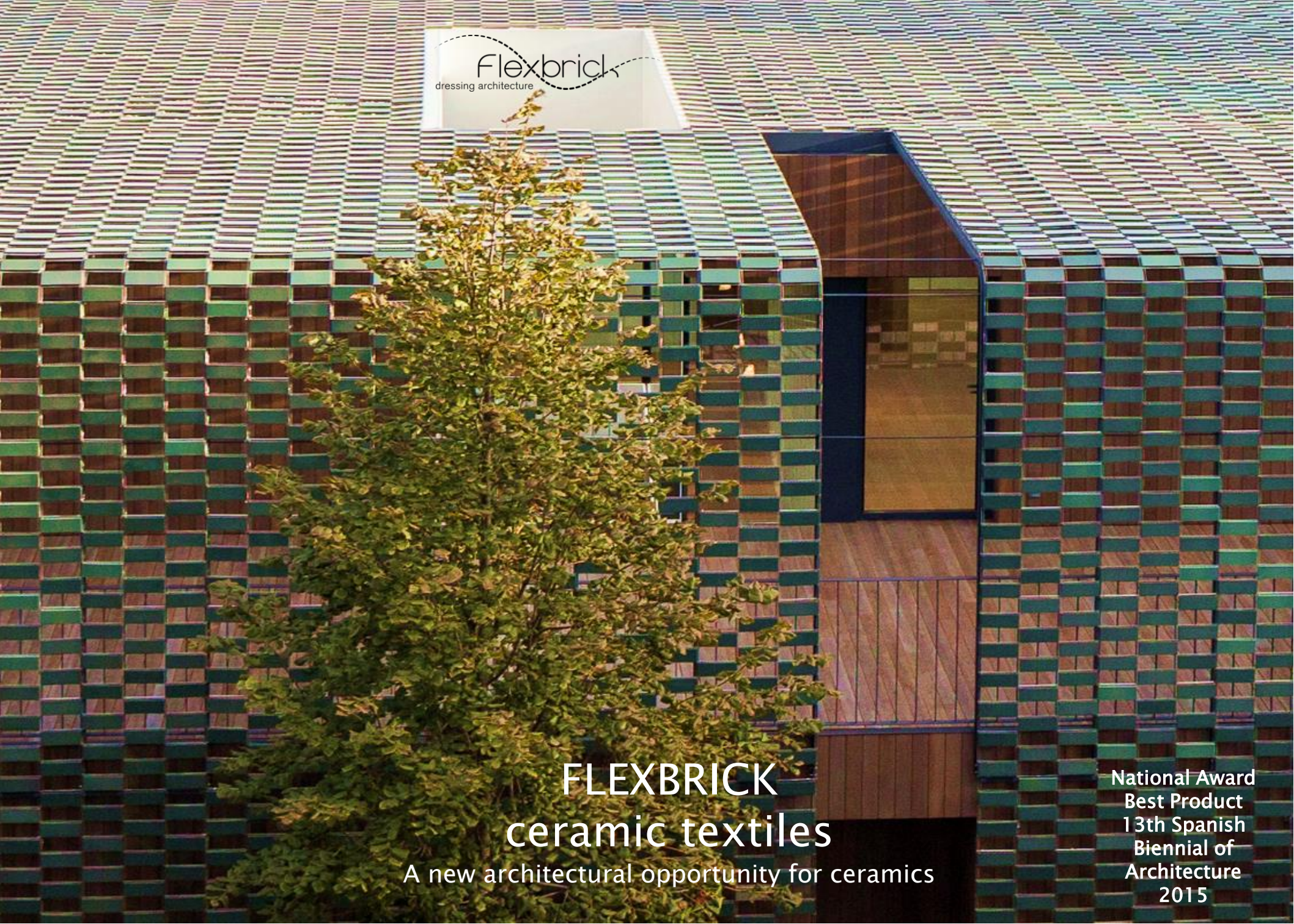


FLEXBRICK
ceramic textiles

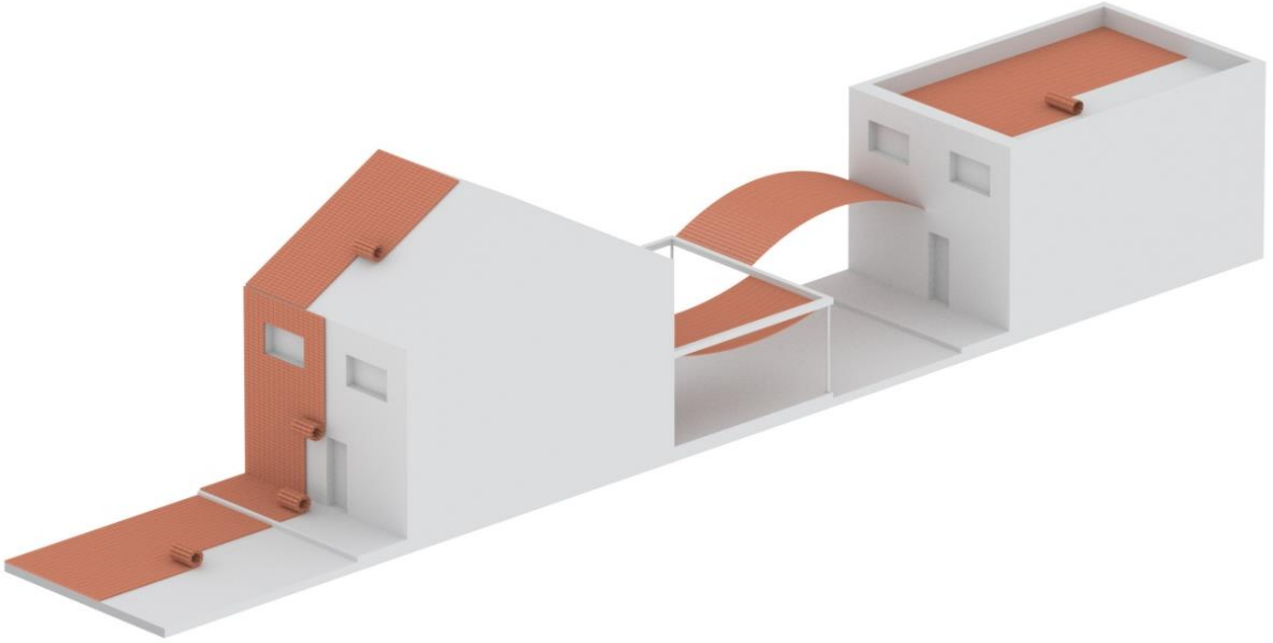
A new architectural opportunity for ceramics

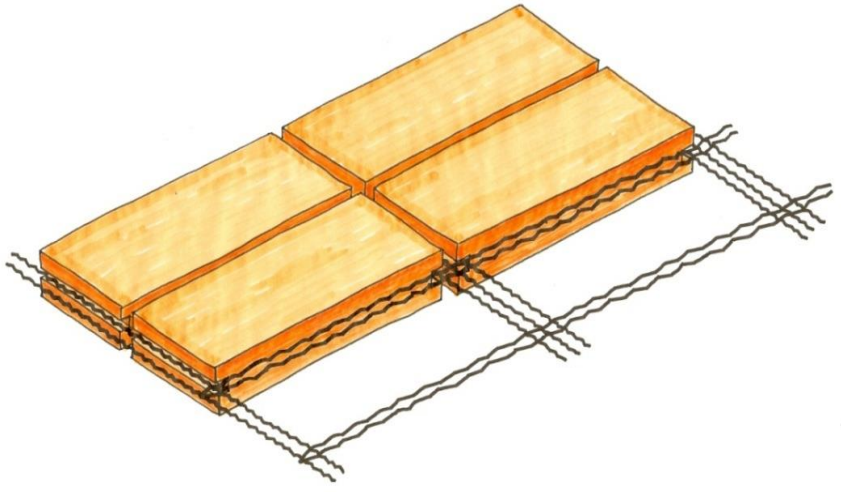
National Award Best Product 13th Spanish Biennial of Architecture 2015

This presentation introduces a new technological concept: ceramic textile, an industrialised system which takes on the shape of flexible sheets of baked clay for tiling, cladding and laminated structures with a ceramic finish.

