

**PRESS KIT**

**Architecture: The Merits of Copper**

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## COPPER IN ARCHITECTURE

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### From Antiquity to the Middle Ages

Copper has played a major role in the development of civilisations. Indeed, it has always been used, notably in architecture, for roofing (roofs) and rainwater handling systems. Its inherent qualities, as well as its ability to be alloyed with other metals, have been known for thousands of years. As early as 290 B.C., the Colossus of Rhodes, one of the Seven Wonders of the World, was built by hammering sheets of copper onto wooden moulds.

The Mediaeval era was the Golden Age for copper and its alloys, such as brass and bronze, which were used to enhance exterior and interior architecture in prestigious constructions, such as the bronze doors of the Cathedral of Aix-la-Chapelle, dating back to the VIIIth century; the bronze doors of the baptistry of the Cathedral of Florence, built by Ghiberti in 1423; or the copper roofing of many churches throughout Europe.

### Today

The use of copper in architecture has made a strong come-back through the development of cladding techniques enabling complete covering of façades, and industrial processes enabling the production of ready-to-use oxidized sheets of copper (green coloured pre-patina). In France, this market has grown by a factor of 6 over a period of 15 years. In terms of roofing, copper now accounts for about 10% of specified metallic roofs. Copper has been naturally integrated into various types of structures: office buildings, blocks of flats, individual houses.

#### Qualities of Copper for Use in Architecture:

- **Aspect:** copper is the only everyday metal that is coloured. Its natural colour is a bright, warm and shimmering reddish brown. But it is a living colour: according to circumstances, over time it takes on a whole range of different shades.
- **Longevity:** While people often talk of a 100-year lifespan, some buildings can attest to the fact that a copper roof can last more than 400 years.
- **Hard-wearing:** A copper roof does not need any special maintenance thanks to the natural process of forming the patina, a green surface coating that is waterproof, insoluble and very adhesive, protecting the copper from the environment.
- **Lightness:** A copper roof weighs on average only half that of a lead roof and a mere quarter of a tiled roof.
- **Thermal expansion:** Copper expands by around 20% less than lead or zinc. With less movement caused by changes in temperature, longevity is greatly increased. At the other end of the spectrum, copper can be worked without tearing, even at low temperatures, making it the natural choice for higher altitudes.
- **Malleability:** Copper is particularly suited for bending and for use in facings. Flat roofs, complex cuts, audacious curves - copper is fully adaptable, giving the designer great freedom.

## **USE OF COPPER IN ARCHITECTURE: A GLOBAL APPROACH**

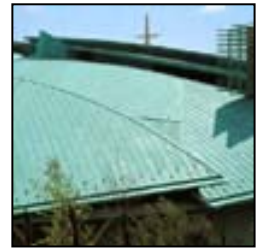
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### **A copper roof stands the test of time**

Used in the past for prestigious buildings, copper roofs are increasingly used in office buildings, apartment blocks and private houses. This is because the benefits of copper as a roofing and cladding material are appealing to more and more architects.

Completed towards the end of 2004, the imposing contemporary Padre Pio Basilica in San Giovanni Rotondo, southern Italy, is a perfect example of the passion of modern architects for copper. Built in the form of a snail shell, its 19,500 square metre roof (the largest to have ever covered a European church) was entirely designed in pre-patinated green copper.

*Roof of the Padre Pio Basilica, Italy  
Architects: Renzo Piano Building Workshop, Genoa*

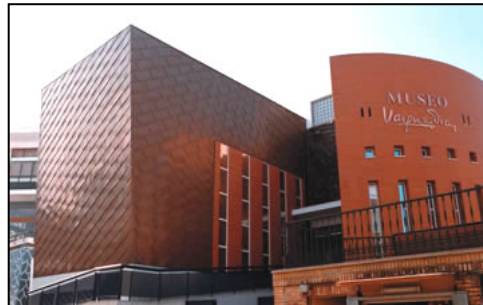


This amazing modern construction continues the evolution of copper in architecture from countless ancient buildings fitted with copper roofs. It shows the range of copper's aesthetic and technical properties.

