuing its green theme.

CH: How did you come to design the new university building and what are the contextual impacts of its surroundings?

EK: The Linguistic department building resulted from a competition in 2006, which our office won. The new building is located in Powisle Pólnocne – Warsaw's Latin Quarter and home to the University of Warsaw and the Academy of Fine Arts. The area sits at a lower level than the main University and Academy buildings and the Old Town: this picturesque topography played an important part in our design strategy. Immediately adjacent is the copper-clad University Library (opened in 1999) which also influenced the new building – particularly its materiality.

CH: What was the strategy behind your design and the different façade treatments in particular?

EK: Our project was considered as a sort of a promenade, linking the higher University campus to the Library. Along this promenade we situated all reading rooms demanded by the programme of different faculties belonging to the Linguistic Department. In order to connect the two new buildings we used a glass wall along Dobra Street which reflects the rich copper facade of the Library with its engravings and texts in different languages. The 140 m long southern wall along Lipowa Street aims to give readers the impression of being in a garden space where light flickers through green leaves, creating a special, coloured light inside – a "sunny" environment, despite gloomy weather outside.
This is achieved using yellow, green and lime foils on the double- skin glazed southern facade.

CH: What are the reasons for the variety of treatments and materials on the facades?

EK: The whole project is in two phases and the now-completed first phase represents only a third of the whole complex. So the impression given by some facades is temporary. When complete, the whole building will read as having two wall finishes – essentially, glass and copper.

CH: Why did you choose pre-patinated copper?

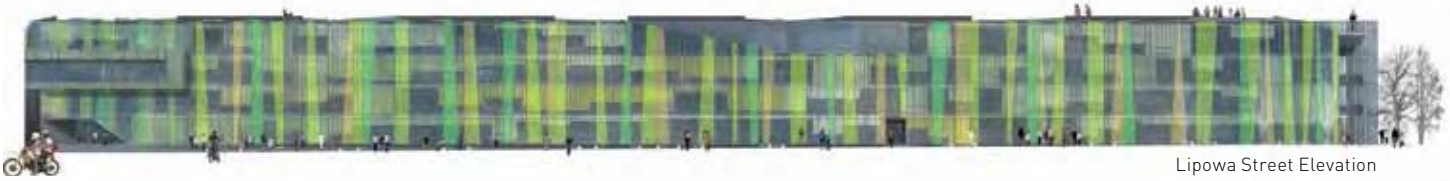
EK:. We selected copper for a number of reasons. Firstly, to accentuate the character of the district which is full of parks and close to the river. But, of course, the green mood of new architecture was previously introduced by the Library building. Although continuing down this line of thought, we choose a different finish for the copper – pre-patinated with a living surface colour – to differentiate our building from the Library. But we also wanted to show the variety of copper finishes which are possible.

Copper is a living material, like nature. Its appearance changes over the years, with the weather, at different times of the day and in different lighting conditions. This is demonstrated on the Wislana Street façade which is mostly copper, including service door facings. Also on this facade, the idea of introducing yellow patches amongst the copper was to enliven it with artificial "sun-beams". There is also a timber patch on this elevation, signalling a wooden terrace on the roof which "slides down" the elevation. The full effect will become clear when the whole complex is finished.

The Wislana Street frontage is generally copper.

Architect: Kurylowicz & Associates
Copper Installer: ME Wielkopolska Co
Copper Product: Nordic Green™ Living
Photos: Artur Białkowski (Grande)

Dobra Street Elevation



Lipowa Street Elevation

Wislana Street Elevation

SEAMLESS ARTICULATION

by Nick Hodges, Envelope Package Architect for Feilden Clegg Bradley Studios

The Hive, Worcester's recently opened Library and History Centre certainly has a striking presence. A beacon for learning, it is a key part of Worcester's river frontage, highly visible from the rising ground to the south and west. The articulation of its unique external form resonates with the scale and grain of the setting: the roofline echoes the profile of the Malvern Hills visible to the west, and recalls the Royal Worcester kilns which, with the Cathedral, once dominated the city's skyline. The iconic 'funnels' are as fundamental to the interior of the building as they are to its external appearance, providing natural light and ventilation to the heart of the floor plates.

The Hive evolved from a groundbreaking partnership to create a fully integrated public and university library, which is completely new to the UK and highly innovative internationally. The building also includes the county archives and record office, a local history centre, the county's archaeology service and a multi-agency customer service centre. The Hive is a cultural, learning and information centre of excellence – promoting lifelong learning, engendering social inclusion and raising aspirations in the broadest sense for the whole community, regardless of age, background, or ability.