These ceramic textiles open up an endless range of possibilities for dry-assembly cladding systems in architecture. They can “dress” façades, roofs, squares, … and explore new relations with textile architecture.

Constructions in which this new ceramic textile has been used, such as drainable pavements, roof gardens, ceilings and suspended light-permeable façades, demonstrate the remarkable architectural opportunities of ceramic materials when they are conceived in industrialised systems.





From past to future

Flexbrick is a new way of using an age-old material. The revolution of ceramic surfaces improving on traditional manual installation techniques

Flexbrick
dressing architecture

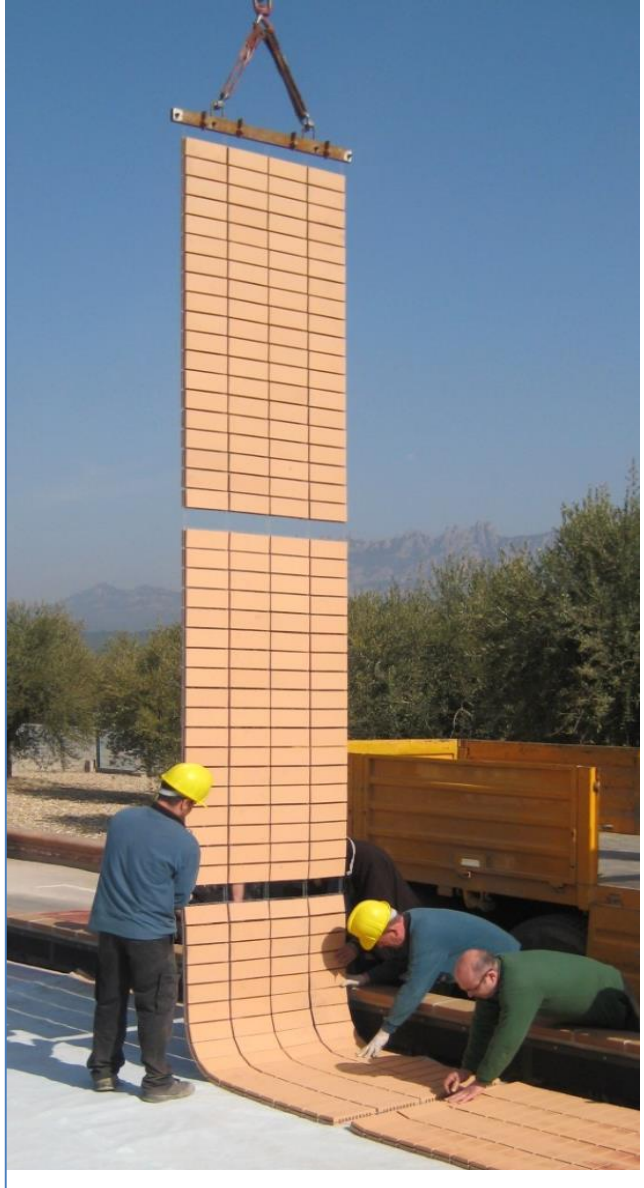
Ceramic textile is an innovative industrialised system based on an interwoven steel wire mesh, which is enclosed in a mosaic of ceramic clay tiles stacked in horizontal and vertical bands. Its main advantage is that it provides us with an ancient material in a new format that improves on traditional manual piece-by-piece installation.

Being highly flexible, the textile can be folded onto pallets for storage and transportation, taking up little space and easy to move. The long strips make its installation easy, quick and economical.

Its main contribution lies in the fact that it is faster to coat any surface. It is a large format fabric that consists of small elements (bricks, cobbles, tiles), which are traditionally installed one by one and are now presented on large canvases, able to cover both floors and walls.

The building performance is optimised on large surfaces, as cranes handle the long strips.

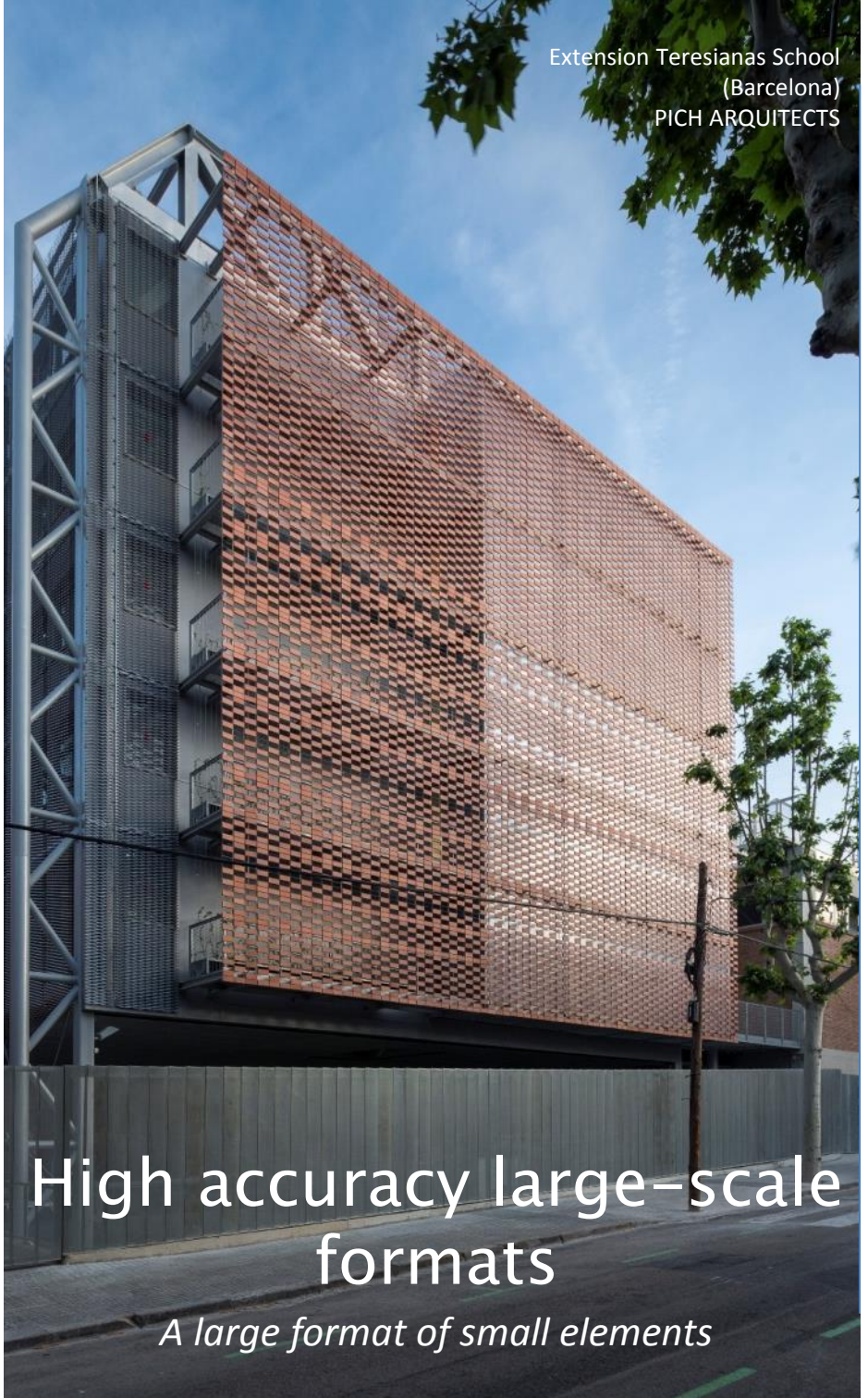
In the case of façades, the great advantage, from a financial point of view, is that they require no ordinary profiles to be secured and regulated, as they are vertically aligned by their own weight, thus saving the cost of accessory materials, and, if the strips are long, significantly reducing the time it takes to install them.