### **Facades revisited**

The great innovation of modern architectural creations is in the use of copper for facades. Smooth, raised or truncated surfaces, in the form of a scale or shingle, in cascade or in panels, copper simply allows great creativity.

*Façade cladding  
'Vázquez Díaz' Museum, Nerva Huelva, Spain  
Architect: Julio A. Sánchez Prieto*



### **Rainwater Systems**

The widespread use of copper as a material for rainwater systems is a natural extension of the tradition of those working in metal coverings. The architect can thus ensure continuity between the roof and the gutters. Copper rainwater systems also work with any type of roofing material - tile, slate, stone or shingle – and any architectural style or trend.

### **Copper also appeals to designers**

As well as inspiring architects, copper is also attracting an increasing number of designers who are rediscovering the amazing properties of this noble material and who are using it in a host of modern applications: from lighting to fireplaces and furniture to accessories. For the second consecutive year, last November Milan hosted an annual exhibition entirely devoted to the use of copper in interior design: *Abitare con il Rame*. The 2004 event offered a surprising collection of creations on the theme of 'Light and Heat'. The displays included lighting, fireplace accessories and radiators designed by talented young designers, all demonstrating the aesthetic and practical qualities of copper.

## ALL COPPER'S COLOURS

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The aesthetic aspect is a key factor in the rediscovery of copper by contemporary architects. Copper is the only commonly used metal with a distinctive colour, all others, apart from gold, being grey.

### A palette of natural colours

Copper offers architects not just a single colour but rather a whole palette of colours:



**A flamboyant reddish-brown,**  
evoking light and opulence in its initial flamboyant phase

*Coast Surveillance Centre, Lisbon*  
*Architects: G.B. Arquitectos, Lisbon, Portugal*

**A chocolate-brown**  
that is more or less darkened by the progressive oxidisation of the metal as cuprous oxide forms

*Office complex, Amsterdam*  
*Architects: Atelier Pro, The Hague, The Netherlands*



**A patina-green finish,**  
the insoluble, waterproof and very adhesive properties of which naturally protect the copper

*Warehouses in Hamburg, Germany*  
*Architect: Jan Störmer, Hamburg, Germany*



### A living material

In the same way as leather develops a beautiful finish as it ages, copper is remarkable in being a living material, with the colour gradually changing over time as it patinates. The speed of this process depends on both atmospheric and climatic conditions, with the patina developing more quickly in a marine climate or industrial environment, on a surface with a shallow slope or if very exposed to the wind. On average it takes between 8 and 12 years in an urban environment and 15 to 20 years in rural areas for it to be adorned with its easily recognisable green finish.

### Pre-finished surfaces

To meet the needs of architects and developers, copper producers have devised a range of pre-finished natural shades right from the production line. In other words, it is now possible to install a copper roof with a natural green finish on a completely new building.

### **Pre-finished copper and copper alloys: an extensive range of colours**

- **Patina green** copper, as a result of a mechanical and chemical treatment that makes it possible to obtain a deep and harmonious finish, like the natural patina. Over time, the pre-patinated copper will naturally evolve, enhancing the natural green finish.
- **Matt brown** copper, which corresponds to the intermediate brown of natural copper. It is obtained by oxidising the copper. Once the pre-oxidised copper is exposed to the atmosphere it will continue to evolve until it has a natural almond green finish.
- **Warm brown** bronze (copper/tin alloy). The bronze makes it possible, with only small amounts of tin, to obtain tones that are pinker than pure copper, which will evolve towards anthracite brown, remaining stable over time.
- **Metallic grey** tin-coated copper. The roof will evolve from a shiny to a warm grey but will retain all the properties of copper (thermal resistance, malleability, corrosion resistance...).
- **Golden yellow**, a hue that will remain stable over time, of the copper/aluminium alloy.
- **Strong yellow** of brass, a copper/zinc alloy, mainly used for interior decoration (handles, floors, walls, door and window frames...).

## KEY FACTS & FIGURES, TECHNICAL SPECIFICATIONS

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Copper is a metal that is naturally present in the Earth's crust and it is essential for the development of life. It is the most ancient metal known to mankind: the first copper coins date back to 8700 BC.

Natural copper reserves across the planet are currently estimated at 2.3 billion tonnes.