Reflecting Local Materials

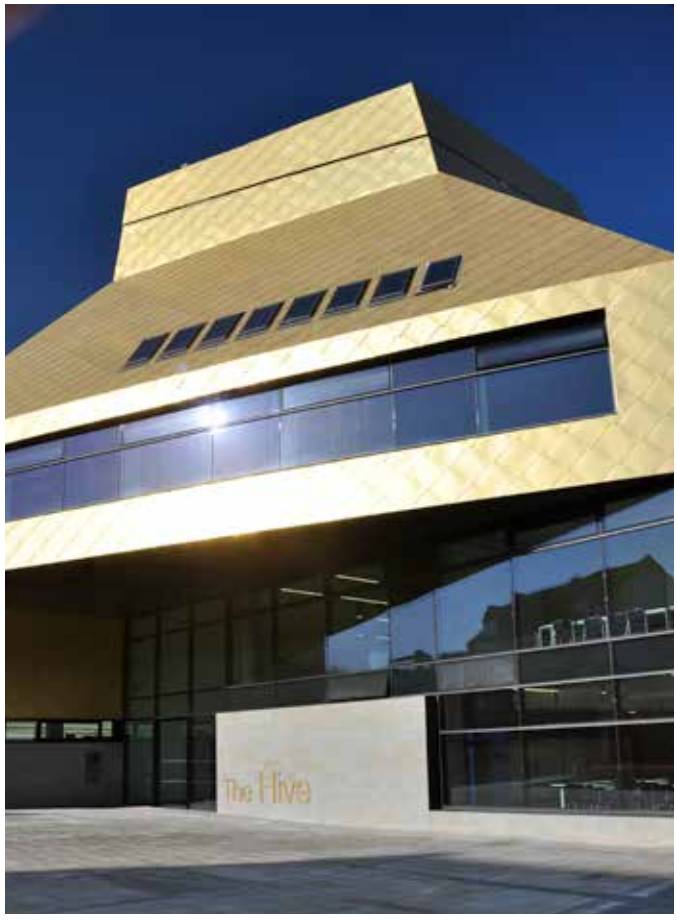
The cladding of golden copper alloy shingles reflects the rich palette of colours and materials which characterise the city centre - the red and gold of brick, terracotta and stone embellished with gilded filigree and finely decorated encaustic tiles. The elevational language of solid walls and punched openings also draws on the local vernacular: solid and void are balanced to optimise light, air and view, with care to avoid overheating and glare, and the need for excessive mechanical systems to maintain a comfortable environment.

The articulation of the roof form as a series of irregular cones is designed to reduce the scale of this significant new public building to better relate to the fine grain of the historic city. The distinctive roof cones are formed in solid laminated timber panels that span between the eaves beam and a timber ring beam at the top of each cone. The plinth, which varies in height around the perimeter, is clad in Forest of Dean Pennant stone to match the paving to the public realm: the ochre streaks echo the golden cladding.

Golden Cloak

The copper alloy cladding was chosen to allow the use of a single material to roof and elevations – a 'golden cloak' draped over the form. The scale of the 600 x 600 mm tiles and the slight offset with which they are laid gives the impression of carapace of scales. As an architectural language, the copper shingles are articulated as 'thin' – expressed at the window reveals and soffits as 25 mm deep, with the remaining depth to the glazing finished with dark anodised aluminium to match the curtain walling.

The shingles are intentionally overlapped rather than tightly coursed – to provide a natural element of variation that allowed openings in the copper alloy to be more freely positioned. It was felt that had the coursing been tighter then the resulting small cuts at openings would have been more noticeable. It was calculated that the difference in additional material was around 1 % and this was considered acceptable in terms of ease of working on site. More critically it was felt that the coursing of the copper should align from the walls to the roof cones, so that there was a feeling of continuity.


The Hive

Architectonic Detailing of Copper Alloy Shingles

Articulation of the metal "fabric" was developed in the detailing of the material at corners, eaves and window cills. A critical part of the material expression was to ensure that it appeared seamless and that cover pieces or horizontal elements of gold that might break up the shingle pattern were avoided. The design team were aided by the excellent copper installers who mocked-up a number of the key detail junctions (some shown here) for discussion and exploration ahead of the start of their site works.

As the installations progressed to site, the installers identified potential difficulties with particular gutter junctions early enough for the design team to discuss practical solutions on site. These conversations were supported by sketches and formal drawings, and testing where necessary. The quality of the copper alloy skin, as part of the overall finished building, is evidence of how well the design and installation team worked together.

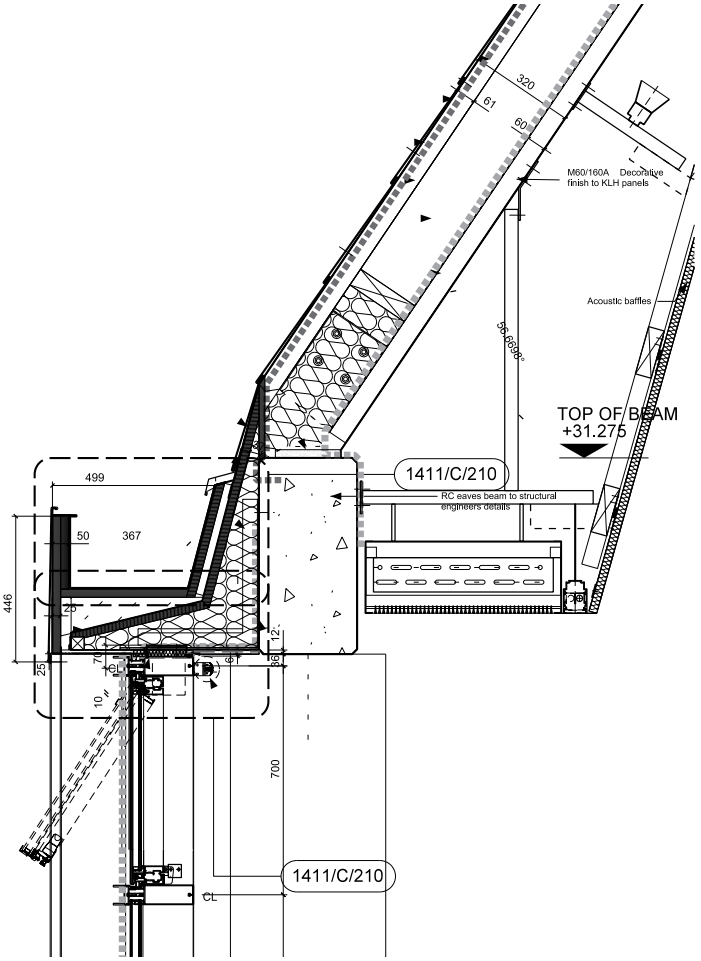
At nearly 12,000 m^2 it would be easy for the sheer volume of such a striking material to be the defining characteristic – but, by developing the details together with a dedicated and skilled installer, the cladding becomes more than simply distinctive. Instead, the prominence of the material is embellished and refined: the subtleties of the golden cloak demonstrated in its careful stitching together.

