ARCHITECTURAL ENAMELING

omeras
SURFACES IN ENAMEL

Contents

Perfect material
from a company steeped in history and tradition

Lauter | Erzgebirge | Saxony | Germany

Metal has been worked and enamelled in Lauter, Saxony since 1838.

Skills and experience have been handed down for generations. During this period, a great variety of products have been developed. For the last 15 years, enamelled panels have been developed and produced for an incredibly diverse range of rear-ventilated façades. After just a few years, numerous construction projects around the world are bearing witness to the success of this versatile material combination, and indeed to the outstanding expertise of the company's employees.

Reliable and flawless project management from planning through manufacture to installation is appreciated worldwide.

Our owner-operated company is rightly proud of its up-to-date production facilities, which guarantee the highest quality and capacity right from the design stage, through forming and enamelling the metal panels, to assembly and installation.

These advantages are prized by customers from all over the world, who need cladding for road tunnels, underground stations, superstructures or other purposes. Our prospectus sets out just a selection of the achievements which can be attained by omeras GmbH and demonstrates the commitment with which all our employees approach new projects. We look forward to working with you.

Andreas Huhn
CEO
omeras GmbH

Enamel – a traditional and innovative material

withstands extreme temperatures; nonflammable

Architecture, signs and advertising hoarding made of enamel and steel are nonflammable and resistant at temperatures ranging from -60 to +450° C. The positive properties of the protective surface remain unchanged. Direct exposure to fire does not produce any toxic fumes. Enamel does not increase the fire load of the building.

no hygiene or physiological hazards

The enamel surface which is as smooth as glass prevents bacteria and other such organisms from becoming established. The enamel surfaces do not contain any harmful substances such as solvents or toxic heavy metals.

versatile design possibilities

Architects and designers will find a virtually limitless number of design options in terms of adaptability, printability, variety and durability of colours, as well as shape stability. For a range of possible shapes, see pages 12 and 16.

UV, climate and corrosion resistant

Enamel coating provides long lasting protection against corrosion, preventing rust infiltration and contact corrosion. Even intense sunlight does not affect the colour of enamelled surfaces. Enamel is remarkably acid-resistant.

dirt-repellent and graffiti-proof

As no static charge develops in enamel, it never, or only rarely, attracts wind-borne particles or brake dust. Adhesives and other chemical substances such as graffiti residue are easily removed from the enamel surfaces which are as smooth as glass.

environmentally friendly and can be recycled

Production of enamels and enamel-coated steel uses environmentally friendly processes. No intrinsically harmful substances are used, and no burden is placed on either man or the environment. Enamel products can be recycled and introduced into waste recycling without polluting the environment.

Quality – Made in Germany

Our high standard of quality is a matter of course.

Omeras GmbH is certified to DIN EN ISO 9001:2008 standards.

As a result of the constant improvement in our products and the associated processes, our customers are guaranteed consistently high production quality. Starting with the design and choice of the optimal base materials, right through to quality assurance – both internally and in externally accredited laboratories – the whole process is monitored all the way to the end product.

Our products are manufactured in accordance with DIN EN ISO 28722:2011-06 – Characteristics of enamel coatings applied to steel panels intended for architecture. This requires the functional and aesthetic properties of the enamel coating to be tested.

Functional properties:
- Adhesive strength test
- Porosity test
- Abrasion and impact resistance
- Determining resistance to chemical corrosion by acids and alkaline liquids

Aesthetic properties:
- Visual appearance of the surface
- Gloss
- Colour

Further tests with regard to fire performance and corrosion (salt spray test) are also carried out. Depending on the project, national and international standards are taken into account.

Our customers' quality requirements are our benchmark and our guiding principle.

CERTIFICATE

DEKRA

omeras
SURFACES IN ENAMEL

ISO 9001:2008

DEKRA Certification GmbH hereby certifies that the company

OMERAS GmbH

Scope of certification:
enamelling of steel sheet parts;
manufacturing of steel and metal construction
Certified location:
D-08312 Lauter, Am Emaillierwerk 1

Scope of certification:
enamelling of steel sheet parts and cast iron parts
Certified location:
D-08352 Raschau - Markersbach, Straße des Friedens 3

has established and maintains a quality management system according to the above mentioned standard. The conformity was adduced with audit report no. A11051385.

This certificate is valid from 2012-02-22 to 2014-10-16

Certificate registration no.: 30102004/4
Duplicate

DEKRA Certification GmbH
Stuttgart, 2012-02-22

Lack of fulfilment on conditions as set out in the Certification Agreement may render this certificate invalid.

DEKRA Certification GmbH * Handwerkstraße 15 * D-70565 Stuttgart * www.dekra-certification.de
page 1 of 1

LICENCE CERTIFICATE

AUTHORISATION TO USE THE QUALITY SIGN

dev deutsche emaillierung
oEV
Email
EEA

This is to certify that

OMERAS GmbH

Licence number: 202

is authorized to use the quality sign which is shown above according to the regulations for the use of the European Enamel Authority quality sign for enamel coating on the application areas (7.20 Industrial Tanks; 7.24 Silos for animal feed; 7.25 Dung silos) as discribed in chapter 7 of the EEA Quality Requirements.

Date of issue of this licence: 01.10.2011

Period of validity of this licence: 30.09.2014

Hagen, 01.10.2011

Chris Taylor
EEA-President

Werner Weisenhaus
EEA-Technical Committee

Fire performance certificate

Porosity test

Determining abrasion resistance

Salt spray test

Resistance to chemical corrosion

Buildings

Airport | Milan Malpensa | Italy

Airport | Milan Malpensa | Italy

Shaped panels and corner pieces

Exhibition Centre | London | United Kingdom

The unique properties of our products provide architects and designers with a variety of possibilities as the project develops. Simple processing and quick installation enable projects to be reliably implemented.