The construction time is reduced, as no ordinary profiles are required

Laying the fabric by crane significantly speeds up the construction process, as the finish is incorporated in advance, it is carried out in a single step

Car park Saint Roc
(Montpellier)
ARCHIKUBIK



Extension Teresianas School
(Barcelona)
PICH ARQUITECTS

High accuracy large-scale formats

A large format of small elements

Flexbrick
dressing architecture

Installing a ceramic fabric façade is similar to hanging a curtain: it merely requires stainless steel rails to be attached to the ceramic fabric to sustain it. They are bolted onto support brackets, which have previously been anchored to the facing slabs.

It is possible to design and construct by using large-scale formats of up to 20 meters, which saves a considerable amount of time and effort.

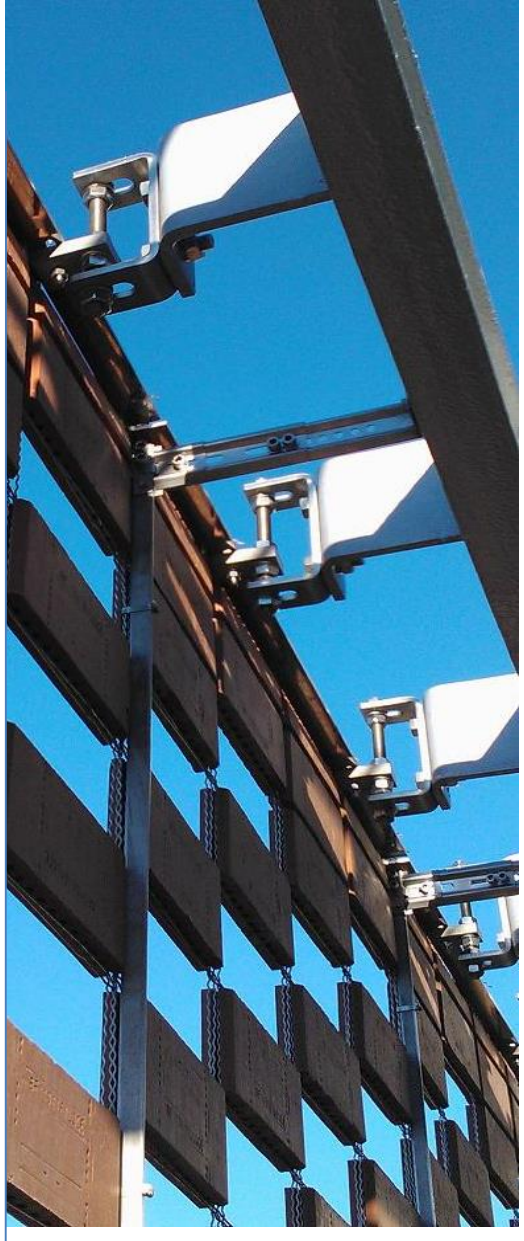
Flexbrick offers a high degree of accuracy. Thanks to the use of a metal mesh, the elements remain perfectly in line for any length. This is remarkable, especially in suspended light-permeable façades or sunscreens.

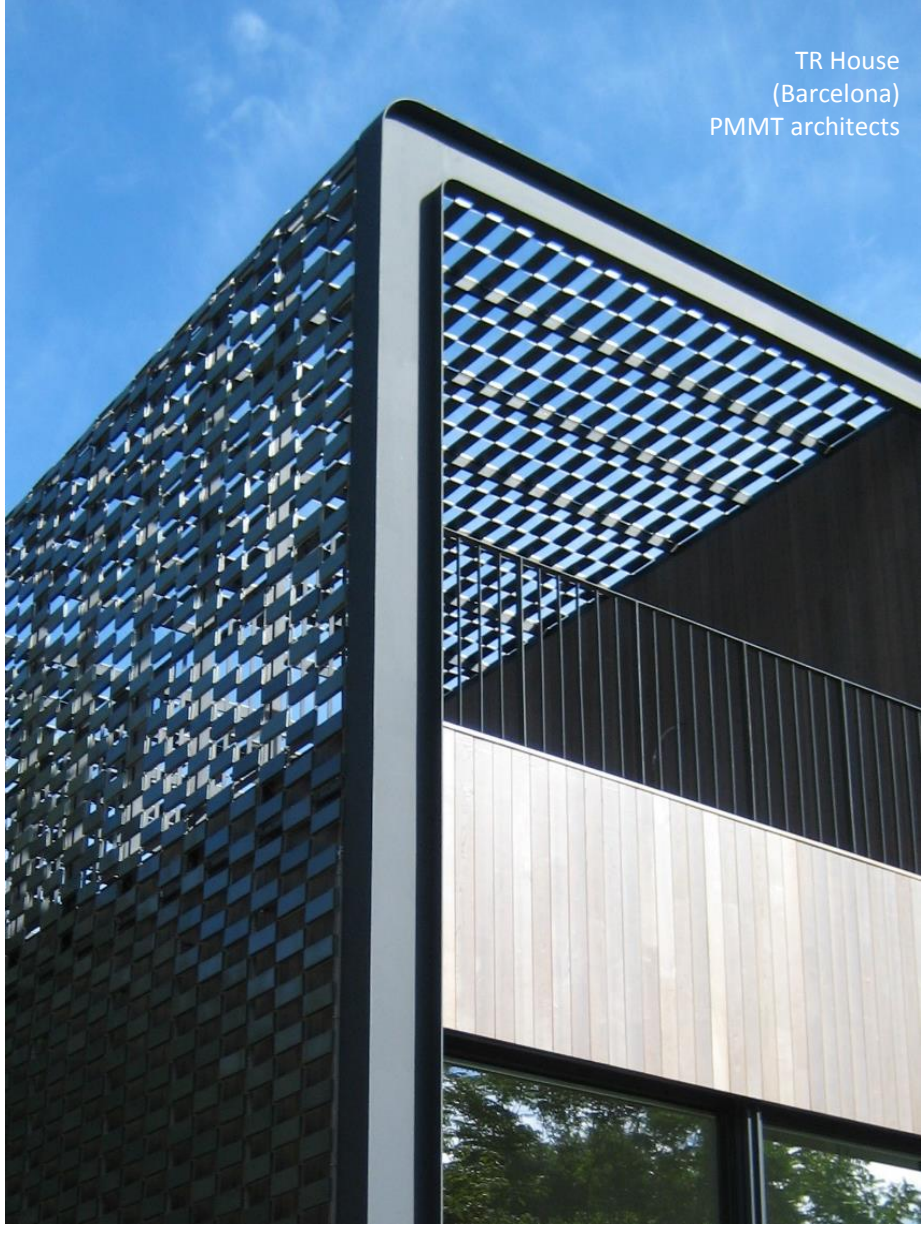
Flexbrick has obtained ATEX certification in France and DAU in Spain, and successfully passed several tests, including a wind tunnel.

In addition to the upper supporting anchors, several retaining anchors are installed to counteract the effect of the wind and to ensure the fabric is easily fixed in place.

In the case of lattices or light-permeable façades, the fabric is very light: 40 kg/m2 or less, depending on the amount of gaps between the bricks. The meshes, the support rail and the retaining anchors are made of stainless steel in order to give the cladding system a long useful life and to avoid galvanic corrosion.

The system is very safe, as the installation of each retaining anchor involves weaving two adjacent sheets together, acting as a safety device in case of seismic activity. The tiles also feature an anti-fall device.