Architect: Feilden Clegg Bradley Studios
Copper Installer: Norman and Underwood
Copper Product: TECU® Gold
Photos: ©Hufton+Crow; Feilden Clegg Bradley Studios; Martin Quest

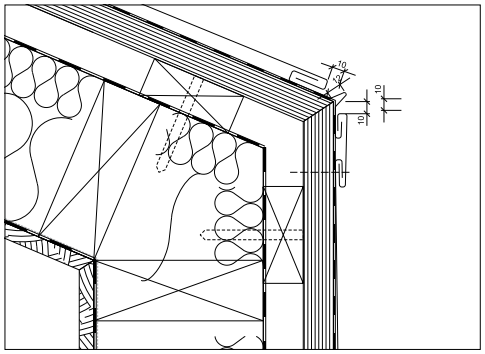
The copper alloy cladding was to appear 'thin', as a drape or fabric, with a reveal thickness at the glazing of only 25 mm.

Vertical and horizontal continuity was achieved by carefully setting out the shingle pattern to key points on the elevations. The eaves gutter means that the roof and walls are not continuous and it was critical to avoid a coping that could break the vertical continuity.

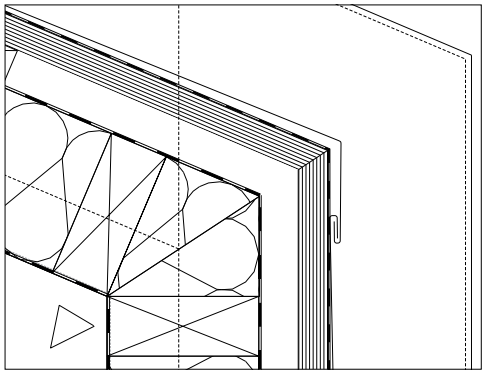
All horizontal changes of direction for both elevations and the roof cones (with one exception) were expressed with a raised corner.