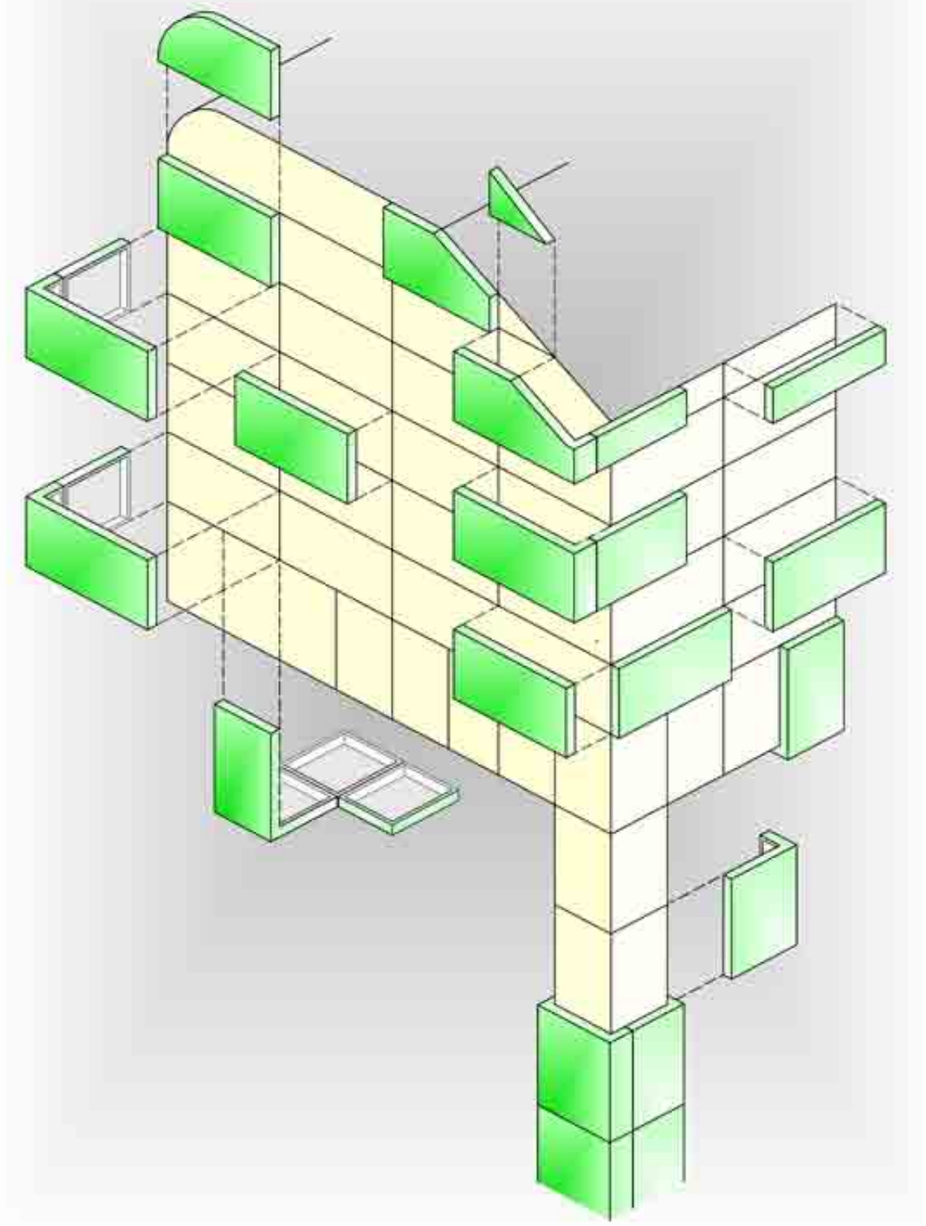
Cladding panels can be used for both internal and external façades, roofs, entrances and niches.

They give each building individual character and demonstrate longevity. The consolidated end-to-end manufacturing process is an invaluable advantage to any building contractor.

As a material, enamel's outstanding properties are impressive:

- Highly versatile in terms of colour, shape and graphic / silkscreen printing
- Dirt-repellent and easy to clean
- Graffiti-proof
- UV, climate and corrosion resistant
- Extremely high mechanical and thermal resistance
- Nonflammable
- Highly resistant to aggressive substances including salty air

Range of angular shapes



Fu-Shin Shopping Centre | Hong Kong

Office building | Berlin | Germany

Community Centre | Hamburg | Germany

Competence Centre | Ahlen | Germany

Home for the Elderly | Saico Hellin | Spain

Shopping Mall | Stadtallendorf | Germany

'Lafayette', Dubai Mall | Dubai | UAE

Office complex | Hamburg | Germany

Roadhouse 'Autostrada' | Italien

Building | Nancy | France

School | Bad Marienberg | Germany

Bank | Minsk | Belarus

Office building | Sivim | Italy

Company building | Raschau | Germany

Dexia Bank | Luxembourg | Luxembourg

Museums and theatres

The outstanding properties of enamelled steel panels mean they are particularly highly recommended for wall cladding in museums and theatres, where creative and artistic features are frequently desired.

Theatre | Newport | United Kingdom

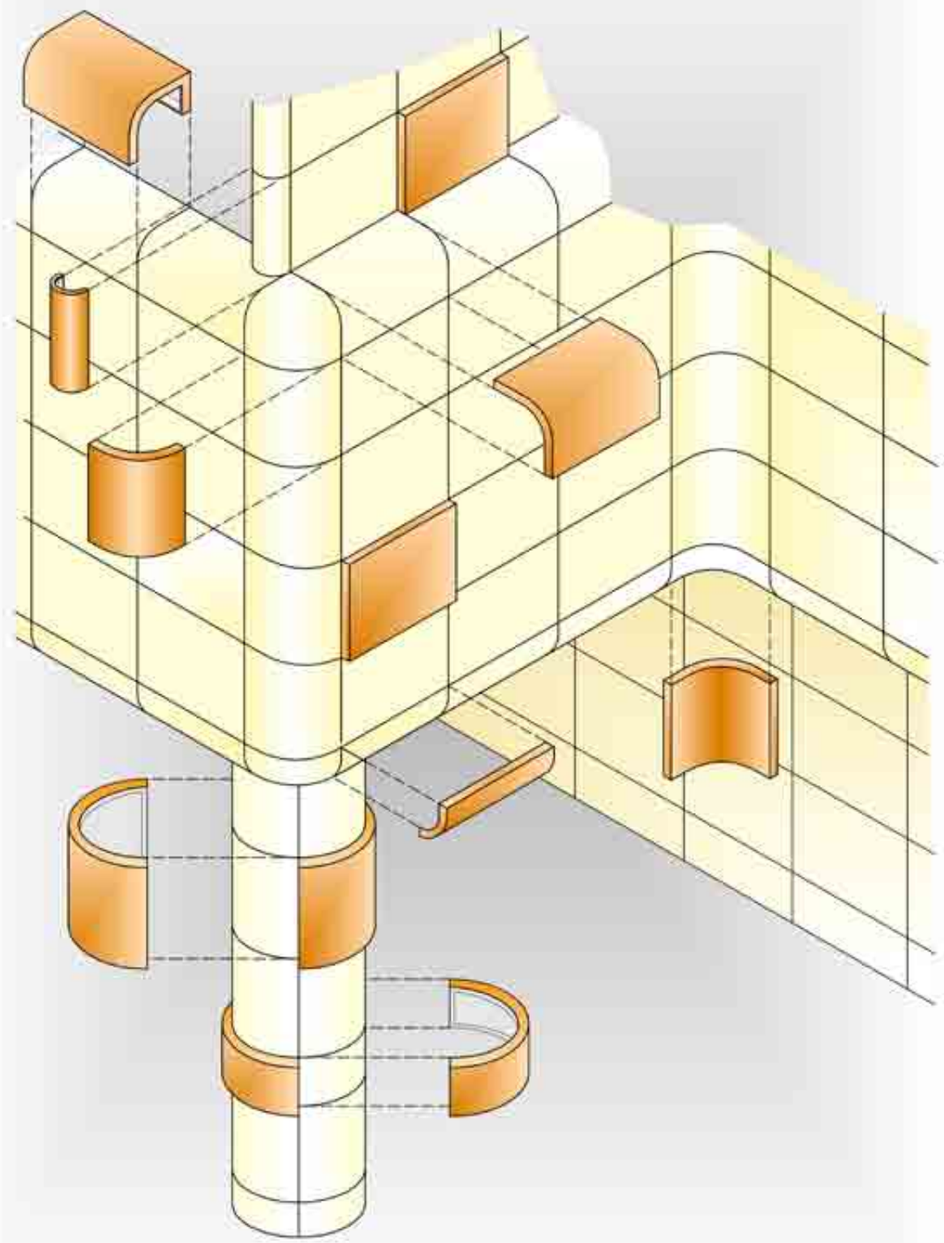
Community museum | The Hague | Netherlands

