



Flexbrick

dressing architecture

ceramic textiles

A new world of possibilities for architectural envelopes

Introducing a new technological concept: ceramic textiles.

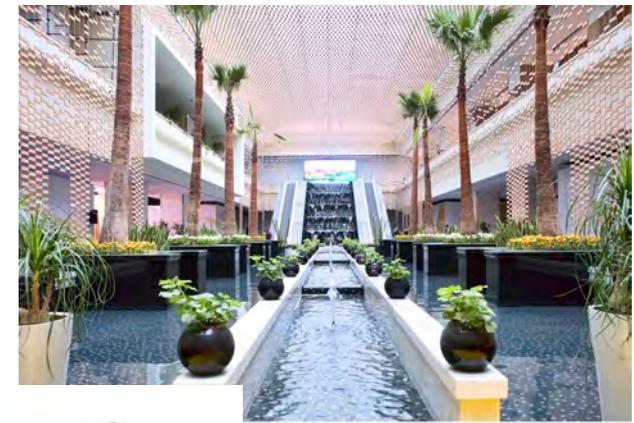
An industrialised system which takes on the shape of flexible sheets of baked clay for tiling, cladding, sunscreens, and laminated structures with a ceramic finish.

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, pergolas and sunscreen façades, demonstrate the remarkable architectural opportunities of ceramic materials when they are conceived in industrialised systems.



Sant Pau Research Institute  
PICH architects

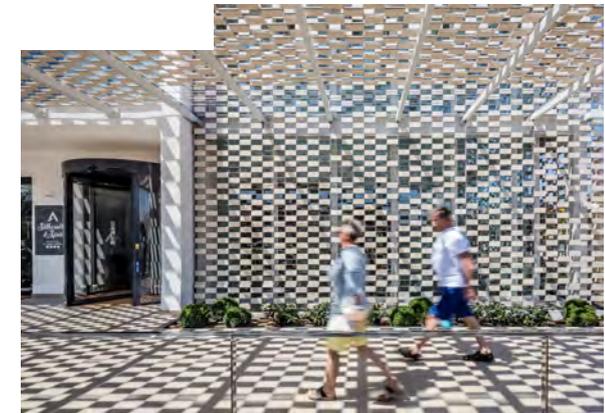


Iran Mall Didar Garden  
The Big Puzzle Architecture

Jardin Niel  
Michelle&Miquel Architecture

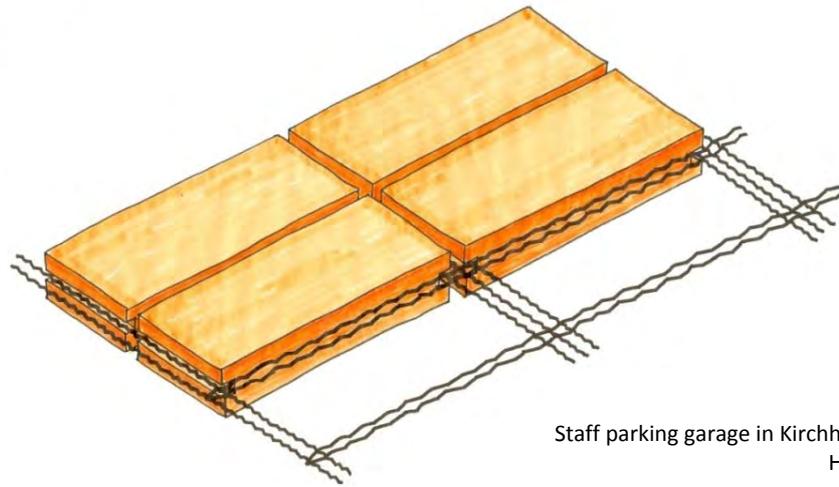


Hotel Silhouette  
Isern Associates Architecture



## APPLICATIONS

- 1) Structural shells (vaults and suspended pergolas)
- 2) Prefabricated panels (fences, façades and vaults)
- 3) Deposited claddings (pavements, drainable pavements, curved roofs and roof gardens)
- 4) Hanging claddings (rainscreens and sunscreens)
- 5) Adhered claddings



Staff parking garage in Kirchheim unter Teck  
HIB 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.