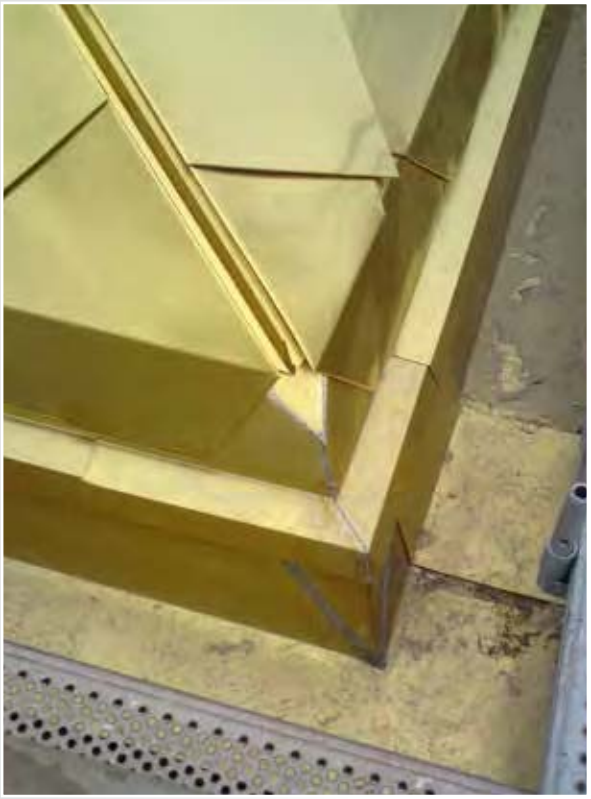
Section detail showing eaves gutter



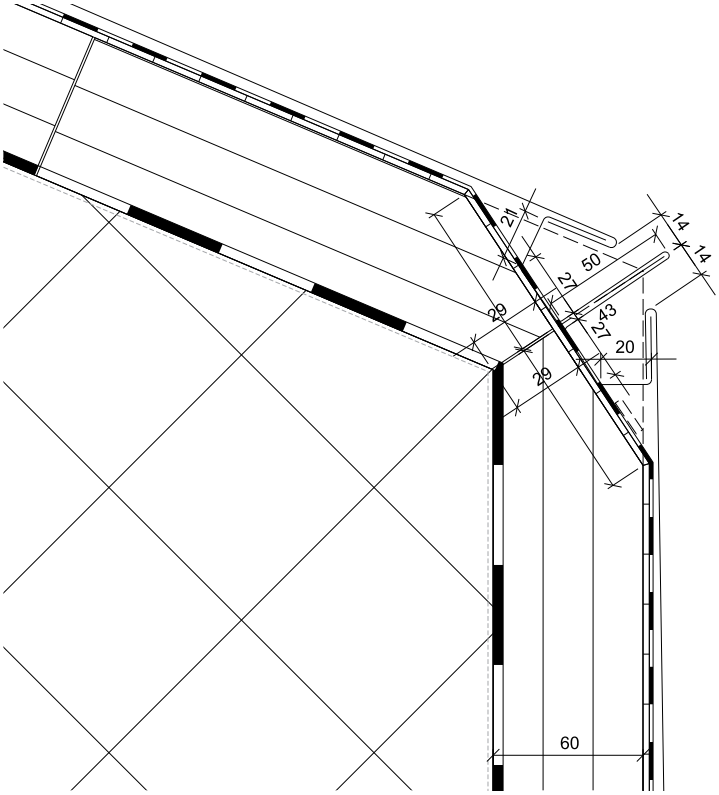
Plan detail showing copper alloy corner at oblique wall junction



Plan detail showing folded copper alloy corner to oblique wall junction

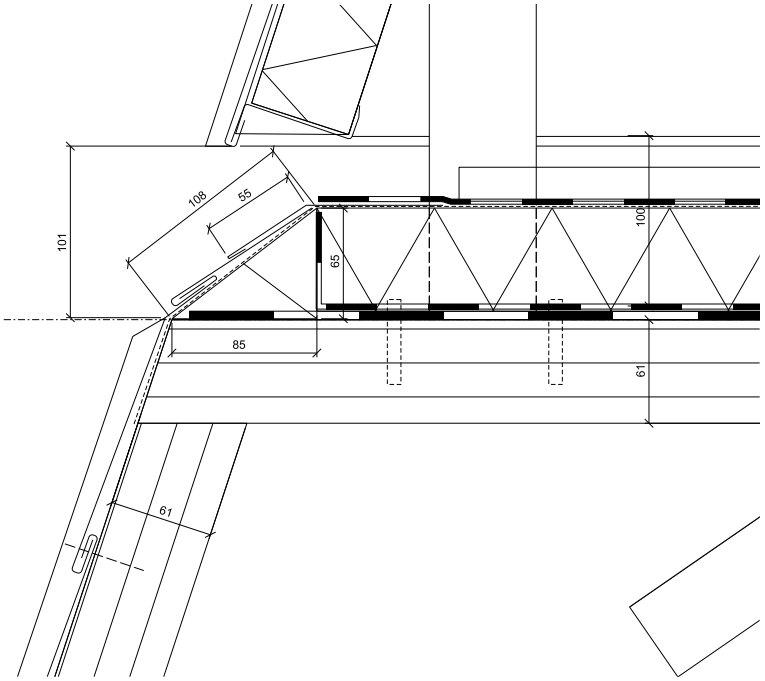


The roof hip is subtly different to the elevation hip – to prevent water ingress it essentially forms a pair of secret gutters that run either side of the central 'prow'.



Plan detail showing copper alloy corner at roof hip

From the outset, the roof intended to have a horizontal break that gave a datum against the various pitches and roofs. It also demarks the upper and lower baffles. It is an expressed 100 mm gap, across which the shingle pattern appears to be continuous.



Section detail showing roof baffle edge

SOLAR WAVES

by Chris Hodson

One of London's best-known public sector schools has been completely redeveloped with a single, state of the art building replacing a sprawling campus. The competition-winning design takes an innovative, highly architectural approach to controlling and optimising sunlight with its brise soleil arrangement of copper, brass and bronze fins.

Opened in 1958, Holland Park School became the flagship for 'comprehensive' education in England, known as the "socialist Eton" due to its impressive reputation. But by 2004, when an architectural competition for redevelopment was instigated, the school's existing buildings were beyond economic repair and failed to meet modern demands, with inflexible accommodation and tortuous circulation. The greatest challenge for architects Aedas was to design a new building to be built on the original site while the existing school remained in operation and that allowed part of the site to be sold to fund the construction but also left more usable external space than before.

Two Halves United

The result is a new block, approximately 100 m long and 30 m wide. A large, 7 m deep basement extends across the entire building footprint to a depth of 7 m, accommodating the sports hall and swimming pool as well as kitchen and dining areas. The above-ground, five storey parts are conceived as two distinct halves united by a central atrium stretching its full length and linked by a series of walkways. The east half contains the more conventional teaching spaces and is constructed using in-situ concrete columns and flat slab construction. The west half is a more dramatic, steel A-frame structure enabling the larger teaching and assembly rooms. This structure then straddles the larger spaces within the basement to create clear-span spaces.

Maximising natural lighting deep into the building with extensive glazing, while controlling glare and solar gain, proved central to the architects' strategy for design of the facades. But reducing visual impact of the long block on its sensitive surroundings – close to Holland Park and with mature trees on site – was also important. The east elevation is finished with a gently undulating stainless steel mesh, passing over a central copper canopy signalling the main entrance.

"We selected the mix of copper and its alloys to give a natural richness, with timeless yet contemporary qualities, as well as to deliver longevity and minimal maintenance."