H. Newton Museum | Berlin | Germany

Musical theatre | Gelsenkirchen | Germany

D & H Maritime Museum | Greenwich | United Kingdom

Range of curved shapes



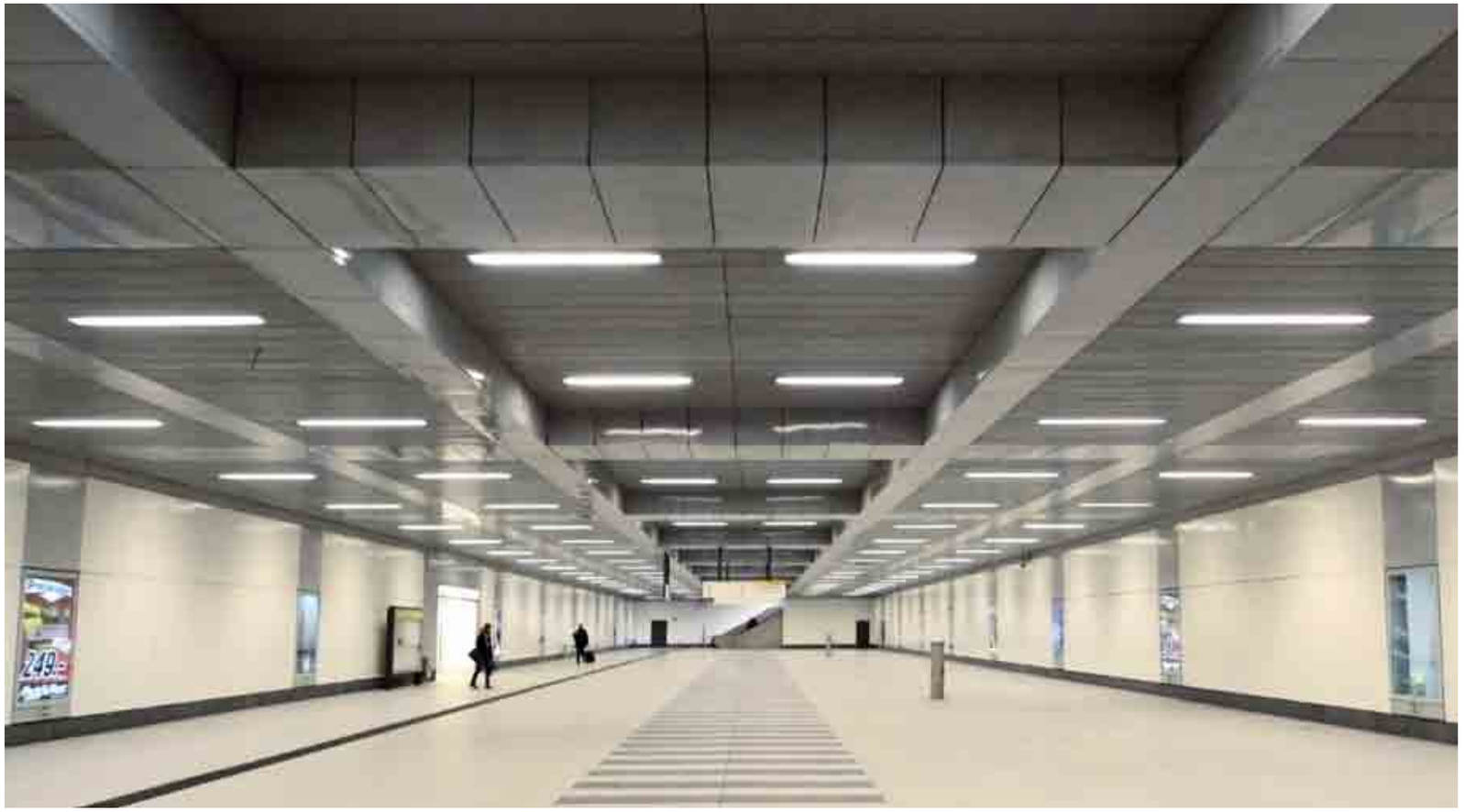
Railway stations

These materials are increasingly used in transport construction due to their purpose-designed practicality and beauty, the versatility they offer to architects, and indeed to their robustness, abrasion resistance and non-flammable nature (Fire Classification A1).

Südtiroler Platz Station | Vienna | Austria

Main station | Berlin | Germany

Wall and ceiling cladding, main station | Berlin | Germany



Main station | Palma de Mallorca | Spain

Main station | Berlin | Germany

Bus Station | San Francisco | USA

Bootle Oriel Road Station | Bootle | Großbritannien

Torre dei Greco Station | Milan | Italy

Horwich Parkway Station | Horwich | United Kingdom

Horwich Parkway Station | Horwich | United Kingdom

Sarria Station | Barcelona | Spain

Northumberland Park Station | London | United Kingdom

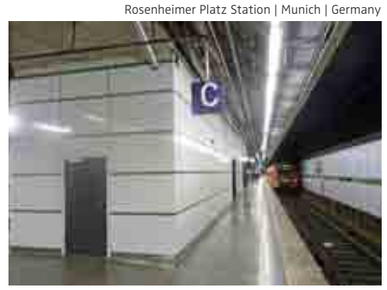
Lichtenberg Station | Berlin | Germany

Simonside Station | South Shields | United Kingdom

Südtiroler Platz Station | Vienna | Austria

Volpelleres Station | Barcelona | Spain

Rosenheimer Platz Station | Munich | Germany

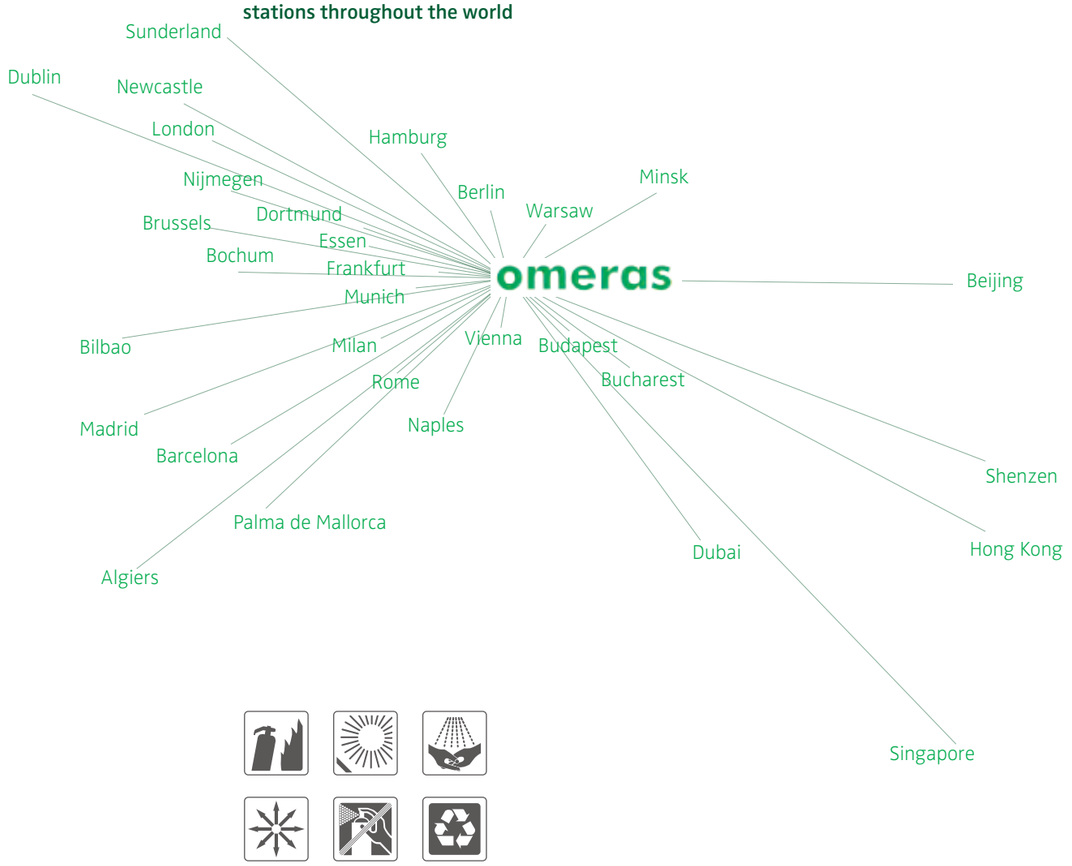


Underground stations

Our panels are particularly widely used in underground stations, as they do not increase the fire load, their high abrasion resistance is particularly well suited to the busy pedestrian thoroughfares, and they are easy to clean.