A revolution of the ceramic surfaces.

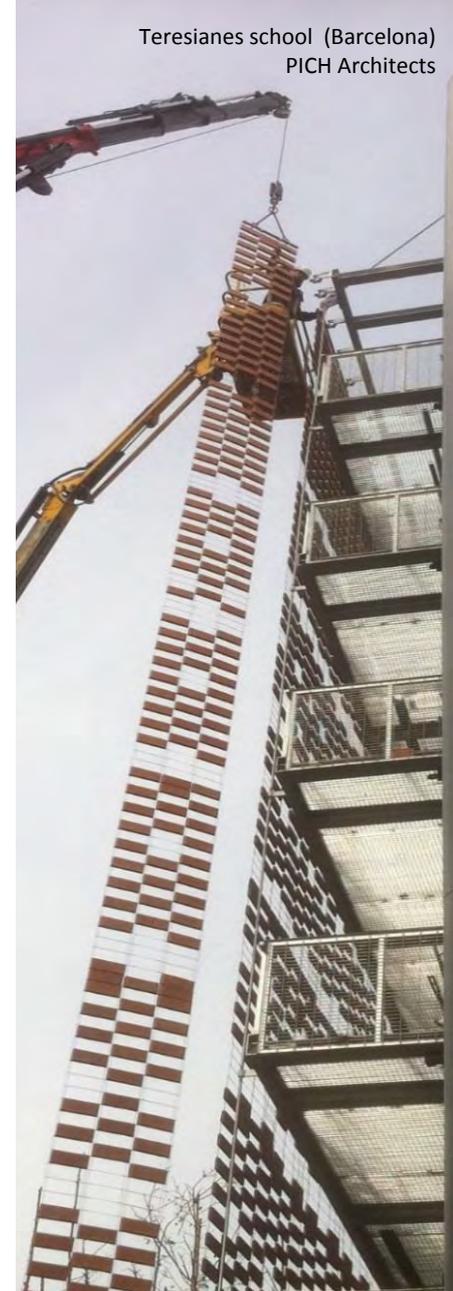
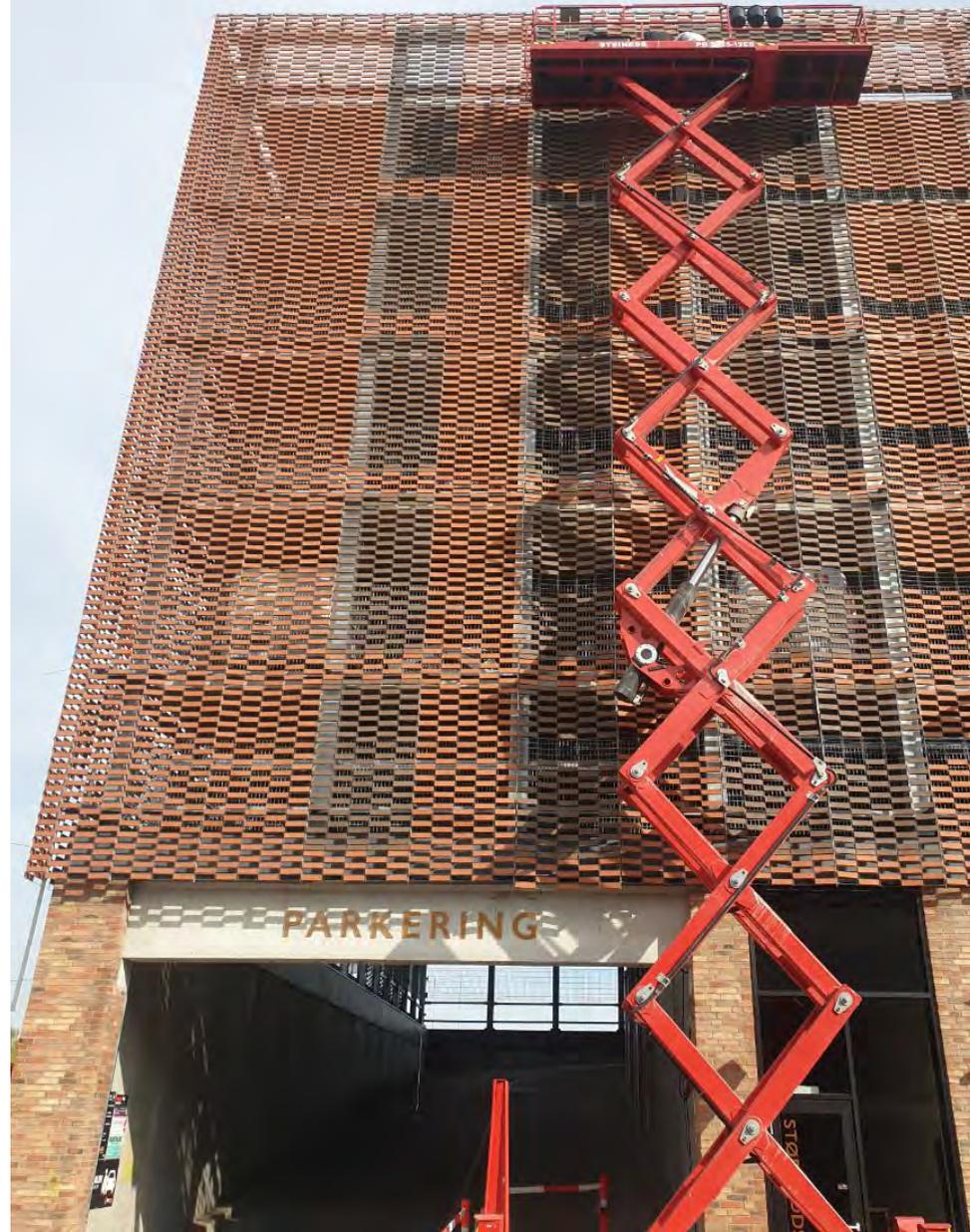
## From past to future