Dynamic Three-dimensional Character

In contrast, the west facade is defined by a series of vertical fins in pre-oxidised copper, brass and bronze which take on a strong, dynamic three-dimensional character. The architect for the project, Peter Runacres, explains the development of their design: *"Due to the building's orientation, this elevation receives more solar gain than the east side and vertical fins are more effective in controlling glare while maximising daylight. The initial design had an arrangement of broken up, smaller fins but solar gain computer modelling revealed that more were needed.*

"We then experimented using a physical model and found that this arrangement created too much visual mass so, instead, settled on full-height fins set at three - apparently random – spacings, continuing over the roof. A soft, sine curve was developed for the fin profiles, which gives an organic feel reflecting the mature trees both on the site and facing this façade from the adjacent Holland Park. We selected the mix of copper and its alloys to give a natural richness, with timeless yet contemporary qualities, as well as to deliver longevity and minimal maintenance."

The copper and copper alloy clad fins are thin in section, minimising the impact on views from inside the building. But their depth acts as an effective barrier to glare and unwanted solar gain from afternoon sunshine. Viewed from an angle, the fins come together to generate a stunning effect of dynamic sinuous forms across the façade.

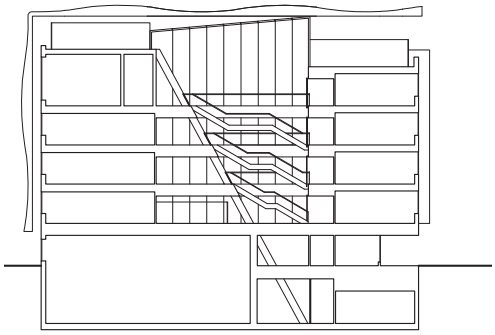
A copper canopy announces the main entrance on the east façade.

Viewed obliquely, the curved copper and alloy fins generate sinuous wave forms.

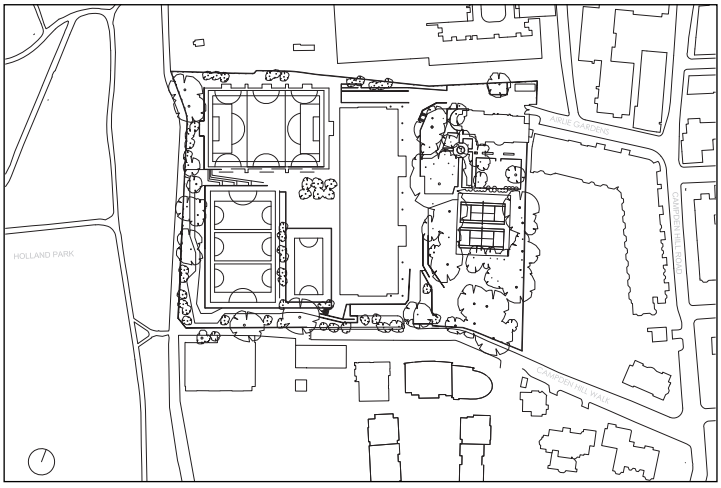
Photo: Graeme Bell

The thin external fins have minimal impact on views towards Holland Park.

The brise soleil fins appear randomly spaced and continue over the roof.



Section



Site Plan

Architect: Aedas
Copper Installer: English Architectural Glazing
Copper Products: Nordic Brown™, Nordic Brass, Nordic Bronze
Photos: Aedas/Daniel Hopkinson (except where stated otherwise)

Copper's Contribution to Improving the Environmental Performance of Buildings

by Nigel Cotton and Irina Dumitrescu

Copper based products improve the economic and environmental performance of multiple applications in energy, transportation and buildings.

A copper-clad trial house at the BRE Innovation Park near London, rated with the highest 'Level 6' using the Code for Sustainable Homes. Photo: Chris Hodson

Improving the environmental performance of products for consumers and the building construction sector is important to the copper industry. EU initiatives, such as the 'Sustainable Consumption and Production' action plan, emphasise greater resource efficiency and the commercialisation of environmentally friendly products. The copper industry is at the forefront of industries committed to reducing the environmental impact of its operations. Today, one third of the energy consumption of modern European copper manufacturing is used to operate environmental protection measures.

Recently, the copper industry has developed an environmental profile which covers around 90% of the EU's production of both copper metal and copper products. A critical review by external experts has confirmed the high quality, consistency and correctness of the results. Based on ISO 14040/44, all aspects of ore extraction, the production of other raw materials, energy supply and the production of the metal itself are detailed. As such, it captures the full impact of the so-called "cradle-to-gate" approach and shows where the greatest environmental impacts occur and where improvement actions would deliver the most benefits.

Whilst this profile is based on a "cradle to-gate" assessment, many of the benefits to society derived from copper will be found during the downstream use phase. The copper industry provides support to those wishing to use the LCI data in their own Life Cycle Assessments including the use phase and end-of-life phases.

Only about 20% of the total impact arises from EU copper production sites, influenced mainly by technology, local authority permit requirements, the source of energy supplying the production site and a company's own standards. Geologically, copper is associated with other valuable metals, such as molybdenum, silver and gold. Since their natural concentrations are much lower, the ore needs careful treatment. Modern mining techniques require less energy than in the past, making the recovery of small amounts of metal possible.

Copper Construction Products in Green Building Rating Schemes

In the last few years, sustainable architecture has evolved from an add-on to an expectation – and society's understanding of what a sustainable building is has become more complex. Sustainable building rating systems have responded to this shift by expanding their focus from operational impacts towards a more holistic life cycle approach.