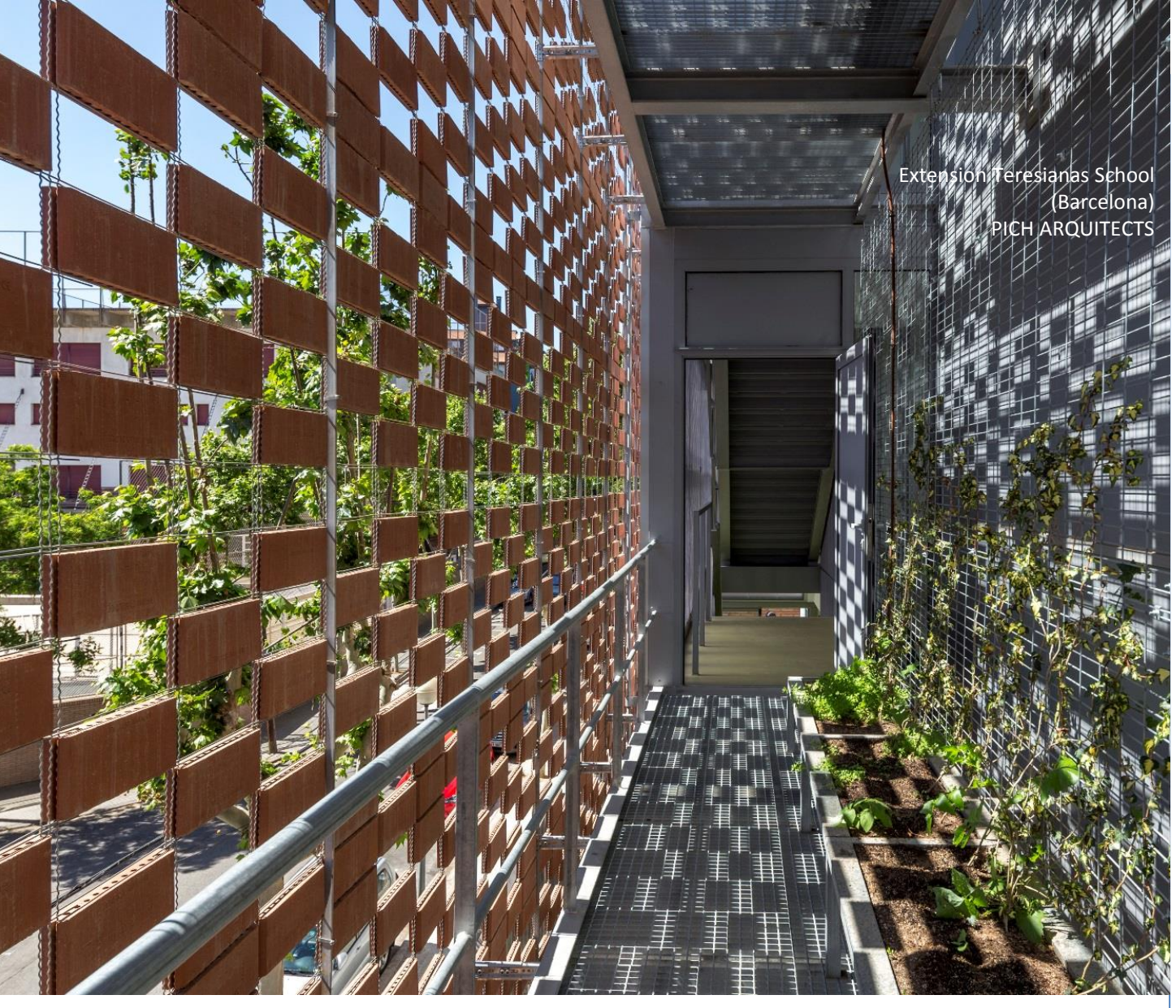




TR House
(Barcelona)
PMMT architects

A safe system

Flexbrick has been developed with the support of numerous universities and laboratories that have tested it, even in a wind tunnel.



Extension Teresianas School
(Barcelona)
PICH ARQUITECTS

A sustainable system

Light-permeable façades; ceramics manufactured using biogas

Flexbrick
dressing architecture

This light-permeable façade or lattice acts as a natural sunscreen and reduces solar radiation. It allows tempered interspaces on buildings.

In addition, Flexbrick can easily be recycled because it only consists of two dry-woven materials, the steel mesh and the ceramic elements, which are easy to separate in order to recycle.

The ceramics used in Flexbrick are manufactured using biogas extracted from landfill. This is a unique process in Europe. A reduction of energy consumption of 5,000,000 Nm3 per year in fossil fuels is attained and it significantly reduces carbon dioxide and other greenhouse gas emissions (approximately 16,700 tonnes/ year of CO_2).

Architects and designers can come up with multiple configurations of patterns that can be customised.

The ceramic tiles on the meshes, like the notes on a stave, can freely be arranged with gaps in between the tiles, thus achieving a greater variety than in the case of traditional latticework built by bricklayers.

Ceramic tiles display a great deal of variation: the system allows numerous configurations, such as staggered joints, openwork or mosaic. It presents a wide range of colours, shades, glazed surfaces and other materials.

Personalised Design

Flexbrick can be used to create patterns by combining multiple fabric configurations, colours and materials. It is easy and cheap to personalise

El Cobijo
(La Rioja)
BLUR Architecture

Self-managed design

Designs can change when the use changes

Flexbrick
dressing architecture

Some architects proposed the idea of a self-managed façade: customers can change the pattern according to changing needs. For example, opening holes for windows, or turning an opaque façade into a translucent skin and vice versa.

It is easy to remove or replace pieces in the holes of the mesh at the user's convenience: users choose the level of opacity or transparency.

A great number of options remain to be explored in this new paradigm of suspended façades, offering versatile possibilities in the field of textile architecture, both in terms of form and pattern.

TR House
(Barcelona)
PMMT architects

Continuous surfaces can be obtained by modifying less than 10% of the components and by simply changing the thickness of the ceramic pieces (5 cm-cobbles, 4,5 cm-bricks or 3 cm-tiles). It can be used for paving surfaces, roofs, ceilings or façades.

By modifying the diameter of the steel mesh, structural applications are possible in vaults or pergolas, which, as they are reinforced, allow the choice of any kind of curved directrix.

Continuous surfaces

Façades can continue on roofs or pavements

Hispalyt Pavilion
SARRABLO architect.

Mingo House
(Barcelona)
SARRABLO & COLOM architects

Versatile and multifunctional applications

Several applications using the same colour and texture

Flexbrick
dressing architecture

Architects can make the most of the versatility of Flexbrick ceramic tiles, as said tiles offer multiple functions. Different applications in the same building work may be provided using the same ceramic element with the same colour and the same texture.

The Mingo House is an excellent example: the same ceramic textile and the same bricks are used in the structural vaults, curved roofs, drainable pavements, prefabricated panels in the fence and in the gabions.

In addition to using ceramic textiles on façades, we will show the possibilities of this system in pavements, roofs and structural elements such as vaults and pergolas.

Installing ceramic textiles as a cladding system is like laying a carpet, in this case a carpet of paving stones, which easily adapts to any curves in the surface it covers.

Building performance is optimised on large surfaces, as cranes handle the long strips. Up to 250 m2 can be paved per day, in other words, ten times faster than manual installation.

There is no need to mark out the perimeter beforehand, as the ceramic elements are held together by a steel mesh that prevents the paving stones from moving out of position at the edges of the paving surface.

The paved areas can gradually fade away at their edges, so that their borders lack definition and merge with the vegetation generating undefined outer edges.

Jardin Niel
(Toulouse)
MICHELE & MIQUEL architects

Pavements

As easy as laying a carpet
and the only way to obtain undefined outer edges

Jardin Niel
(Toulouse)
MICHELE & MIQUEL

Drainable pavements

Irremovable elements to improve soil absorption

Flexbrick
dressing architecture

Another interesting application, which is of increasing interest in a sustainable urban context, are drainable or openwork paving surfaces, or paved surfaces with wide joints. It is used to avoid the loss of rainwater down drains or to reduce the impact of flooding as a result of heavy rain.

Until now, installing paved surfaces with wide joints without sealing them with cement posed the problem of how to hold them in place. However, Flexbrick ceramic tiles prevent any movement or detachment of the ceramic elements, as the mesh holds them in place.