The success of these properties is evidenced by projects implemented in a total of **135 stations** in 30 cities.

Underground, city and suburban railway stations throughout the world



Burjuman Station | Dubai | UAE

Union Square Station | Dubai | UAE

Union Square Station | Dubai | UAE

Union Square Station | Dubai | UAE

Haymarket Station | Newcastle | United Kingdom

Termini Station | Rome | Italy

Termini Station | Rome | Italy

Sternschanze Station | Hamburg | Germany

Keleti Station | Budapest | Hungary

Le 5 mai Station | Algiers | Algeria

Carpetana Station | Madrid | Spain

Termini Station | Rome | Italy

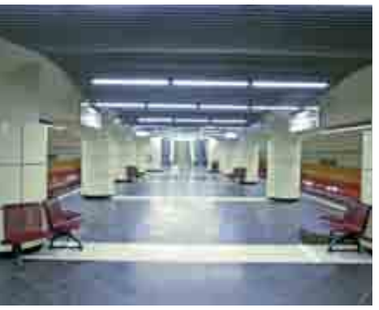
Chueng Sha Wan Station | Hong Kong

Südtiroler Platz Station | Vienna | Austria

Chueng Sha Wan Station | Hong Kong

Jungfernstieg Station | Hamburg | Germany

Basilescu Station | Bucharest | Romania



Basilescu Station | Bucharest | Romania

Haymarket Station | Newcastle | United Kingdom

Westminster Station | London | United Kingdom

Unionstraße Station | Dortmund | Germany

Lübecker Station | Hamburg | Germany

Jiului Station | Bucharest | Romania

Tin Shui Wai Station | Hong Kong

Schillingstraße Station | Berlin | Germany

Straußberger Platz Station | Berlin | Germany

Jungfernstieg Station | Hamburg | Germany

MTRC C607 Station | Hong Kong

Nea Ionia Station | Athens | Greece

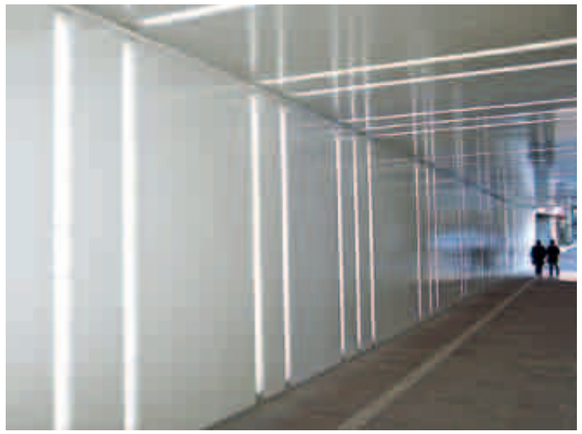
Altenessen Station | Essen | Germany

Leicester Square Station | London | United Kingdom

Underpasses

Enamel surfaces are particularly suitable for use in pedestrian underpasses due to their robust nature, and the variety of possible designs allows for a bright and friendly appearance. Artistic motifs are also often used. What used to be grey, dark holes are now transformed with attractive wall cladding, enticing passers-by to contemplate and daydream. A novel benefit is that graffiti artists are deterred from dabbling at their creations or, alternatively, graffiti can be removed easily using cleaning agents.

Bozen | Italy



Uppsala | Sweden

Schwabach | Germany

Berlin | Germany

Newcastle | United Kingdom

Berlin | Germany

Rendsburg | Germany

London | United Kingdom

Glasgow | United Kingdom

Uppsala | Sweden

Eskoriatza | Spain

Vienna | Austria

Madrid | Spain

Bishopbriggs | United Kingdom

Tunnel cladding

700,000 m²
manufactured tunnel panels
(100,000 m² of that self installed)

The outstanding properties of enamel cladding make it ideally suited for use in road tunnels. The chief priority in tunnel construction lies firmly in the domain of safety technology.

In this domain, the material properties of enamel provide the best starting point; when combining high resistance, a long lifespan and low maintenance costs, the unique selling point of enamel panels is clear.

Tunnel | Kallang | Singapore

Advantages

- No fire load; protects the tunnel wall from fire and impact
- Bright, reflective surfaces reduce tunnel phobia and save energy
- Extremely easy to clean, thereby saving on water, cleaning agents and personnel
- Panels can be immediately and quickly replaced while the tunnel is in use
- Long lifespan – at least 30 years
- Enamelled information signs provide guidance throughout the entire lifespan of the panels
- Protection for tunnel infrastructure (conduits, cables, pipes)
- Potential for diverting water running off mountains by using a specially designed enamelled reverse side

Colourful, durable escape route design

Marking fire safety equipment

Design variants for tunnel portals

Tunnel 6 | Sochi | Russia

Tunnel entrance Northern Busway · Airport Link | Brisbane | Australia

Inclined and curved design of roadway using enamelled panels

Tunnel Northern Busway · Airport Link | Brisbane | Australia

Tunnel Northern Busway · Airport Link | Brisbane | Australia

Mechanical cleaning of the tunnel wall

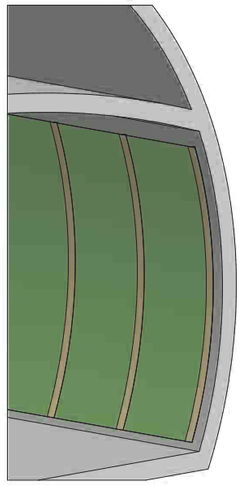
Illustration of standard systems
Tunnel cladding

Detail of fitting flexed / curved

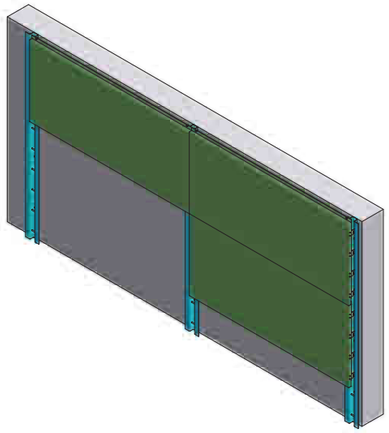
Detail of the upper fixing

Detail of the lower fixing

Tunnel view of flat panels installed flexed / curved with cover strips



Flanged panel solution with hook in system



Cuilfail Tunnel | Lewes | United Kingdom

Cuilfail Tunnel | Lewes | United Kingdom

Safety panel box | Cuilfail Tunnel | United Kingdom

Tunnel Pino Torinese | Turin | Italy

Soundproofing panels | Tunnel Dogana Como | Italy

Tunnel Northern Busway · Airport Link | Brisbane | Australia

Tunnel Northern Busway · Airport Link | Brisbane | Australia

Escape route marking | Airport Link | Brisbane | Australia

Tunnel Northern Busway · Airport Link | Brisbane | Australia

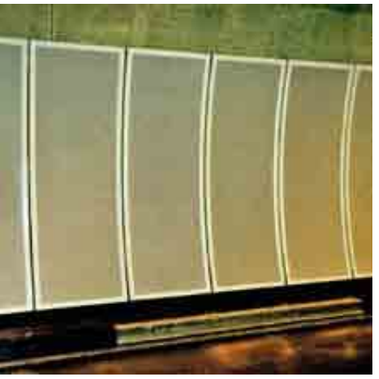
Tunnel Northern Busway · Airport Link | Brisbane | Australia