*Flexbrick is a new High-Tech way of using a traditional material*

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, where the pattern finishing is incorporated in advance and carried out in one single step.

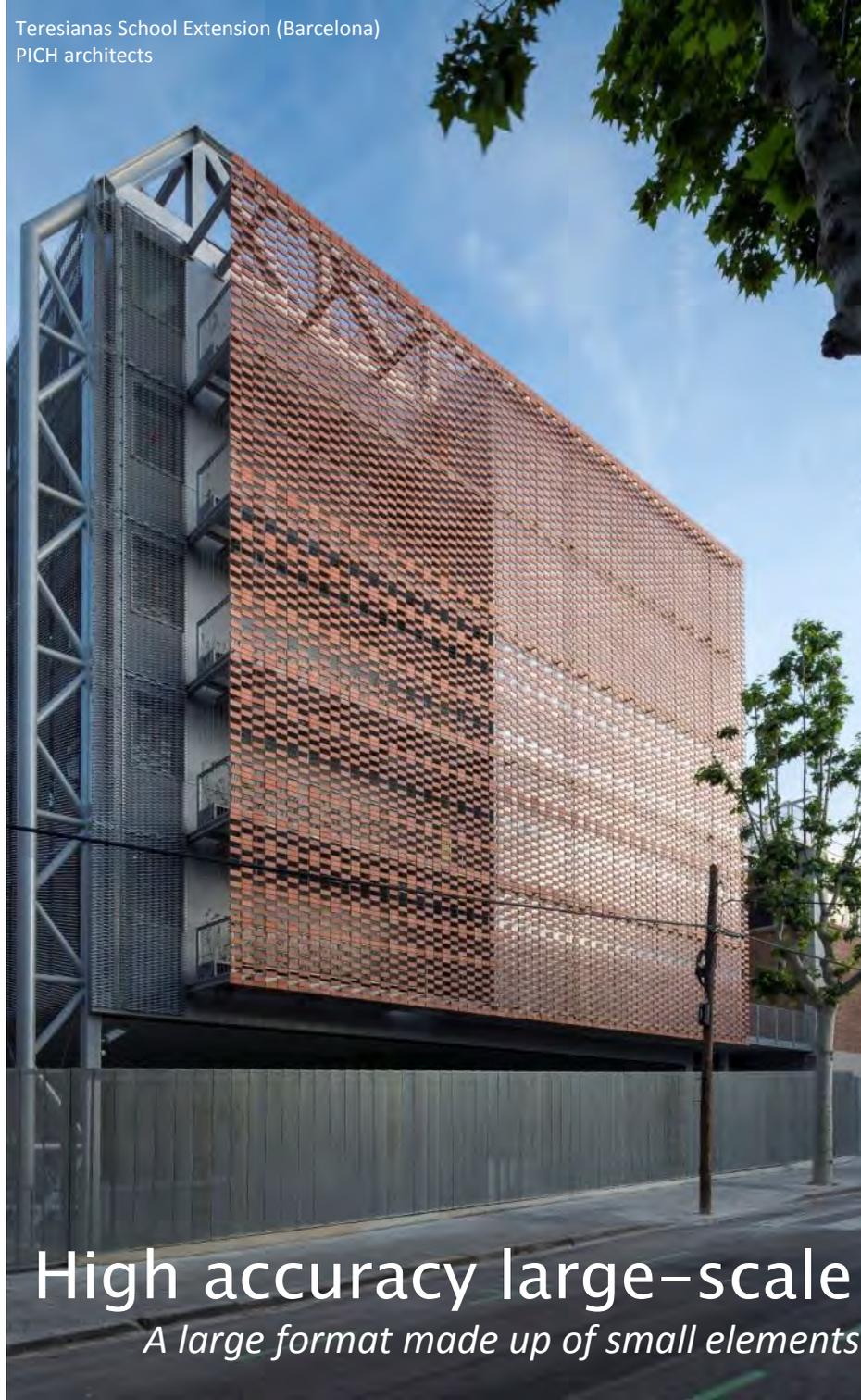
The building performance is optimised on large surfaces, handling the long strips with cranes.