Their combination with other materials or landscaped areas enriches the finish of this type of paving surface and considerably increases drainage.

On flat roofs, ceramic textiles are arranged like a surface that can be walked on and serves as ballast. They offer architects a third option, in addition to the current systems that use gravel or porous concrete slabs including insulation. Ceramic textiles provide a higher quality finish than gravel and are lighter and more adaptable to drainpipe slopes than concrete slabs.

As drainable paving surfaces, it is easy to check if their waterproof sheets need to be repaired. Changes in the layout of landscaped and paved walkways can easily be made.

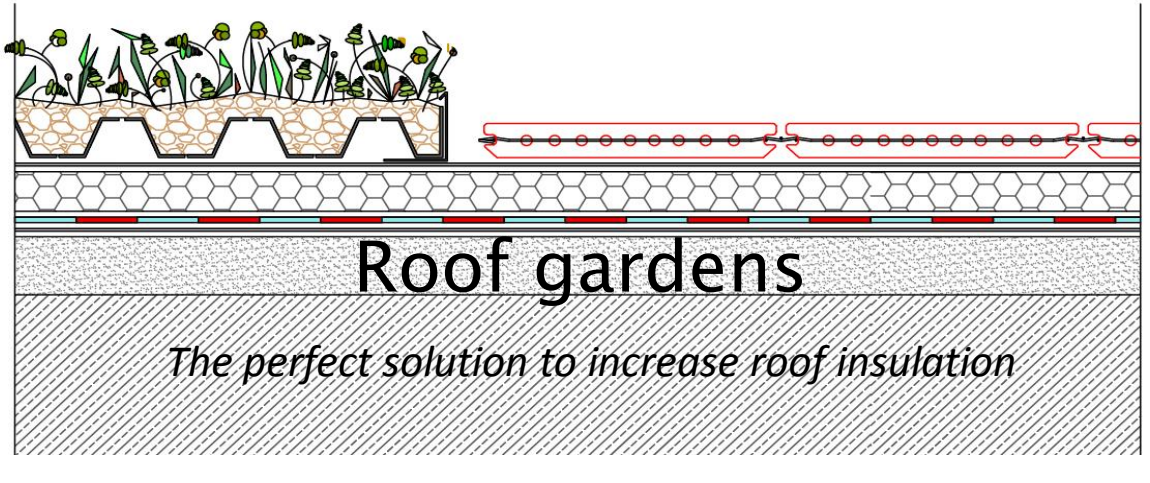
In the case of curved roofs, their large format and the flexibility of the small ceramic pieces ensure adaptation to any curvature. These textiles, which are available in very long formats, are placed in position without adhering them to the roof. Installing them is fast and it increases the construction speed.

House in Berga
(Barcelona)
EIDEE Arch.

Flat and curved roofs

Easier to install than roof tiles; cheaper than metal sheets

Giscosa Company roof
SARRABLO & COLOM architects



Roof gardens

The perfect solution to increase roof insulation

Flexbrick
dressing architecture

In the case of Flexbrick roof gardens, two systems can be used. The first one consists of leaving wide joints between the ceramic elements, which allows vegetation to grow interspersed between them.

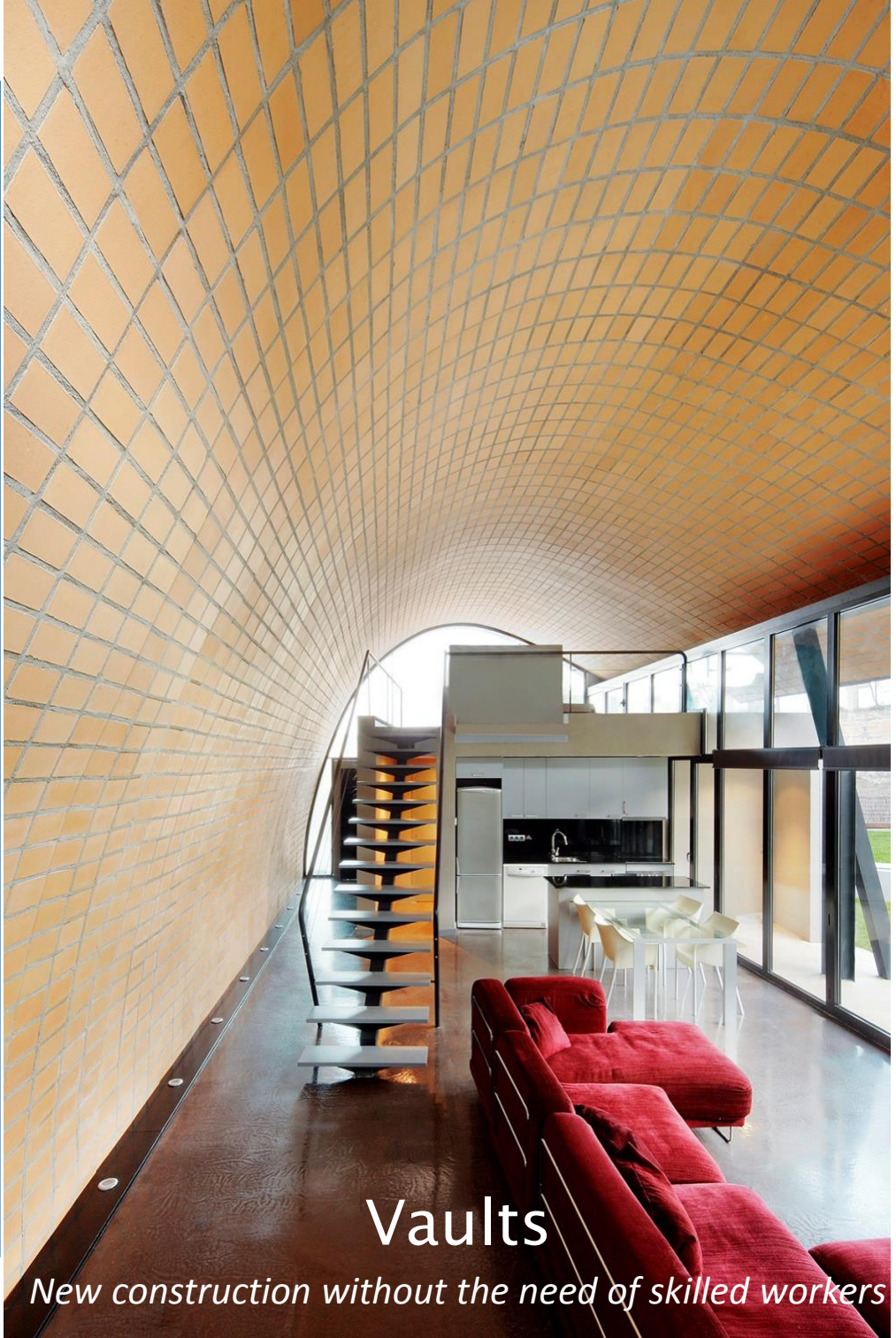
The second system combines pre-grown vegetation mats and walkways paved with ceramic textiles. Both systems have managed to significantly reduce the temperature.

Interesting finishes are obtained thanks to the different patterns and textures of these innovative ceramic ‘carpets’.

The Flexbrick system can be mixed with concrete for structural applications such as vaults.

By building domes with ceramic textiles, an updated and more constructive viability is achieved, since skilled construction workers are not required. This gives a new boost to those types of structures that up to now seemed to be reserved only for special occasions.

Thanks to the use of light formworks, this new industrialised system achieves substantial construction speed, is mechanically resistant and shows great durability.