Dogana Como Tunnel| Dogana | Italy

Tunnel M30 | Madrid | Spain

La Carouge Tunnel | Geneva | Switzerland

La Carouge Tunnel | Geneva | Switzerland



Tunnel | Gran Canaria | Spain

Nam Wan Tunnel | Hong Kong

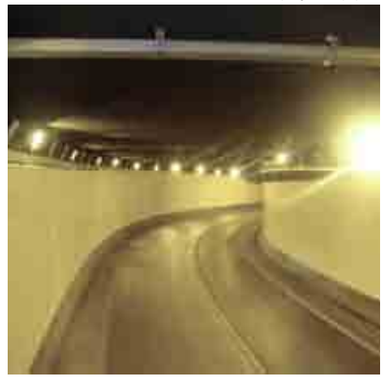
Tunnel 6 | Sochi | Russia

Tunnel Fie | Italy

Roppener Tunnel | Imst | Austria

Roppener Tunnel | Imst | Austria

Tunnel | Algeciras | Spain



Installation of tunnel walls

End-to-end project management by omeras (90,000 m²)

- designed
- manufactured
- installed

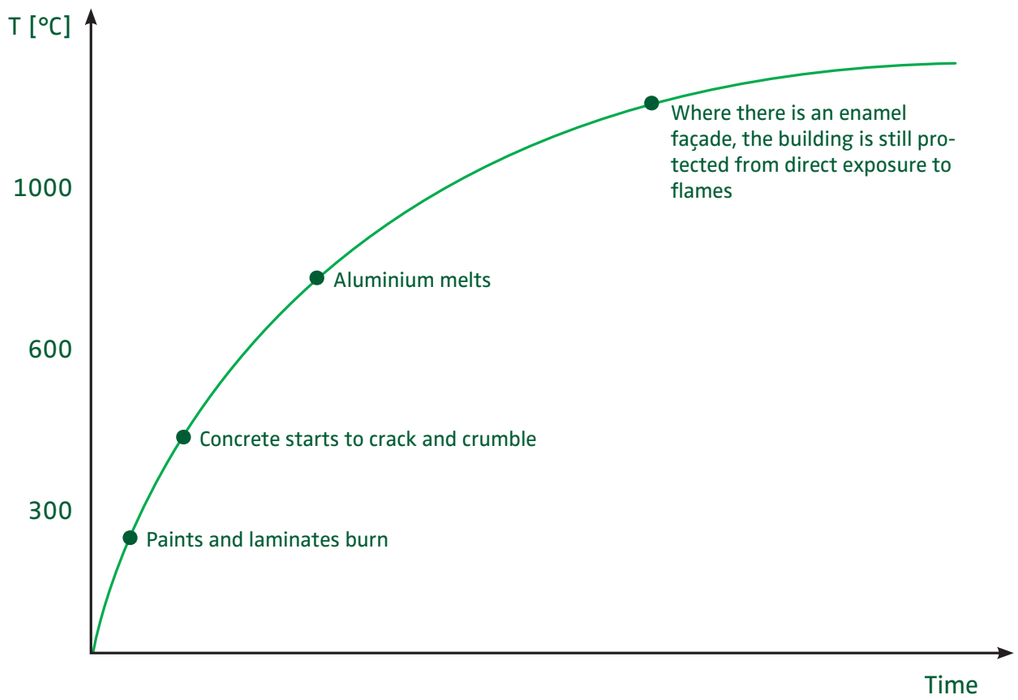
Tunnel Northern Busway · Airport Link | Brisbane | Australia

- Substructure and panels create a stable and dynamically tested system
- Installation with specially designed lifting technology for flat and curved panels in one lane
- Efficient installation with minimal personnel

Tunnel installation of flat panels

Tunnel installation of curved panels

Comparison graph of various cladding materials



Tunnel claddings: a comparison

Criteria	Cladding materials: Coated aluminium	Coated fibre cement	Concrete	Enamel	Paint	Tiles/ Ceramic
Fire resistance	+	+	++	++	−−	++
High-temperature performance (1000°C, fire)	−−	−−	−	++	−−	−
Production of gases at high temperatures	−	−	++ No gases produced	++ No gases produced	−−	++ No gases produced
Durable reflectivity	+	−	−	++	−−	++
Cleaning performance/ self-cleaning	+	+	−−	++	−	++
Surface resistance	+	+	−	++	−−	++
Climate resistance	+	+	+	++	−	++
Impact resistance	+	+	+	−	+	−
Initial investment	+	+	+	−	++	−
Maintenance costs	+	+	−	++	−−	−−
Recyclability	+	−	−	++	−−	−−
Lifespan	−	−	++	++	−−	+

Evaluation: ++ Very good + Satisfactory − Adequate −− Inadequate

Entrances

Entrances, Chantal | Houston | USA

The entrance area of a company building is of particular stylistic importance. Enamel panels offer an extraordinarily wide variety of shapes, colours and artistic design. Combined with its light-fastness, lifespan and other positive properties, enamel as a material is clearly the ideal choice for styling a building.

Regionalbus Transport Company | Mühlhausen | Germany

Southwall | Großröhrsdorf | Germany

Eccolo Qua | Valencia | Spain

Berliner Wasserbetriebe | Berlin | Germany

Dubai Mall | Dubai | UAE

PDS | Wellingborough | United Kingdom

YSL-Store | Hong Kong

BAS | Scheibenberg | Germany

omeras | Lauter | Germany

Dexia Bank | Luxembourg | Luxembourg

Headoffice LTA | Singapore

Operating theatres, laboratories and clean rooms

Enamel, characterised by its glassy surfaces which are nonporous, easy to clean and, moreover, pose no physiological hazards, effectively meets all the hygiene requirements of these special facilities.

Operating theatre | Italy

Operating theatre | United Kingdom

Operating theatre | Italy

Operating theatre | Sudan

Toilets

In city toilet facilities, where inner surfaces and basins are automatically cleaned with hot water, enamel has won out against all other materials.

The crucial advantage: its chemically resistant, glassy surface.

Toilets | Heringbau | Germany

Wall City Toilets | Berlin | Germany

Toilets Heringbau | Germany

Toilets Heringbau | Germany

Toilets Heringbau | Germany

Toilet cladding | Tecnocim | Italy

Toilet cladding Pmec | Italy

Toilets Heringbau | Germany

Healthmatic | United Kingdom

Toilets Heringbau | Germany

Columns

Graffiti-resistance, scratch resistance and longevity are key properties of panelling for metro, underground and bus stations. Above all, cleaning can be carried out with no hassle.

These advantages are of particular value for column cladding, which is often a target for vandalism.

The range of shapes, from round to oval, square to polygonal, and their suitability for use at any height, only serves to reinforce the value of these claddings.

Munich | Germany

Dubai | UAE

Berlin | Germany

Beijing | China

Malpensa | Italy

Vienna | Austria

Hong Kong

Beijing | China

Budapest | Hungary

Beijing | China

Nanjing | China

Munich | Germany

Barcelona | Spain

Dubai | UAE

Minsk | Belarus

Other products and special applications of enamelled steel

As a result of the many advantages and good properties of enamel surfaces, they also have a wide range of uses.

This means they are used for decorative purposes as often as they are used in situations where heat and abrasion damage are likely.