### Different Uses of Copper

- **Electricity and energy:** 60% (incl. copper wire in the building industry)
- **Construction:** 25% (architecture and pipework systems)
- **Transport:** 10%
- **Other:** 5% (coins, sculpture, etc.)

The annual usage of copper throughout the world has doubled since the 70's, to reach over 20 million tonnes in 2004, of which 70% was produced by mining (14 million tonnes) and 30% by recycling (6 million tonnes). In 2004, the world market grew by 5.4%.

Over the past 10 years, the use of copper has increased by 14% in Europe. The European copper recycling industry is extremely well-organised and highly efficient, supplying 41% of European annual needs in copper (i.e. over 2 million tonnes).

China has become the leading global copper consumer, i.e. almost 20% of global use against only 9% in 1995.

Today, the use of copper in architecture is on a veritable upward trend: in France, this market has grown by a factor of 6 over a period of 15 years. More particularly, in terms of roofing, copper is now used in about 10% of new metallic roofs. 70% of the copper used in architecture across the globe is produced in Europe.

### Profile of copper

On the galvanic scale, copper is located amongst the most noble metals, just behind platinum, gold and silver.

- **Symbol:** Cu
- **Density:** 8930 kg/m<sup>3</sup>
- **Melting point:** 1083°c
- **Durability:** over 700 years
- 100% recyclable with no loss of properties
- Available in all forms including sheet and strip

## ARCHITECTURE & COPPER IN BERLIN

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### Scandinavian Embassies

Denmark, Finland, Iceland, Norway and Sweden: in 1994, the five Scandinavian countries, which share similar histories and institutions, decided to group together within the same embassy, while maintaining their respective identities. The project was completed in 1999, for a total cost of 42.5 million Euros, at the time that the German government transferred from Bonn to Berlin. The challenge consisted in expressing the unity of these Scandinavian countries while respecting their individual differences.

The Scandinavian Embassy complex, located next to the Tiergarten at the heart of the diplomatic district, thus complies with the motto: "*1 family, but 5 individuals*". Symbolising Scandinavian harmony and unity, a 15-meter high, 250-meter long pre patinated copper wall surrounds the group of buildings, transforming them into a vast complex on a scale with Berlin's city centre. The wall's 4,000 shutters reveal or veil the inside complex, depending upon their degree of opening.



*Berger+Parkkinen Architekten, Wien  
Photographer: Christian Richters, Münster*

A common building, constructed by Alfred Berger, provides a welcome area for visitors and access to the five embassies, each of which was designed by an architect from the country concerned. In the interior courtyard, the space between the buildings is like a 'plaza' streaked with lines that meet up with the different elements of the complex.



The various design and decoration elements used evoke the natural resources of the Scandinavian states: volcanic basalt for Iceland, pinewood for Finland, water for Denmark, rock for Norway... and copper for all of them, including inside the embassies. The Swedish embassy notably hosts an architectural treasure in terms of interior decoration, with furniture (tables, chairs) and a staircase set with copper.

Architect: Berger Parkkinen Architekten (Vienna)

### Austrian Embassy

Built between 1999 and 2001, this vast building is situated at the entrance of the Embassy district, near the famous Tiergarten. It was built at a cost of 15 million Euros following a European call for tender launched in 1996, to provide Austria with a new embassy comprising 3,700 m<sup>2</sup> of office space. Completely covered in a green coloured pre-patina copper facing, the construction carries the signature of its architect, Hans Hollein. The latter considers that architecture "must always be a millennium ahead" if it is to keep in line with current trends.



The project rests upon a strong bias: move as far away as possible from functional so as to get as close as possible to "absolute organic": the shapes and aspect of the final building are thus like those of a living organism, with an oval body and a magnificent patina green skin.

*Photo: credit KM Europa Metal AG, Germany*

Similar to a private house, there is a garden hidden from the outside, situated between the two wings behind the Embassy, which can be reached from inside the building, providing it with a veritable "lung".

The totally futuristic architecture of the monument enables simultaneous manifestation of the four fundamental values of openness, integrity, hospitality, and style. According to the Austrian President this new Embassy "symbolises the renewed international political presence of Austria and its opening out to the world".