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.



## Reduced construction time

Long fabric laid by crane significantly speeds up processes



## High accuracy large-scale

*A large format made up of small elements*

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. Or directly fixed against the aconditioned metal structure.

It is possible to design and construct by using large-scale formats of up to 25 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 is in final stages of obtaining a DAU in Spain and also advancing in obtaining an ETA for Europe. It successfully passed several intensive tests, including wind tunnel tests at speeds greater than 170 Km/h.

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.

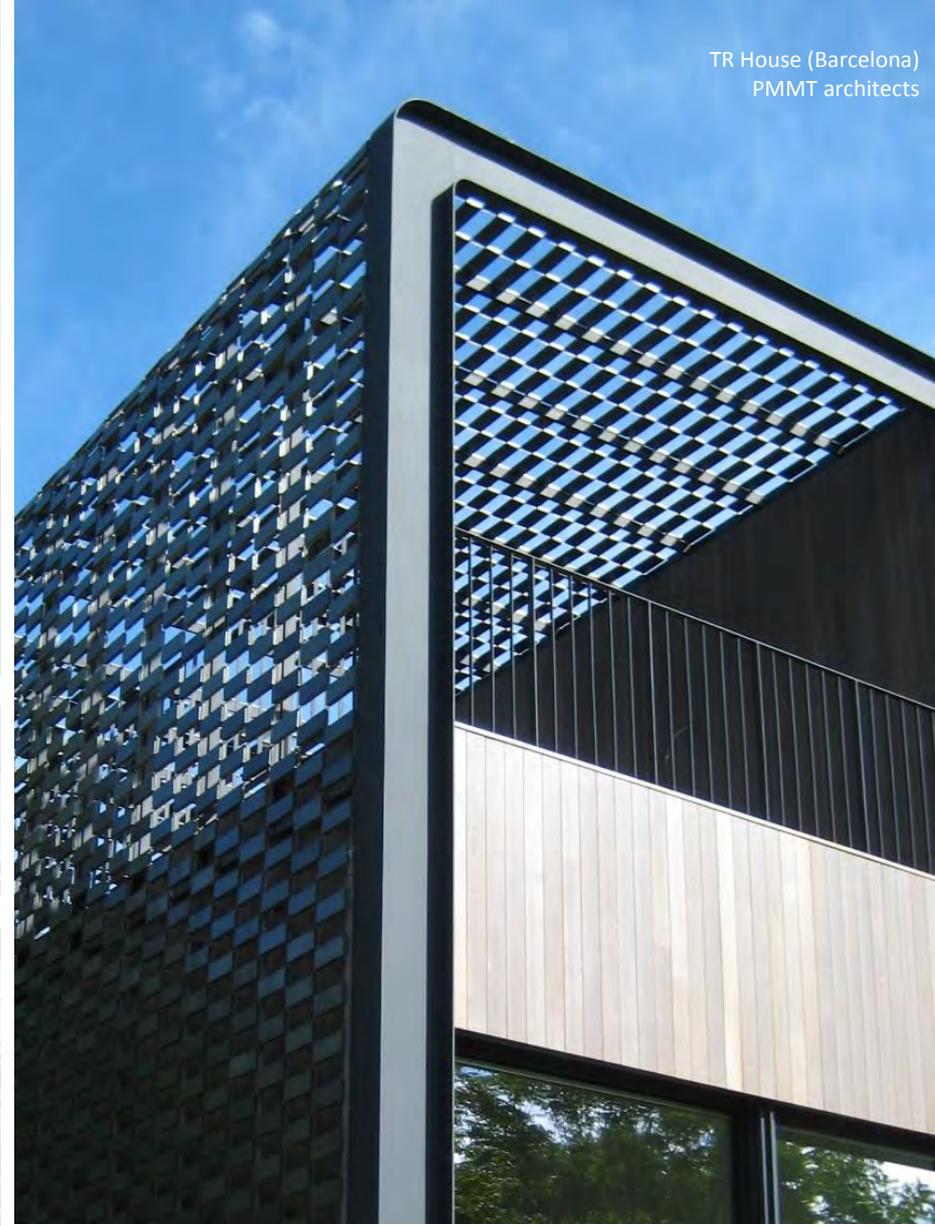
In the case of lattices or light-permeable façades, the fabric is very light: 40 kg/m<sup>2</sup> or less, depending on the amount of gaps between the bricks. The meshes, the support rail and the retaining anchors are made of stainless steel in order to give the cladding system a long useful life and 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. M0 materials (Inox, ceramic) grants the best fire behaviour, the tiles also featuring anti-fall devices on design requirements.

Teresianes School (Barcelona)  
PICH architects



TR House (Barcelona)  
PMMT architects



## A redundantly safe system

*Developed with the support of numerous universities and laboratories*



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 Nm<sup>3</sup> per year in fossil fuels is attained and it significantly reduces carbon dioxide and other greenhouse gas emissions (16,700 Tm/year of CO<sub>2</sub> approx.)

Gaudi's Teresianas School Extension (Barcelona)  
PICH ARCHITECTS

## A sustainable system

*Dry joint recyclable elements, ceramics manufactured with biogas*

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

*Create patterns by combining fabric configurations, colours and materials*



El Cobijo (La Rioja)  
BLUR 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.



**Self-managed design**  
*Designs can change when the use changes*



TR House (Barcelona)  
PMMT architects

Continuous ruled surfaces can be obtained by modifying less than 10% of the components and by simply changing the thickness of the ceramic pieces, if needed, allowing a diversity of uses in paving surfaces, roofs, pergolas, ceilings or façades.

By conveniently designing the substructure, applications like vaults and pergolas are possible, allowing the choice of any kind of curved directrix.

Hisपालyt Pavilion  
SARRABLO architects

## Continuous surfaces

*Uninterrupted envelopes on roofs and pavements*





Mingo House (Barcelona)  
SARRABLO & COLOM architects

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.

## Versatile and multifunctional applications

*Several applications using the same colour and texture*

Installing ceramic textiles as a cladding system is like laying a carpet, in this case a carpet of paving bricks, 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 m<sup>2</sup> can be paved per day by one only team, 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.