Hearth for electric fire | Germany

Interior cladding Café ´Lafayette`| Dubai | UAE

Column cladding, Pier Caps | Dubai | UAE

Lighting cladding | Dubai | UAE

Tabletops | United Kingdom

Bench for underground railway| | Albanova | Italy

Fortis-Bank | Brussels | Belgium

Helppoint | London | United Kingdom

Balcony cladding | London| United Kingdom

Heater cladding panel

Tabletops

The ideal item of furniture is characterised by its versatility, variety and, specifically, its design. The winning features of enamel tabletops – their colours, images and the variety of possible shapes – make them just such an item. Moreover, they enable both indoor and outdoor use, due to their mechanically robust nature and weather resistance.

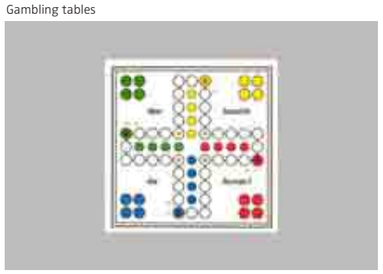
Table and counter claddings, Spiegelverlag | Hamburg | Germany

Designer-Tabletops | Italy

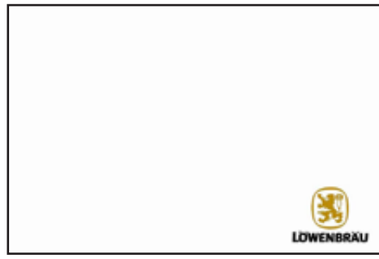
Bar tables, Spiegelverlag | Hamburg | Germany

Tabletops | Germany

Gambling tables



Beer tables set



Each situation makes use of both the benefit of a glass-smooth, easy-to-clean surface, and the decorative options, whether function-led or even for advertising.

Bar tables | Sölden | Austria

Tabletops, 'Royal Garden' | United Kingdom

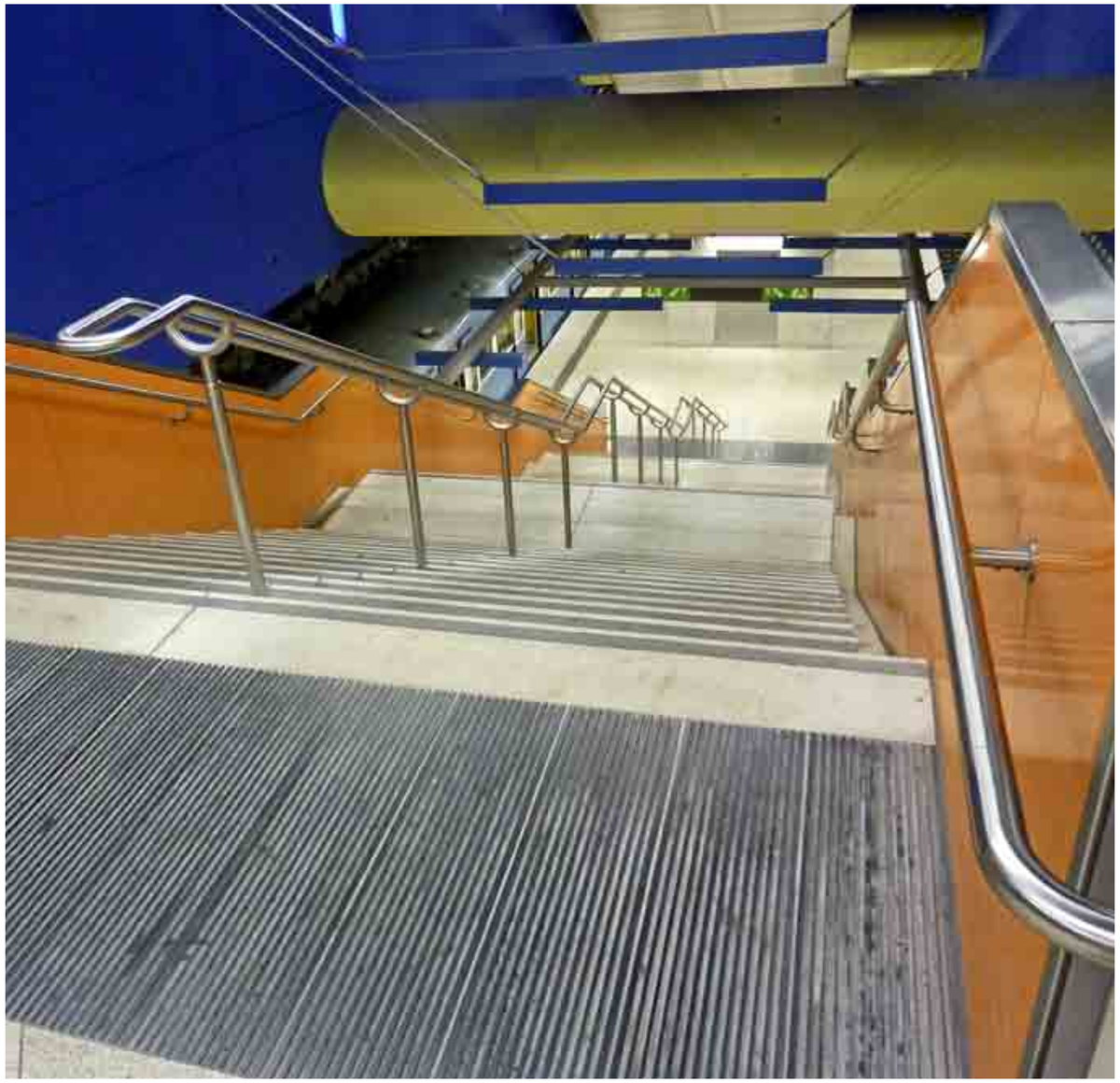
Stairs / escalators / lifts / doors

Primarily due to its high abrasion resistance, enamel is used in areas with high levels of pedestrian traffic which are frequented daily and thus exposed to a variety of environmental factors. It also offers the customer or planner a wide spectrum of possible options in terms of colours and product shapes.

Lift cladding | Dexia Bank | Luxembourg

Lift cladding | London | United Kingdom

Stair cladding | Olympia Centre | Munich | Gemany



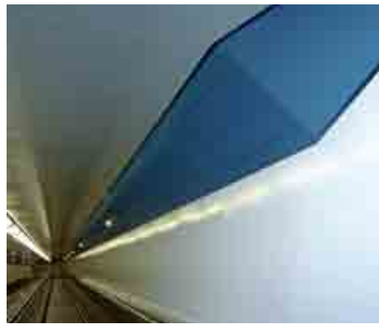
Staircase, Ie 5 mai Station | Algiers | Algeria

Staircase, Dexia Bank | Luxembourg

Escalator cladding | Hamburg | Germany

Escalator | Budapest | Hungary

Escalator | Rendsburg | Germany



Escalator | Hamburg | Germany

Stair cladding | Olympia Centre | Munich | Gemany

Inspection door | Madrid | Spain

Double door, Ogata School | Düsseldorf | Germany

Screen printing

A significant advantage of using enamel is being able to print on it. Images can be preserved for a long period, and colour effects retain their original brilliance even after several years. You can print information signs and route maps as well as images using the 4-colour process. More than 10 colours can be printed, up to a maximum size of 1250 x 2500 mm.

Mei Foo Station | Hong Kong

Station sign | Barcelona | Spain

15 colors street map | Paris | France

Campus signage | Trier | Germany

Underground Sophie-Charlotte-Platz Station | Berlin | Germany

Station signs 'Steam railway route' | Saxony | Germany

Signage, Drassanes Station | Barcelona | Spain

Signage, Drassanes Station | Barcelona | Spain

Signage, Bootle Oriel Road Station | United Kingdom

Möllerbrücke Station | Dortmund | Germany

Etching in enamel | Unionstraße Station | Dortmund | Germany

Signage 3rd Street Light Rail Station | San Francisco | USA

Mall of the Emirates Station| Dubai | UAE

Planetenweg Deutsches Museum | Munich | Germany

Signage historical buildings | Rome | Italy

Cheung Sha Wan Station | Hong Kong

Kowloon Tong Station | Hong Kong

Bundesplatz Station | Berlin | Germany

Townscape | Werdau | Germany

Painting | Germany

Signage, Park and Museum | Italy

Sandstone · marble replica in enamel | Italy

Sandstone · marble replica in enamel | Italy

Enamel art

Omeras is a magnet for national and international artists.