Architect: Hans Hollein (Vienna)

## Israeli Embassy

In active use since 9 May 2001, the first Israeli Embassy to be built on Berlin soil is located in the Grünewald district, outside of the diplomatic and government area.

The project was thought up by Israeli architect Orit Willenberg Giladi who explains: "The issue here was to combine the acknowledgment of the tragic destiny of the Jewish people in Nazi Germany, with the necessity of a project reflecting the good relations between the Jewish state and today's Germany". The construction is organised like an architectural game full of meanings: the garden includes two buildings, one in an old style (the Schöndorff Villa, dating back to the thirties, which has become the residence of the Ambassador) and the other in a modern style: the Embassy itself, brand new and sculptural.



*Photo: credit KM Europa Métal AG, Germany*

The choice of materials lent itself particularly well to this search for meaning: the façades of both structures were built in the same conchitic limestone and the suspended roof of the new building like the four sides of the old patrician villa, were covered with pre-patina sheets of copper. The choice of copper is explained by its timelessness: a traditional material heavy with history, it now brings hope as it is anchored in the future. Finally, the presence of numerous glass windows symbolises Israel's wish for openness and transparency.



*Photo: credit KM Europa Métal AG, Germany*

The front view is marked by six stone pillars in memory of the six million Jews who were victims of the Nazi regime. The body of the building is crossed by a wall made from sandstone from Israel along the central axis. By its physical presence, this warm yellow-coloured uncut stone wall, turned towards the East and protruding from the building's roof, conveys some of the Israeli identity to Berlin. The challenge was to inspire dialogue between Israel and Germany, without trying to deny the weight of the Holocaust.

Architect: Orit Willenberg-Giladi

## Private House in Lichterfelde

Located in the residential district of Lichterfelde, the "Haus W." house project is based on the concept that a place of dwelling should be solid, original and pleasant to live in.



Privathaus in Berlin,  
Lichterfelde West  
HamannPottArchitekten.de  
07.2005  
Foto: Rudi Meisel

Built in a clear green valley on a plot of land that includes a landscaped garden, this house with 200 m<sup>2</sup> of floor space was only recently completed. Built in 2004 and 2005, the project focuses on optimising space and shapes, with the entrance situated at basement level.

Staggered brown copper panels cover the entire building, from roof to façade, and large windows completely light up the whole structure. Simple design and harmonious integration of the building into its environment are the key words in this construction shaped like a geometrical snail.

Its pure and angular lines are softened by the gentleness and greenness of the surrounding garden. The play of colour between flaming copper and translucent glass create effects of light that make this project one of the most original of its time.

Architect: Hamann Pott Architekten (Berlin)

## INTERVIEWS

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### 3 Questions to... Alfred Berger



*Berger+Parkkinen Architekten, Vienna*

*Work: wall of the Scandinavian Embassies*

#### ***What difficulties did you come up against?***

The 4,000 pre-patina copper shutters in the wall are held by copper alloy fixtures. From an aesthetical viewpoint, it was difficult for us to guarantee that the copper and the alloy would display the same patina over the course of time, but the final result lives up to our expectations.

#### ***How much copper is used in the overall design of the project?***

When you arrive by sea in the Scandinavian capitals you are struck by the green copper roofs reflecting on the water. We wanted to produce a reminder of this image by draping the Scandinavian Embassies in copper to symbolise their unity and their identity.

#### ***Why use copper in architecture?***

Copper is one of the oldest materials used by mankind, first of all for its technical qualities: it is resistant and long-lasting, requires no particular treatment and very little maintenance. Today, we are rediscovering its aesthetic qualities: it produces a richness of colour and a play of light which make it an interesting material to use for numerous architectural projects.

### 3 Questions to... Ingo Pott



*HamannPott Architekten, Berlin*

*Work: private house in Lichterfelde*

#### ***Why choose copper?***

We wanted a material that would achieve an overall homogeneous outline, perfectly integrated into its environment, and that would age in harmony with it. Copper was our primary choice: "a copper house blending into the landscape". The result is a genuine living skin, the colour of which will change over time.