To date, various green building rating schemes exist. They differ in their approach to considering building product sustainability in the context of the whole building. LCAs are provided by the copper industry to represent the ecological performance of copper products (e.g. sheets, tubes and wire of copper) in a transparent way. Moreover, the copper industry has developed Environmental Product Declarations (EPD) based on LCAs for communicating reliable quantitative environmental data for products based upon independently verified calculations.

Life Cycle Assessment (LCA) in Building Rating Schemes

The BRE 'Green Guide to Specification' is a useful starting point for assessing the sustainability of architectural materials and provides independent endorsement of the low environmental impact of both copper roofing and cladding. It rates a wide range of complete building elements from 'A+' to 'E', using LCA techniques. Ratings form an important part of the 'Code for Sustainable Homes' and other assessment tools such as BREEAM.

Various complete wall or roof build-ups are considered, each including materials for structure, insulation, moisture control and finishes. All the copper-finished roofs and most copper wall cladding specifications included achieved A+ or A summary ratings. Even the few build-ups with lower ratings could be improved easily with replacement components, without affecting the copper skin itself. Copper's longevity is a major strength, resulting from its complex patination process that ensures extreme durability with no maintenance and resistance to corrosion in virtually any atmospheric conditions.

But despite these high summary ratings, copper's life-span is one aspect that the Green Guide simply underestimates. It includes unexpectedly low replacement intervals for copper cladding and roofing – generally just 45 years – that are not justified either by experience or by science. Many historic copper roofs have survived for hundreds of years and some are known to have performed well for over 700 years.

The 'Agora' Council of Europe building in Strasbourg was awarded the sustainable building BEX Award 2008. Photo: Art & Build Brussels

Below are some examples of gaining credits in green building rating schemes, but there are many more opportunities to use copper to gain credits in building rating schemes not least in plumbing, renewables, heating and cooling.

The UK's Environmental Assessment Method for Buildings (BREEAM 2011)

Credits are available for using specifications for key building elements (e.g. external walls and roofs) with low embodied environmental impact as measured by the 'Green Guide to Specification'. Copper product manufacturers proving that their product is better than the average – in terms of embodied impact of the 60 year study period, because of reduced impact in manufacture, reduced material or increased durability – can obtain product specific Green Guide ratings by undertaking certification to BRE Global's Environmental Profiles Scheme.

For the "responsible sourcing of materials", credits can be achieved when construction materials – at least 80 % of materials used - are responsibly sourced. Points are awarded depending on the type of certification available for the materials used in each building element.

The US's Leadership in Energy and Environmental Design (LEED)

This system developed by the US Green Building Council addresses: Sustainable Sites; Water Efficiency; Energy & Atmosphere; Material & Resources; Indoor Environmental Quality and Innovation & Design. Life-cycle is not part of the current version (LEED 2009) but it will be incorporated into the next one (LEED V4) that will assess the building's life cycle impact reduction. LEED categories where copper can contribute include:

MR Credit 1 – Building reuse: credits can be achieved if building products can be reused during renovations, which is usually possible due to the durability of copper.

MR Credit 2 – Diversion from landfill: credits apply to end of life of the building and its materials. Since it encourages the recycling of products instead of their disposal, credits can be achieved if materials such as copper are used in buildings which have a high value as secondary materials and high recycling rates.

MR Credit 4 – Recycling content: credits are given if the recycled content of used materials in the construction is high. Usually, this is the case for copper products.

MR Credit 5 – Regional materials: i.e. extracted, processed and manufactured regionally. If copper products from regional processing or manufacturing sites are used in buildings, additional credits can be achieved.

SS Credit 7 – Heat island effect: credits are awarded depending on the Solar Reflection Index (SRI) of the roof, walls and site paving area. If copper is used as a roof or cladding, manufacturers can provide an initial SRI and one 3 years after installation.

The German Sustainable Building Council (DGNB)

This rating scheme addresses the three pillars of sustainability. It doesn't assess individual measures, but the overall performance of buildings and an LCA calculation are mandatory.

ECO1.1 Life cycle costs (LCC): the manufacturing costs of façade and roof have to be considered. No maintenance costs during use phase. Please note, the end of life scenario is not part of the LCC calculation.

This government office building in Wales received a BREEAM 'Excellent' rating and a sustainability award. Photo: Welsh Assembly Government and Infinite 3D

SOC1.6 Exterior quality: this criterion evaluates the design of outdoor areas. The goal of the criterion is to maximize the roof area by integration of technical structures in the building and reduction of fascia/parapets. Special outdoor areas (balcony, loggia, terraces, etc.) gain more points in this criterion.

TEC1.6 Ease of dismantling and recycling: copper is a non-toxic, recyclable material, which is a requirement for a good evaluation of this criterion. The effort of dismantling and sorting is low and the value is high, which helps ensure the reuse of copper metal at the end of its life.

To learn more about the copper Life Cycle, visit our dedicated website www.copper-life-cycle.org. The site provides important information on aspects related to the use of life cycle data and the methodologies used for copper, and also provides a link for practitioners to contact our experts.