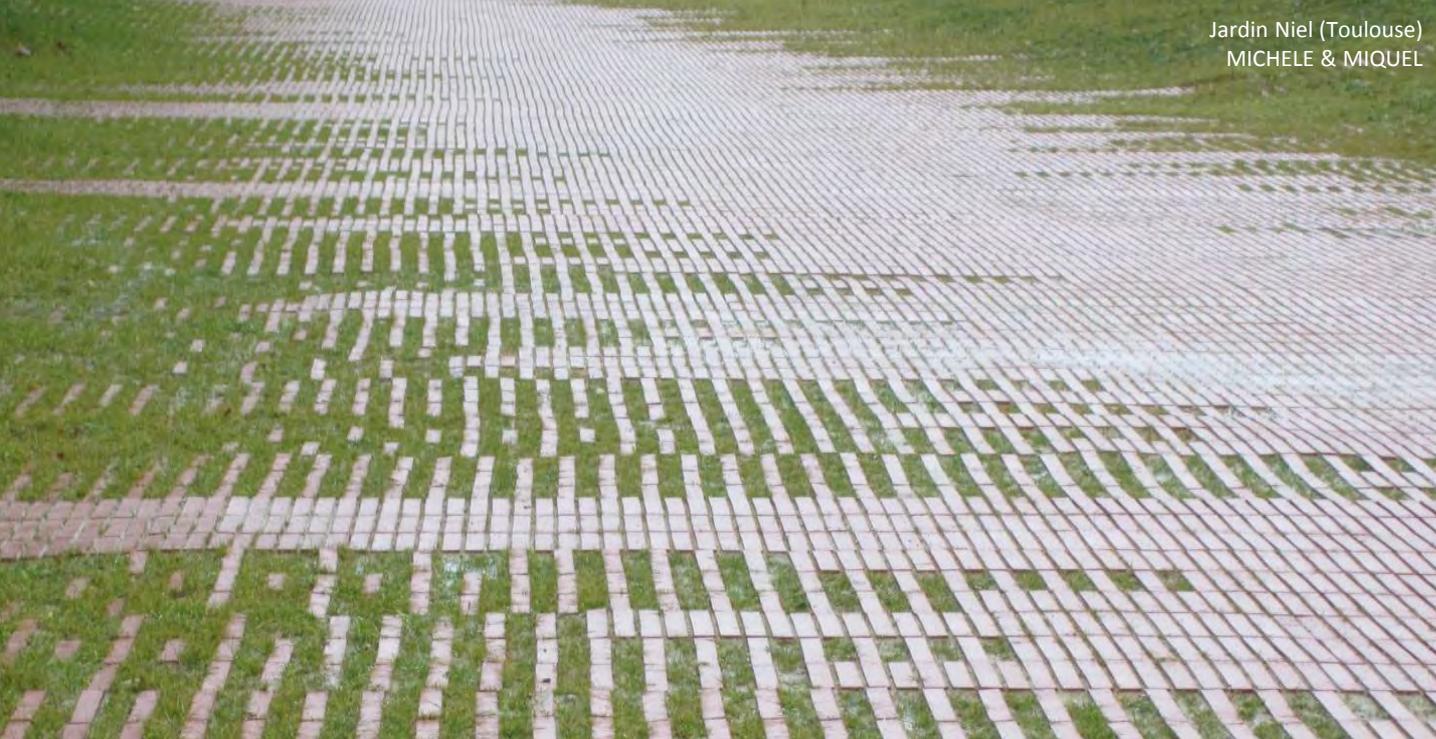
In the case of horizontal surfaces, galvanised meshes are used to ensure high grade resistance to corrosion and mechanical efforts, while keeping all properties needed in a cost-effective, long lasting use.

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.



## Pavements

*The right and only way to obtain undefined outer edges*



Another interesting applications, of increasing interest in a sustainable urban context, are drainable or openwork paving surfaces, or paved surfaces with wide joints, 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.



## *Drainable pavements*

*Include grass or filler elements to improve soil absorption*

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.