#### ***What were the technical constraints?***

The quality of the final rendering depends mostly on the rigour with which the material has been processed beforehand. At each step of construction, the company in charge of the project provided samples, allowing us to assess the quality of the parts together with the skilled process used, before fitting was carried out. The exceptional final aspect of the house is the result of this long and meticulous work.

#### ***Is the use of copper in architecture a background trend or simply a fashion?***

Copper has been used for centuries, specifically in roofing for religious monuments such as churches and cathedrals. The recent development of industrial processes that enable producing pre-patina sheets of copper has resulted in its revival. In addition, its durability and its high environmental value make it a material of the future for building project by owners, local authorities, private developers or individuals.

## ARCHITECTURE AND COPPER IN FRANCE

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### The UGC Ciné Cité in Strasbourg



Strasbourg completed its leisure facilities in 2001 with a twenty-two screen multiplex cinema.

Thanks to the luminous green of its copper facing, the two curved façades, slightly bigger than the actual complex, can be seen from afar giving cinemagoers a taste of what "potent images" await them on the inside.

Visitors arriving from the town centre can walk along the old docks of the port and come out directly onto the esplanade opposite the main entrance. A projecting green-coloured semi-circular drum at the corner of the façade covers the two upper floors, thus demarcating the outside of the large screen 600-seat cinema. The copper facing continues on the inside giving the impression of entering into an egg-shaped room.



### The Restored Roof of the Orangerie of the Louvre Museum

Built in 1852 opposite the Jeu de Paume in the Tuileries Gardens, the Orangerie of the Louvre Museum has been housing an amazing collection of Impressionist works since 1920. Over the past few years the Orangerie has been undergoing a major renovation, notably with regard to its roof, which is made up of two sides with a surface area of 800 m<sup>2</sup> and covered in glass panels dating back to 1922. In 1947, iron attachments were added to reinforce the structure of the roof. More than 50 years later, gradual ageing of the whole structure combined with the effects of pollution and pigeon droppings, made a complete renovation necessary.

Four ideas were considered, ranging from simply repairing the existing structure to completely replacing it with aluminium, stainless steel or brass. The latter was chosen in the end because it is practical to use, very solid, resistant to corrosion and lasts for over 100 years.

But beyond these technical features, brass also has major aesthetic advantages: "Architects have always favoured brass for creating a feeling of luxury in shops, hotels, restaurants and monuments", reveals Luc Lacombe, in charge of the *Architecture Products* division at KME.



There are more than 60 grades of brass, with different technical features and colour tones according to the amount of copper used in the alloy. At the end of the day, the elegance of the work that was carried out is very much down to the colour of the brass that was chosen, for the golden yellow shows off the roof of the Orangerie to its true advantage.

*View of the structure of the brass roof, before covering.*

The project was carried out in 2 stages: first of all the glass was replaced along a length of 50 metres. This section effectively overhung Monet's *Water lilies*, which could not be moved under any pretext, and so a protective roof was installed underneath the main roof. The second 50-metre section did not require such protective measures and was thus easier to renovate.

*The brass roof during vitrifying*



The entire glass covering, some 1000 double-glazed panels, each with an individual surface area of 2.2x0.6 metres, has now been replaced. The complexity of the overall structure required using innovative manufacturing procedures to ensure the quality of the pieces. In the end, approximately 25 tonnes of brass were used to successfully complete the work, making the renovation of the Orangerie one of the most modern architectural creations of the present time.

Architect: Michel Goutal (Chief architect of historical monuments), renovation in progress.

### **Private House in Clamart, France**

Transform an old grinding mill into a modern building and extend it without detracting from the original building - such were the requirements of the architectural project carried out on the M. house, situated in a well-to-do Parisian suburb.



For the architects of the SoA workshop, "it was not a matter of adding a free-standing volume that would blend into the existing architectural support but rather to find a way of subtly getting the house to fit into a whole new era."

From the very outset, the design stage of the project was geared towards researching materials that would allow for this transition in time. The roughness and dark tone of the grinding mill led to a choice of two main materials: a moulded black-coloured brick and brown pre-patina copper.

The ground floor extension and the two skylights that emerge from the roof emphasize the overall brown tonality of the house. The black brick is used for the façade at the entrance to the house and continues through to all of the outside windows. All of the woodwork of the house has been painted black to enable the new and old elements on the outside of the building to co-exist in harmony. This tonality has also served as a starting point for the interior decoration.