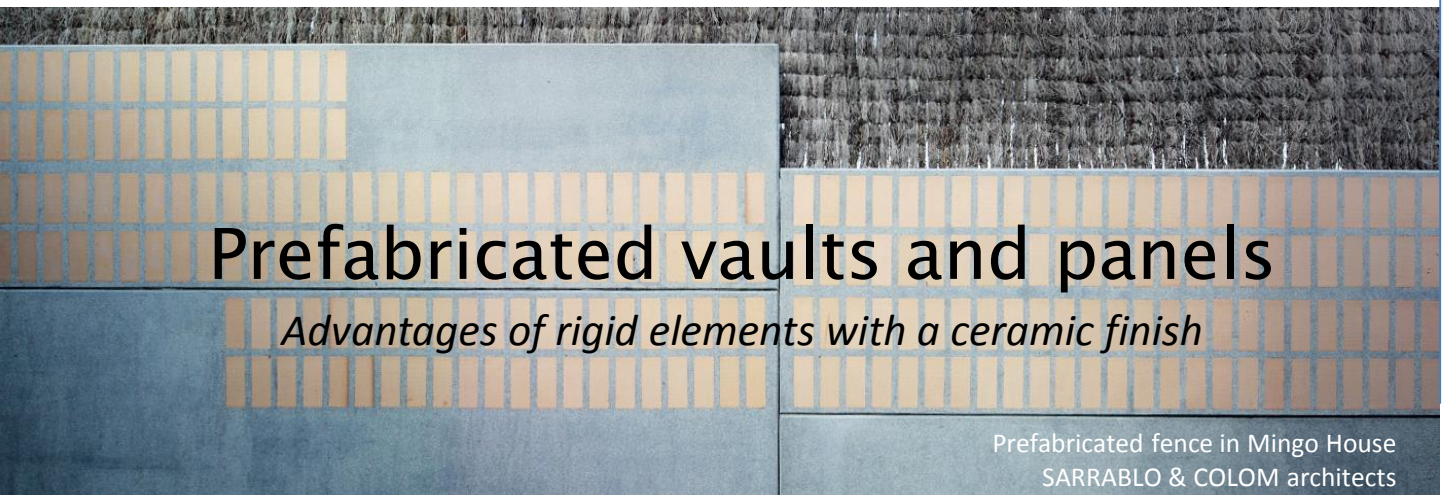


Vaults

New construction without the need of skilled workers

Mingo House
(Barcelona)
SARRABLO & COLOM architects

CDS House
(Girona)
TDB-Arquitectura



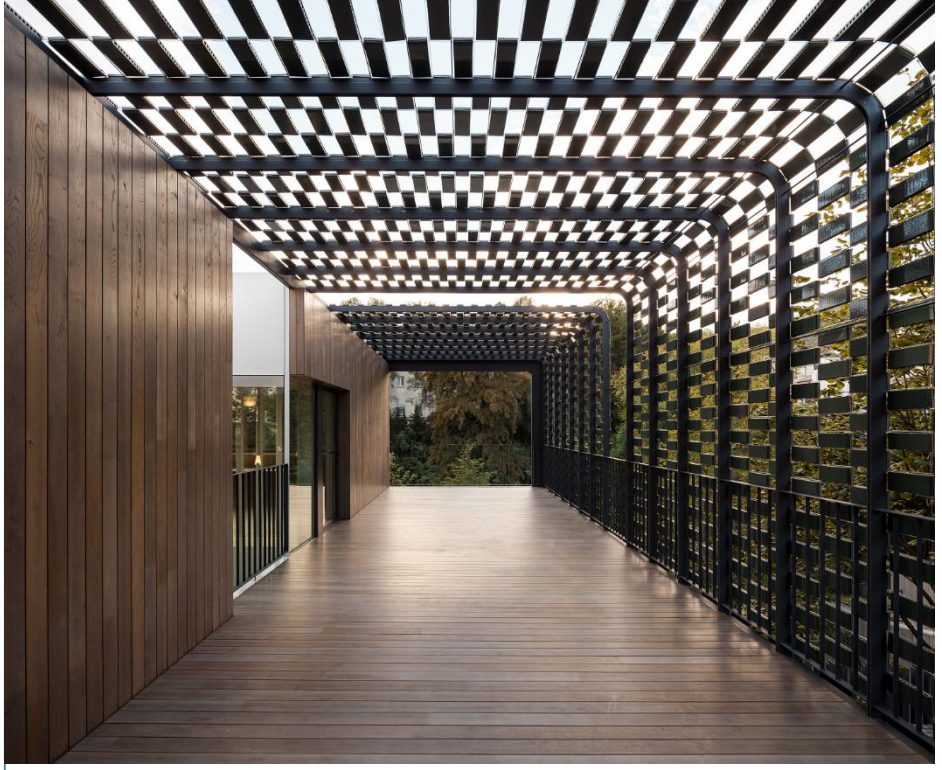
Prefabricated vaults and panels

Advantages of rigid elements with a ceramic finish

Prefabricated fence in Mingo House
SARRABLO & COLOM architects

Flexbrick can also be combined with prefabricated concrete panels or vaults, thus increasing its aesthetic possibilities and providing a finish of warmer colours that requires no maintenance, unlike painted concrete panels.

In the case of prefabricated vaults, they replace the traditional system of beams and beam infill using a single element that performs both functions and is quickly installed as a large beam.

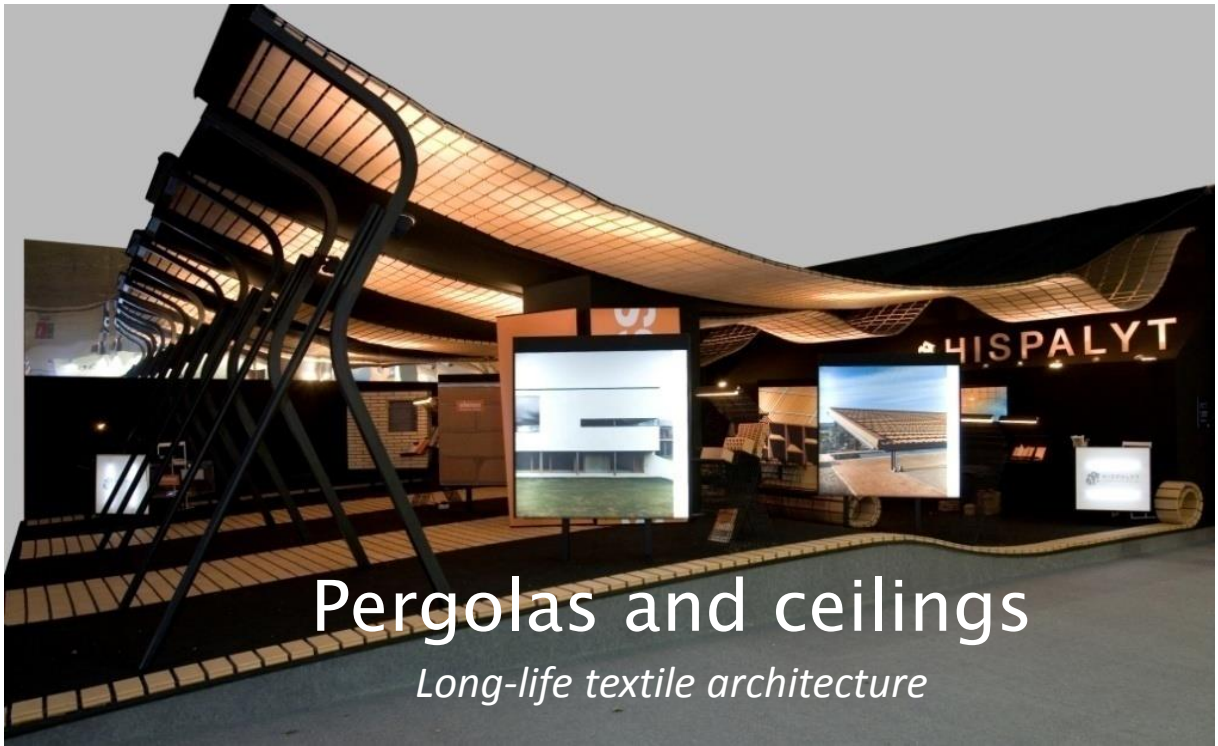


TR House
(Barcelona)
PMMT architects

Flexbrick is a fabric and as such draws on the experience of textile architecture used in canopies and shading fabrics but being ceramic, it is more weather-resistant and requires no maintenance.