## Flat and curved roofs

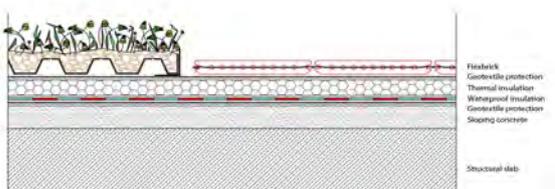
*Easier to install than roof tiles, better thermal behaviour*



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 manage to significantly reduce temperature.

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



## Roof gardens

*The perfect solution to increase roof insulation*

Flexbrick® introduced a new development especially adapted to a ventilated roof, resulting in significant energy savings.

Sports halls or industrial buildings, due to their big exposed surfaces on roofs, can benefit from a remarkable improvement when using Flexbrick® ceramic fabrics. Sheets deposited by crane enable the fastest installation, while ceramic pieces until now were not frequent due to the low installation speed of the pieces placed one by one.

Ventilation through the chambers in gables allows a remarkable improvement in thermal insulation by evacuating the heat accumulated from the sun and the consequent energy savings in cooling. In addition, the ventilated cover contributes to diminishing the wear caused by the reheating of the waterproof sheets.



Campclar Sports pavilion for the XVIII Mediterranean Games (Tarragona)  
BARCELÓ & BALANZÓ architects



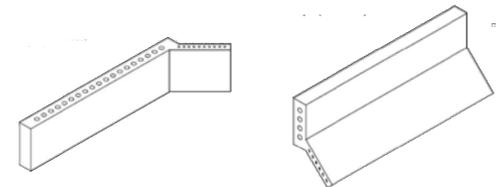
## Ventilated roofs

*Covers with special pieces housing ventilation chambers*



Protecting glazed facades from sunlight is becoming increasingly important and Flexbrick® produces long format Sunscreens in an industrialized way providing several levels of protection: from the standard flat piece to special pieces for shade control due to their folded geometry, passively adapted to the needs of each orientation.

In addition, the singular profiles of these pieces provides the facades with a specially expressive scaled texture.



## Sunscreens

*Advantages and aesthetics of protecting against the sun*

Sant Pau Hospital Research Institute (Barcelona)  
PICH ARCHITECTS

Flexbrick® has developed a new solution after a period of research and testing. It is a new cladding system with mixed fixing attached and screwed on the support façade.

This new Flexbrick application solves one of the usual problems in traditional claddings: the detachment of tiles and the appearance, consequently, of moistures. To avoid it, Flexbrick adds –to the traditional fixation with adhesives– a device of dowels and screws that anchor the steel mesh of the fabric to the support wall. The tiles being enclosed to this mesh, its safety is guaranteed in case of detachments even if the adhesive mortar fails.

This new solution can be applied both in new construction and in rehabilitation.



## Adhered + screwed application

*Increased safety to prevent the detachment of tiles*

(before and after rehabilitation)



The iconic façades of Girasol building in Madrid have been renovated with Flexbrick® system.

For this rehabilitation, the architects were interested in fabrics like Flexbrick, looking for the addition of an enhanced security to the traditional issues of adhesion conditions of the mortar. Those problems were solved once and for all by including a hidden mesh that could be mechanically fixed to the original support.

The project has achieved two important milestones: first, entering the market of rehabilitation with none other than one of the most charismatic buildings in the history of modern architecture in Spain, designed by Coderch, and second, definitively solving the detachment of tiles, one of the common fears in adhered tiling.