Using our intensive support, our excellent know-how and the variety of design possibilities, artists are able to realise their ideas and works to the utmost of their ability. You can see a small selection of this work here.

Ian Davenport (United Kingdom)

Ian Davenport at work in Lauter

Artwork, Southwark Street | London | United Kingdom

Quality control

Project plaque, Southwark Bridge

Artworks of durable beauty

Juan Hernando León Perez (Chile)

Juan Hernando León Perez in action

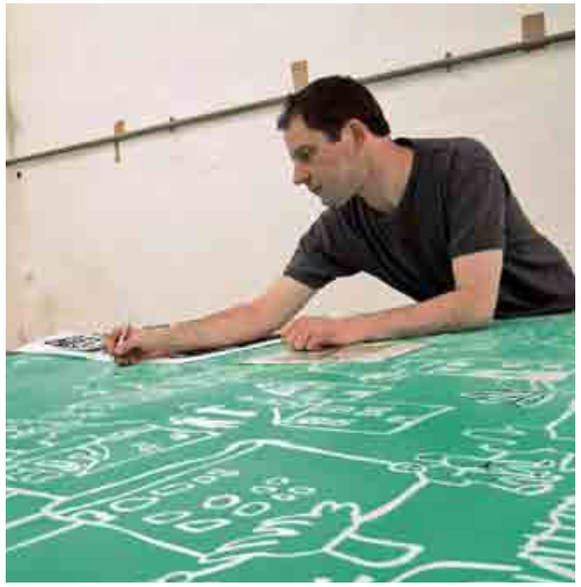
Prohlis district | Dresden | Germany

Installation of the artwork onto the wall

Jason Gibilaro (United Kingdom)

The artist at work – from draft to display.

Artist Jason Gibilaro at the draft stage



Wall artwork | London | United Kingdom

Display by mayor

General impression

Artist Jason Gibilaro at work in Lauter

Enamel picture M. Neubert | Oberhausen | Germany

Artwork, John Aiken | United Kingdom

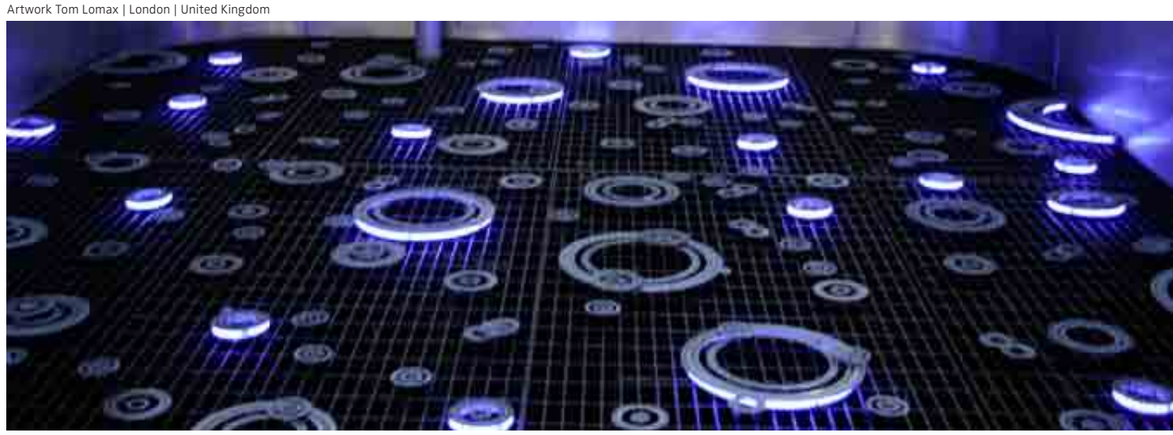
Architctural art | Göteborg | Sweden

Artwork Schlumper Künstler | Hamburg | Germany

Reprinting in enamel | H. Pedit | Austria

Artwork Tom Lomax | London | United Kingdom

Artwork Tom Lomax | London | United Kingdom



Art, Martius Column | Erlangen | Germany

'Red wall' artwork, Lohring Station | Bochum | Germany

Production process

1 | Preparatory work

2D/3D design
Systems: AutoCAD, Autodesk Inventor
Visualisation | Pre-production

2 | Cutting/lasers

Laser | max. 3000 x 1500 mm
12 mm steel, 6 mm stainless steel, 4 mm aluminium
Pipe cutting function up to DN60

3 | Bevelling/rounding

Edges | max. 4000 mm
160 t presses
up to 10 mm steel

4 | Welding

MAG/MIG manual welding

5 | Cleaning

Chemical spray de-greasing | max. part size 4000 x 1500 mm | Waste water processing unit to dispense with water waste in the cleaning process

6 | Enamelling

Wet electrostatic coating
Powder coating

7 | Printing (optional)

4-7 colour screen print
Max. 2500 x 1250 mm
Screen print production using CTS process

8 | Firing

Temperatures from 800-840° C
max. part size 4000 x 1500 x 500 mm in oven 1 | max. section size 2700 x 1000 x 600 mm in oven 2

9 | Bonding

Bonding with 2-K adhesive at temperature and pressure | various materials
Such as gypsum board, calcium silicate, aluminium honeycomb

10 | Quality control

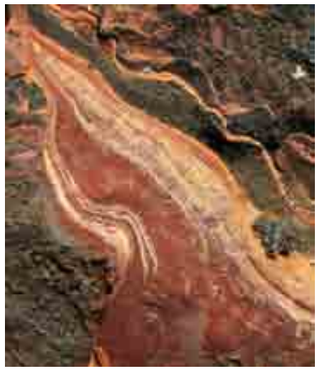
Check the product meets its targeted parameters

11 | Packaging/dispatch

Packed in suitable crates for air or sea freight | sheltered truck and container loading area

Paint, stone and wood effects

Red marble



White marble

Speckled granite

Granite

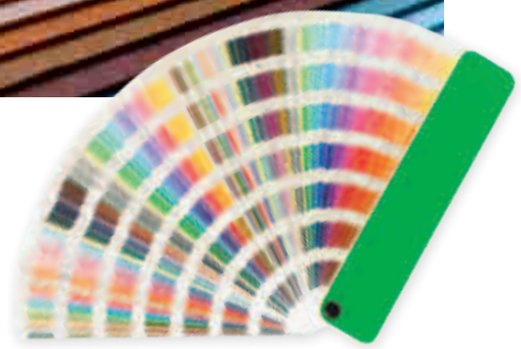
Pebbles

Granite

Wood

Maple

Teak



Enamelled steel cladding can be produced in any shape or colour desired.

Special effects such as texture and flecking, imitation stone and wood are available on request.

Guidance can be sought from the classic paint cards:

- RAL
- HKS
- NCS
- PANTONE
- SIKKENS

All color measurement is carried out using the Gardner method.