Architect: SOA Architects (Paris), 2005

## Private House in Châtenay-Malabry, France

To use the actual words spoken by its architect, Marc Chazeaux, the project undertaken for the S. house, in Châtenay-Malabry, was something of a challenge: *"We started out with an old house in no particular style dating back to 1950, and finished up with a high-class detached house in a decidedly modern design."*

It's a fact that the current building has absolutely nothing in common with the old one. Building an extension on 3 levels, linked to the original house by openings at every level, doubled the amount of living space (which went from 180 m<sup>2</sup> to 360 m<sup>2</sup>). Cladding the façade in green pre-patina copper made it possible to unify the creation while giving it a brand new style in the middle of this residential area.

The proportions were completely rethought. All of the openings of the initial building were modified to allow for continuity with the bay windows in the new part, and the main entrance was moved. Finally, the new building benefits from corner windows which add yet another touch of modernity to the house.



For Marc Chazeaux, choosing copper was very much for the aesthetic as well as the functional. Aside from the fact that the almond green patina of the metal introduced a touch of original colour, the copper covering requires less maintenance than wood and is more stable over time.

Architect: WKZ Architecture (Levallois), 1998-1999.

## **COPPER: VERY ENVIRONMENTALLY FRIENDLY**

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### **For sustainable construction**

The future is one of sustainable construction that is environmentally friendly, an area which is being driven by public authorities. At a European level, in particular, several programmes encourage the application of sustainable development criteria in architecture, for example:

- The European Directive on the "energy performance of buildings" (2002/91/EC) that will come into force in January 2006. This is designed to promote improvements in the energy performance of buildings, taking into account outside climatic conditions, special local conditions, requirements with regard to the indoor climate and cost effectiveness.
- The European Interreg III B "ENCOURAGE" project that seeks to reduce the ecological footprint of the sites of economic activity in new French, Dutch and British towns.

In some European countries label schemes have begun to emerge: this has happened, for example, in the UK where the Building Research Establishment created a label for new buildings (mainly offices) in order to evaluate the environmental performance of buildings. The programme now covers over 25% of the office blocks in the UK.

In the early 90s, a High Environmental Quality [HQE] initiative began in France. Founded in 1996, the HQE association now has 43 local branches. The HQE initiative is not built on strict legal regulations or any outside standards but acts as an encouragement for developers to design buildings that are more environmentally friendly. The HQE nevertheless operates on the basis of specific rules and requirements, relating to the construction and life of the building and set out in the form of 14 goals that the developer must seek to achieve when building.

### **Architects rediscover the 'green metal'**

Leading practices appreciate copper's environmental credentials. This can be seen, for example, in the specification of copper for the facades of the highly environmentally friendly 'La Glacière' complex in Brussels, currently being designed by the Art Urbain firm.

### **The global environmental contribution of copper**

Copper's essential properties fit into a global environmental approach covering the whole life cycle of a building, from design to recycling.

- Durable, resistant to corrosion and easy to install, the use of copper helps to limit the volume of waste upstream and cut maintenance to a minimum.
- 100% recyclable, the copper available on the market already contains recycled copper. The recycling process changes none of copper's properties and recycled copper is melted down with new copper and can be used in exactly the same way as new copper. It is estimated that recycled copper accounts for over 40% of copper demand in Europe thus saving raw materials. As well as saving resources, the recycling process generates energy savings up to 85% when compared to the extraction of new copper.

Recycling is becoming a major issue: it is estimated that more than a quarter of all the waste produced in Europe comes from the demolition and renovation of buildings. Yet, half of the waste from this sector is still thrown away without being reused or recycled. Around 30% of the materials used in construction are recycled, whereas 90% of them could be<sup>1</sup>.

- Copper plays a natural role in the environmental performance of buildings due to its exceptional electrical conductivity (the best of all non-precious metals), a factor in the improvement of the energy efficiency of electrical installations. It is known, for example, that increasing the amount of copper in electrical appliances such as motors or transformers minimises heat loss, thereby increasing efficiency. Now, as in the past, whenever there is an electrical application in a building, you'll find copper.