IN THE NEXT ISSUE:

The Building Sector Leads the Way in Copper Recycling.

by Chris Hodson

COPPER TAKES CONTROL

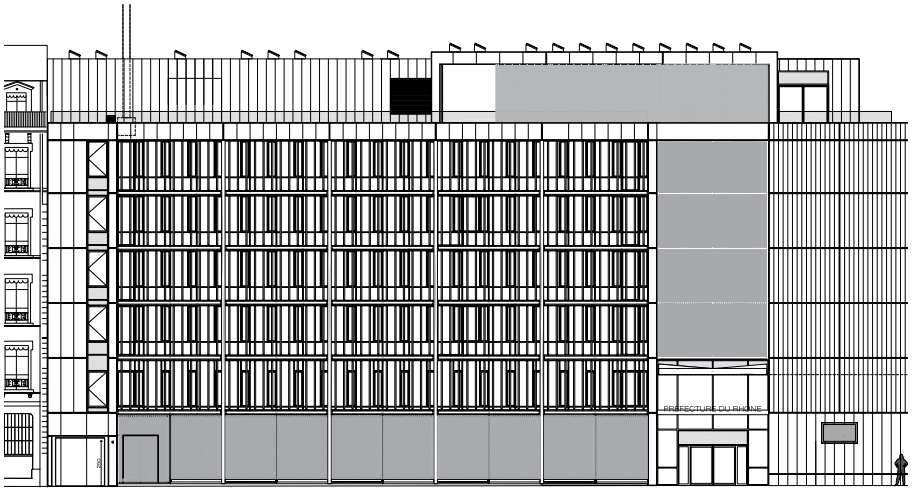
This new, civic building in the southern French city of Lyon is characterised by rotating copper brise soleil shutters within its deep facades, controlling solar gain and optimising natural lighting.

The Préfecture du Rhône building – designed by architects GARBIT & BLONDEAU – is the administrative centre for the Rhône department, demanding a strong public presence. It replaces a previous building on a corner plot in the central Third Arrondissement of Lyon, the department's capital city. Its plan-form is straightforward with six storeys plus a set-back 'penthouse' and external roof areas, and a 2-storey basement.

Copper Clad Volumes

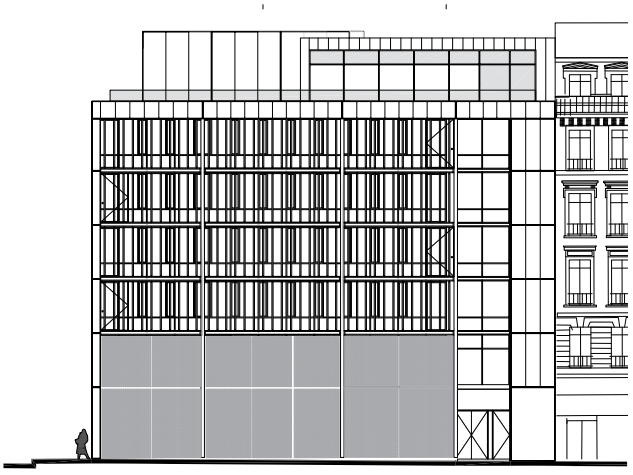
The two main facades are articulated as distinct, copper-clad volumes aligning with the typical Mansard-roofed blocks either side. The volumes are separated on the west front by an inset cloak of suspended stainless steel mesh reaching up to the penthouse and signaling the building's entrance. Copper was the architect's first choice and its sustainable credentials a consideration. Opaque cladding is generally pre-oxidised copper, selected for its more regular brown shade than 'mill finish' material.

The defining external features of the new building are vertical shutters clad in perforated, pre-oxidised copper. In conjunction with the suspended stainless steel mesh screens at street level, the perforated copper gives transparency – but the motorised, pivoting shutter arrangement also animates the facades. This brise soleil arrangement allows direct response to external conditions, controlling solar gain and glare, whilst maximizing potential for daylighting deep into the building. This strategy is thoroughly sustainable in terms of both environmental performance and choice of materials.

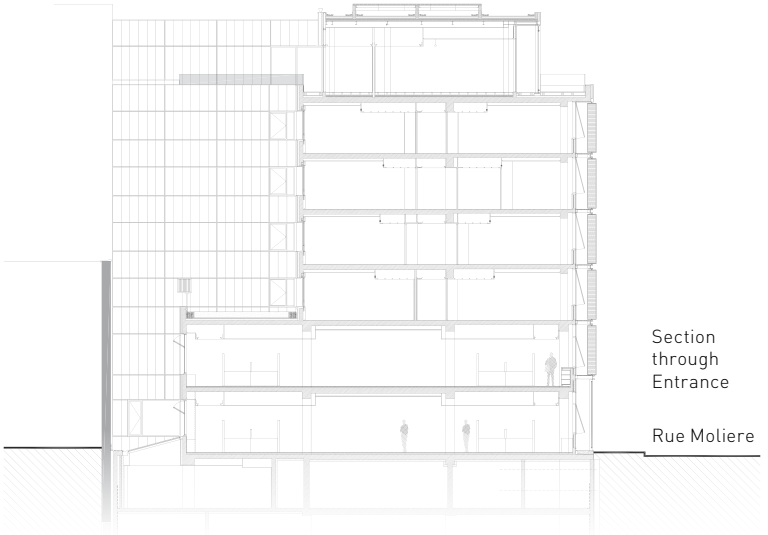


West Elevation

Architect: GARBIT & BLONDEAU
Copper Installer: SAS Alain LE NY
Copper Product: Nordic Brown™
Photos: © Studio Erick Saillet