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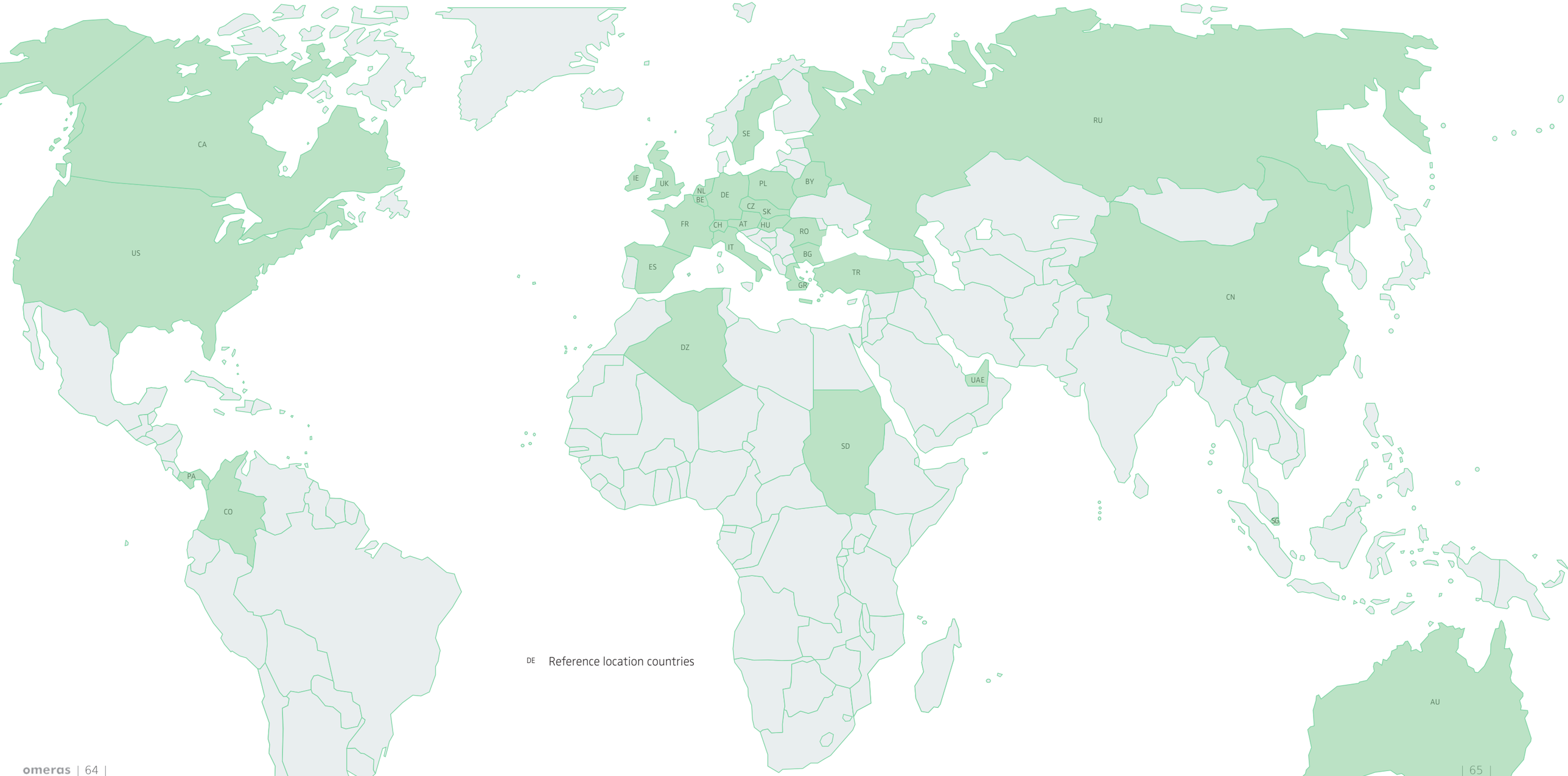
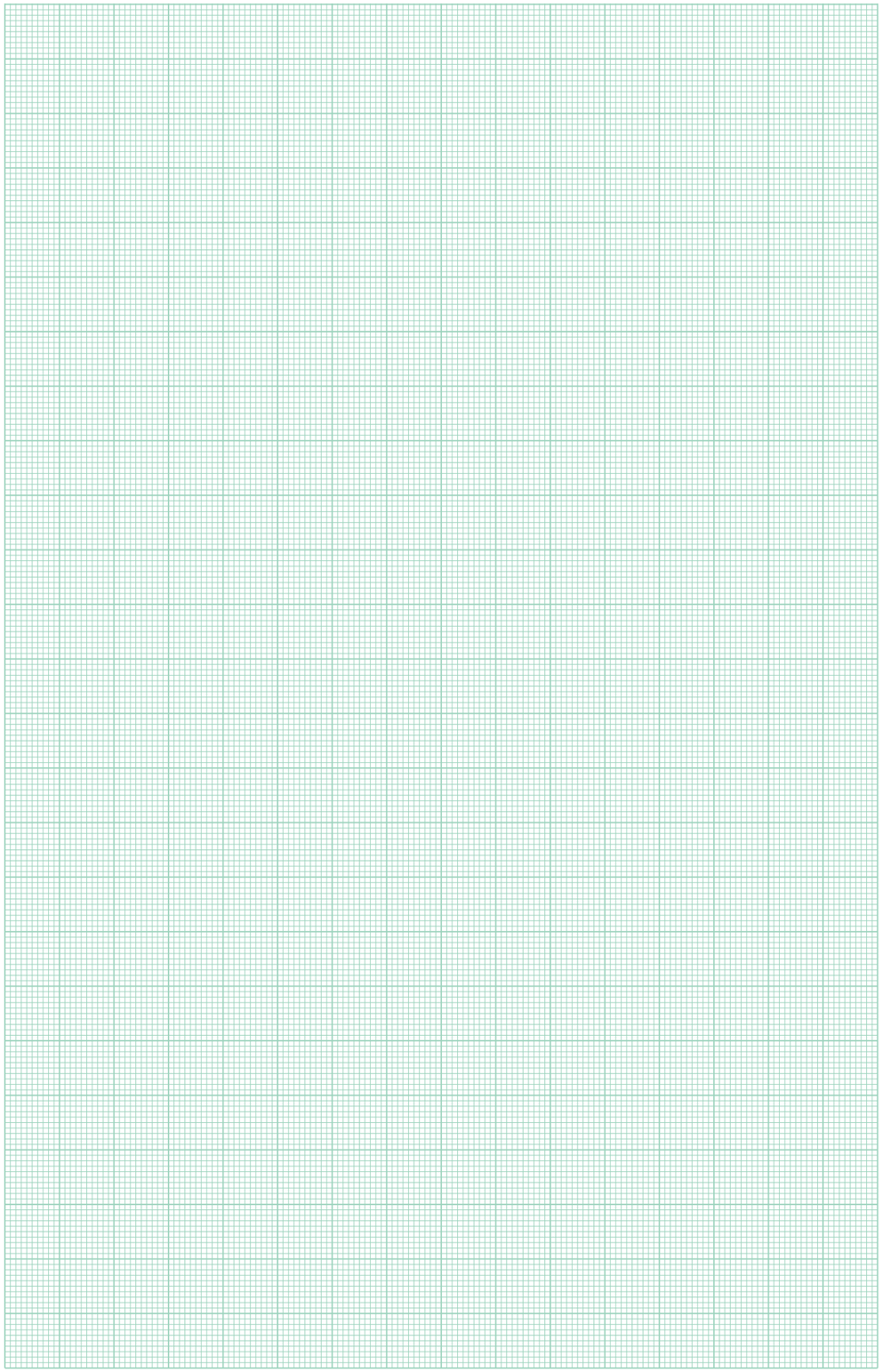
Our worldwide reference installations are the proof of our high quality and the lasting advantages of our products. You can benefit from our experience too.

Satisfied customers in the countries highlighted below speak for our company.



DE Reference location countries



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