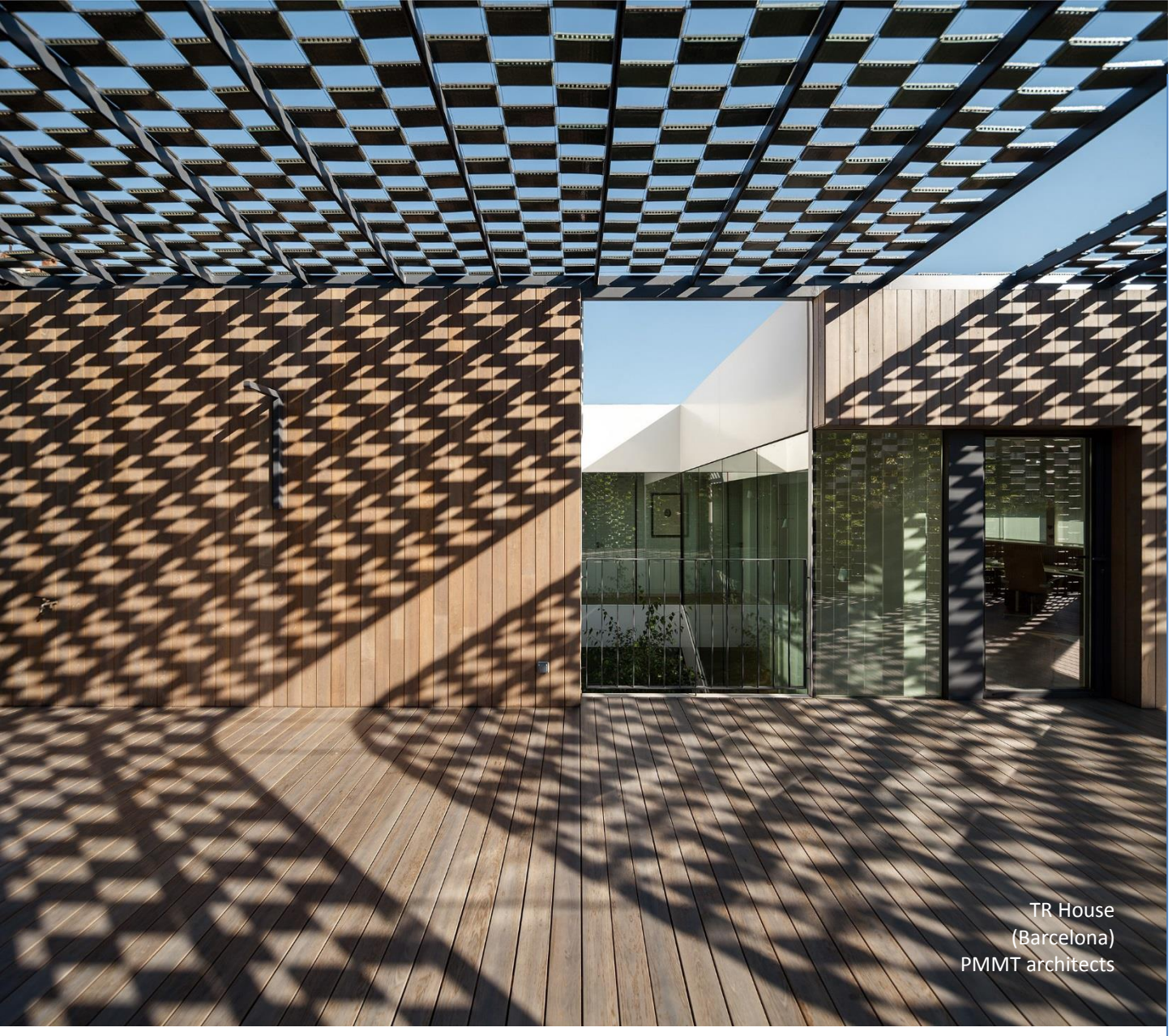
Flat or suspended pergolas constitute a great screen against excess light and heat in summer while presenting interesting tempered gaps between the exterior and the interior. The use of ceramic elements ensures a long useful life.