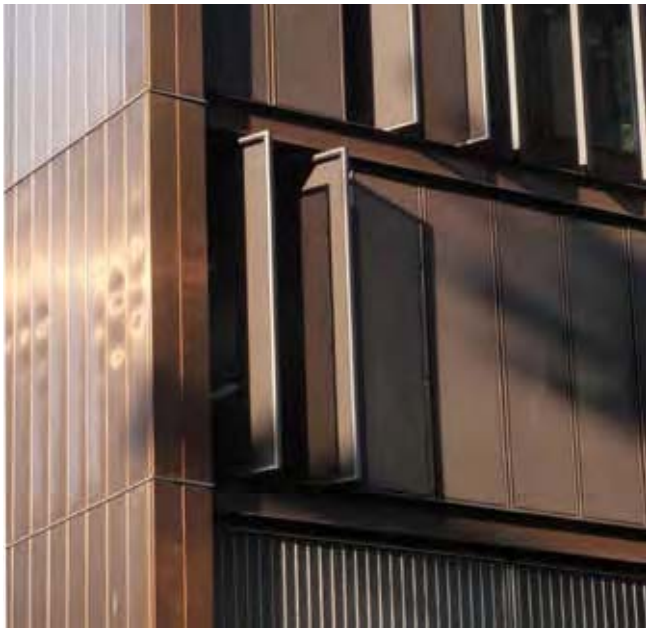


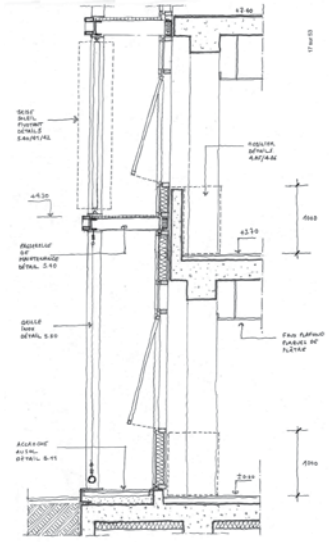
South Elevation



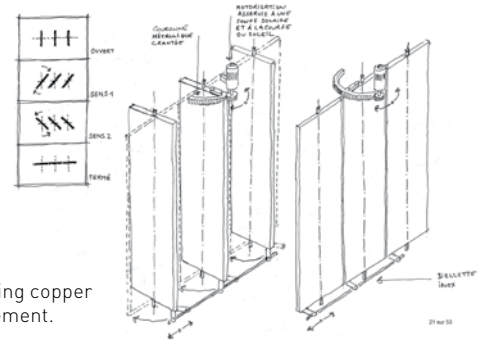
Environmental Control with Copper

The external copper shutters each pivot centrally and are operated in groups by electric motors, enabling local response to external conditions in combination with opening windows for ventilation. Even when closed, the shutters allow filtered natural light into the building and, at night, internal lighting transforms the building when seen from outside. The purely architectural impact of the design can be judged by comparison with the new facades before the brise soleil were installed.

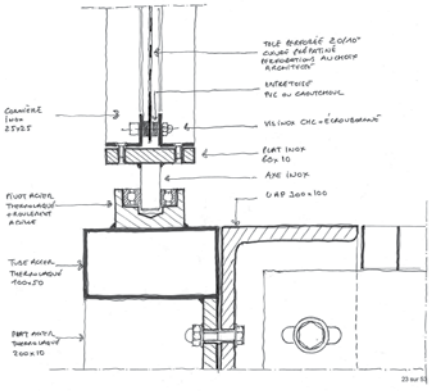




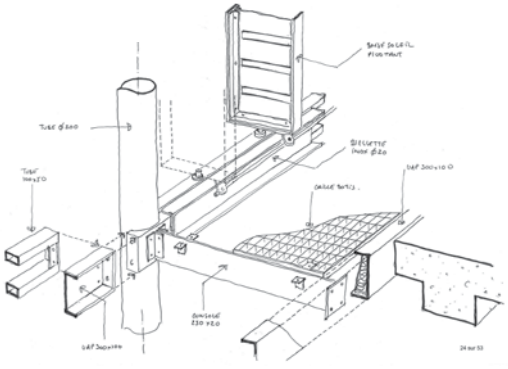
Vertical façade section showing stainless steel mesh below perforated copper brise soleil.



Motorised pivoting copper shutter arrangement.



Vertical detail of pivoting copper shutter.



Brise soleil build-up.

Awards Ceremony and Exhibition of all projects will take place in partnership with **BATIMAT**® on 04 – 08 November 2013 in Paris Nord Villepinte

ARCHITECTURAL AWARDS LAUNCH

Entries are invited for the 2013 European Copper in Architecture Awards – a showcase for architects designing with copper and its alloys to promote their work to an international audience.

All entries must incorporate facades, roofing or other architectural elements of copper or copper alloys. Any scale or type of project can be entered – from major landmark buildings to modest schemes.

Architects and critics, drawn from a panel including some of the most influential designers in Europe, will judge all the entries on their architectural qualities from graphic submissions.

Final deadline for receipt of entries: 31st May 2013

For more information on entering the 2013 Awards-16 and on previous awards entries and results, visit: **www.copperconcept.org/awards**

Visit us at:

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Copper in Architecture Awards

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