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<sup>1</sup> Source: CSTC RecyHouse Programme [www.recyhouse.be](http://www.recyhouse.be)



## THE EUROPEAN COPPER INSTITUTE

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The European Copper Institute is a joint venture between the world's mining companies (represented by the International Copper Association, Ltd.) and the European copper industry. Its mission is to communicate copper's benefits to modern society across Europe through its Brussels office and a network of eleven Copper Development Associations.

ECI is active in 4 key areas in Europe:

- Electricity & Energy
- Building Construction & Automotive
- Environment
- Health

### 1) ECI Electricity and Energy Programme

The ECI Electricity and Energy Programme is aimed at promoting the rational use of energy, in the context of sustainable development, in three areas:

- **Energy efficiency:** in increasing research, awareness and market development activities, in particular by participating in community action programmes, like the 'European Union's Motor Challenge Programme', which encourage industry to use energy efficient motor driven systems.
- **Quality of electrical energy:** ECI is the founder of a community action programme for professional training (LEONARDO Power Quality Initiative) to improve the quality and reliability of electrical energy by reducing electrical interference. Present in 12 countries, this programme, involving more than 80 organisations, including renowned universities, companies and professional bodies, aims to save European industry 10 billion euro per year through reducing electrical interference.
- **Electrical safety and convenience:** ECI brought together the main players in the field to focus efforts on enhancing electrical safety and convenience in the home (the FEEDS partnership - Forum for Enhanced Electrical Domestic Safety).

### 2) ECI Construction and Automotive Programme

Construction and automotive are key sectors of activity for ECI. Promotional activities in these fields are centred on 3 main areas:

- **Architecture and pipework systems:** to promote copper's aesthetic properties, its durability, its modernity, as well as its reliability, particularly in systems distributing drinking water, heating and gas.
- **The role of copper in solar energy:** to raise awareness of copper's outstanding electrical and thermal conductivity as key factors in efficiently exploiting solar energy.
- **The advantages of copper in modern vehicles:** to communicate copper's essential role in improving the safety and comfort of modern cars and to make possible the electric cars of the future.

### 3) ECI Environmental Programme

The ECI environmental programme is mainly aimed at understanding copper's role in soil and water. The results are used in discussions on regulations both at a European Union and national level. All research is undertaken with the assistance of eminent scientists.



#### **4) ECI Health Programme**

The ECI health programme is primarily aimed at understanding the role of copper as an essential element in health. The results are used to improve health by contributing to the discussions on regulations both at a European Union and national level.

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## **THE FRENCH COPPER INFORMATION CENTRE**

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The Information Centre for Copper, Brass and Alloys is the professional body representing copper producers and processors. It is responsible for promoting applications of copper and its alloys in the French market.

The Copper Information Centre, which is financed by copper producers throughout the world and by European manufacturers of semi-finished products, implements development programmes on the French market, in coordination with the international work being done by the International Copper Association (ICA) at world level and the European Copper Institute (ECI) in Europe.

The Copper Information Centre produces and circulates information concerning copper and its alloys to promote their correct and efficient application. It creates and implements development and communication campaigns in a number of key fields, in particular:

### **CONSTRUCTION AND INDUSTRY**

- Copper tubes in construction (domestic water pipes, heating, under-floor heating and gas distribution);
- The different applications of copper and copper construction products (roofing, cladding, rain water drainage);
- The key role of copper in modern motor vehicles.

### **ENERGY AND THE ENVIRONMENT**

- High output industrial electric motors;
- The quality and continuity of current in industrial installations;
- The use of copper in the manufacture of alternative energy systems (wind turbine generators, solar cells, etc.);
- The recycling of copper.

### **HABITAT AND DAILY LIFE**

- The use of metals containing copper in interior architecture and decoration;
- The renovation of the electrical installations of older dwellings;
- The use of copper in consumer electronics (cable networks, broadband internet service, computers, mobile telephones).

### **HEALTH**

- Copper as a trace element in food, essential for life;
- The antibacterial properties of copper as domestic water supply networks.

The Copper Information Centre is linked to many organisations and sources of information concerning copper and actively cooperates with the other copper centres throughout the world.

### ***Further Information:***

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