Hispalyt Pavilion
SARRABLO & COLOM



Pergolas and ceilings

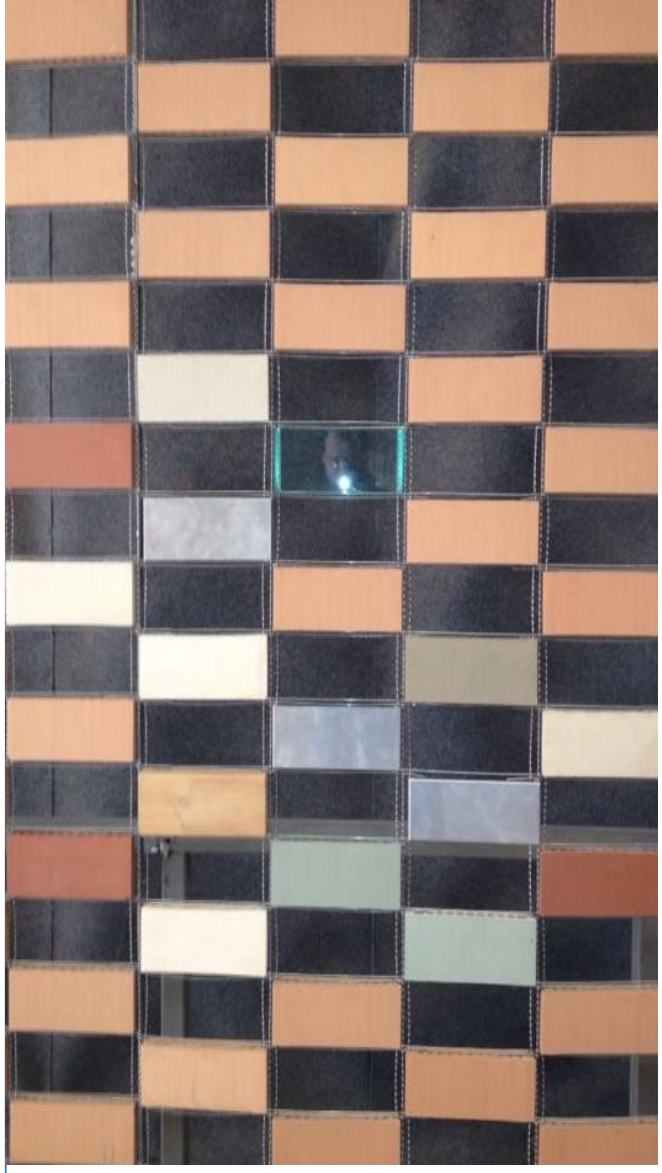
Long-life textile architecture

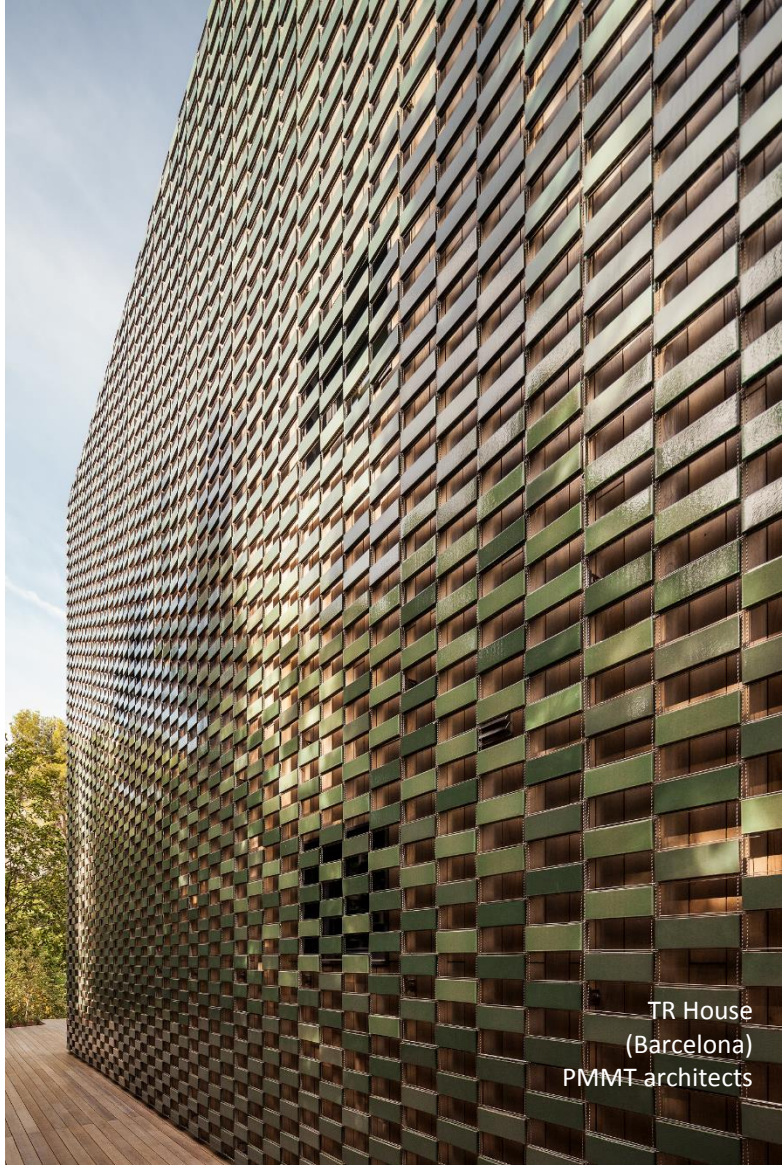


Spectacular shadow effects

Playing with lights and shadows

In the case of sunscreens, the images the shadows project are as important as the design of the pattern.





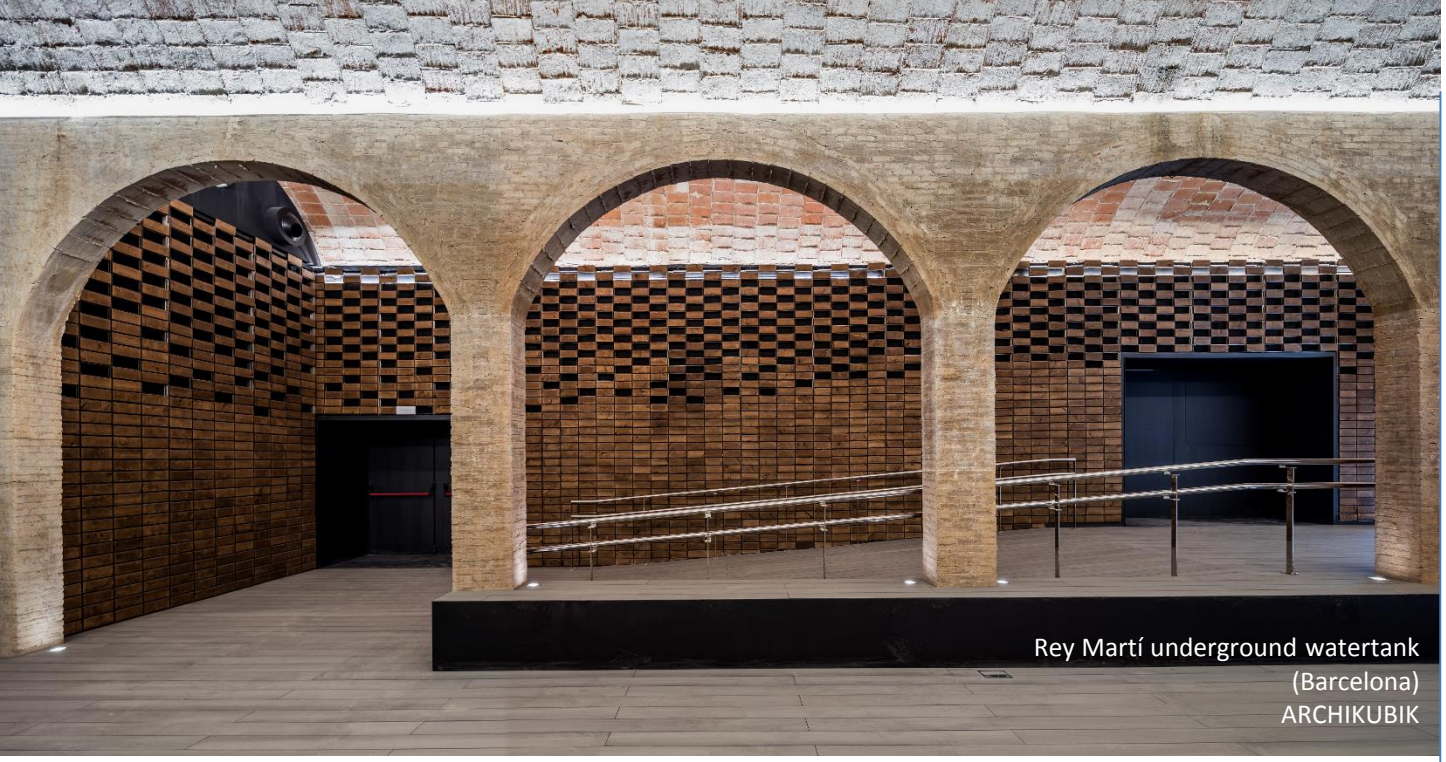
TR House
(Barcelona)
PMMT architects

Several materials to combine

Glazed tiles, wood, steel and glass textiles

Flexbrick began as a ceramic textile but now leverages technology developed to offer more materials such as glazed tiles, wood, steel or glass.

Contrast and combination



Rey Martí underground watertank
(Barcelona)
ARCHIKUBIK

Flexbrick
dressing architecture

Wood textiles as well

An option to apply in the design of interior spaces

Wood is ideal to be combined in pre-existent buildings. As it is lighter than ceramics, it can easily be installed and does not require the use of cranes.

Flexbrick Wood textiles allows using different kinds of wood and different dyes for each type of wood.

La Gota Cultural Center has won the First Award for the Building of the Year 2016 in the well known Archdaily blog (which gets more than 70 million visits per month).

This impressive building reminds us of a tobacco-drying house during the daytime. At night, however, a totally different image springs to mind when you look at it. As soon as lights are switched on, this award-winning building turns into a lamp in which the ceramic textile acts as a diffuser, spreading out soft light and creating an unforgettable ambience.


La Gota Cultural Center
(Cáceres)
LOSADA & GARCÍA architects

International Building of the year 2016

Great recognition for Flexbrick

Car park Saint Roc
(Montpellier)
ARCHIKUBIK

La Gota Cultural Center
(Cáceres)
LOSADA & GARCÍA architects

Several awards for Flexbrick

Awards to the concept and to the buildings using it

Flexbrick
dressing architecture

- Awards to Flexbrick concept:

2016 – National Award to Best Product in XIII Spanish Biennial of Architecture 2015.

2014 – Honors Plaque of the Spanish Association of Scientists

- Awards to the buildings where architects propose Flexbrick :

2016 – La Gota Cultural Center wins 1st Award for the Building of the Year in Archdaily blog.

2016 – Car Park Saint Roc, Mention at the Tile of Spain Awards.

2016 – CDS House, Finalist at the Tile of Spain Awards.

2015 – TR House wins the First Prize of the Technal Architecture Awards.

2015 – TR House, Finalist at the Tile of Spain Awards.

Flexbrick
dressing architecture

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Car Park Saint Roc
(Montpellier)
ARCHIKUBIK