## Safety facade rehabilitation

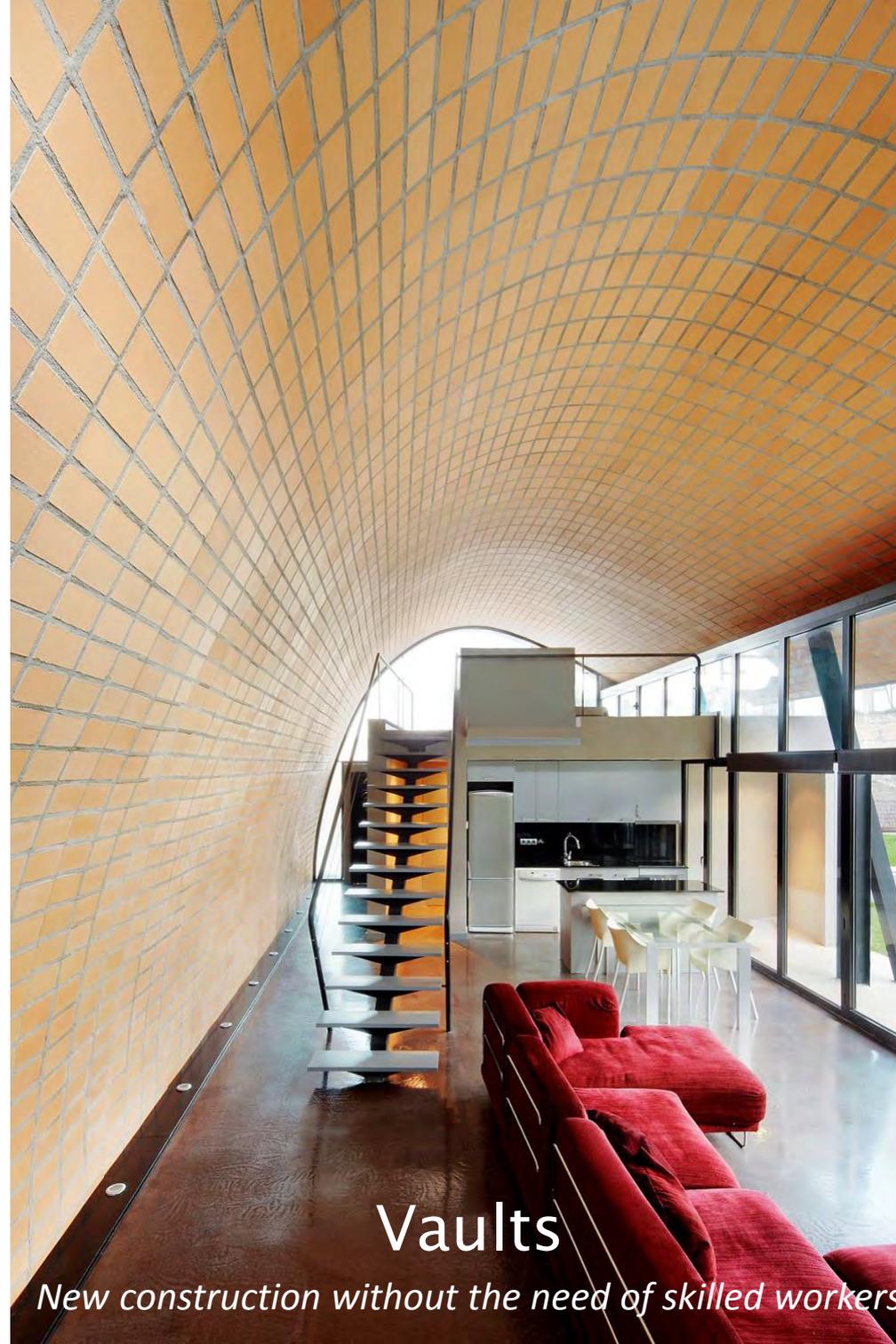
*Recuperation of iconic buildings*

Coderch's Girasol building in Madrid  
ATELIER GALANTE

Flexbrick system can be introduced in concrete elements 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 now seemed to be reserved only for special occasions up to this moment.

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



Mingo House (Barcelona)  
SARRABLO & COLOM architects

## Vaults

*New construction without the need of skilled workers*



CDS House (Girona)  
TDB-Arquitectura

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 performing both functions at the same time with the advantage of being quickly installed, as a large beam.

## Prefabricated vaults and panels

*Advantages of rigid elements with a ceramic finish*

Prefabricated fence in Mingo House  
SARRABLO & COLOM architects



TR House (Barcelona)  
PMMT architects

Flexbrick allows the experience of textile architecture to be used in ruled surfaces for canopies and shading to be materialised in a ceramic finishing, which is traditionally 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 use life.



Hispalyt Pavilion  
SARRABLO & COLOM

## Pergolas and ceilings

*Long-life textile architecture*



TR House (Barcelona)  
PMMT architects

# Spectacular shadow effects

*Playing with lights and shades*

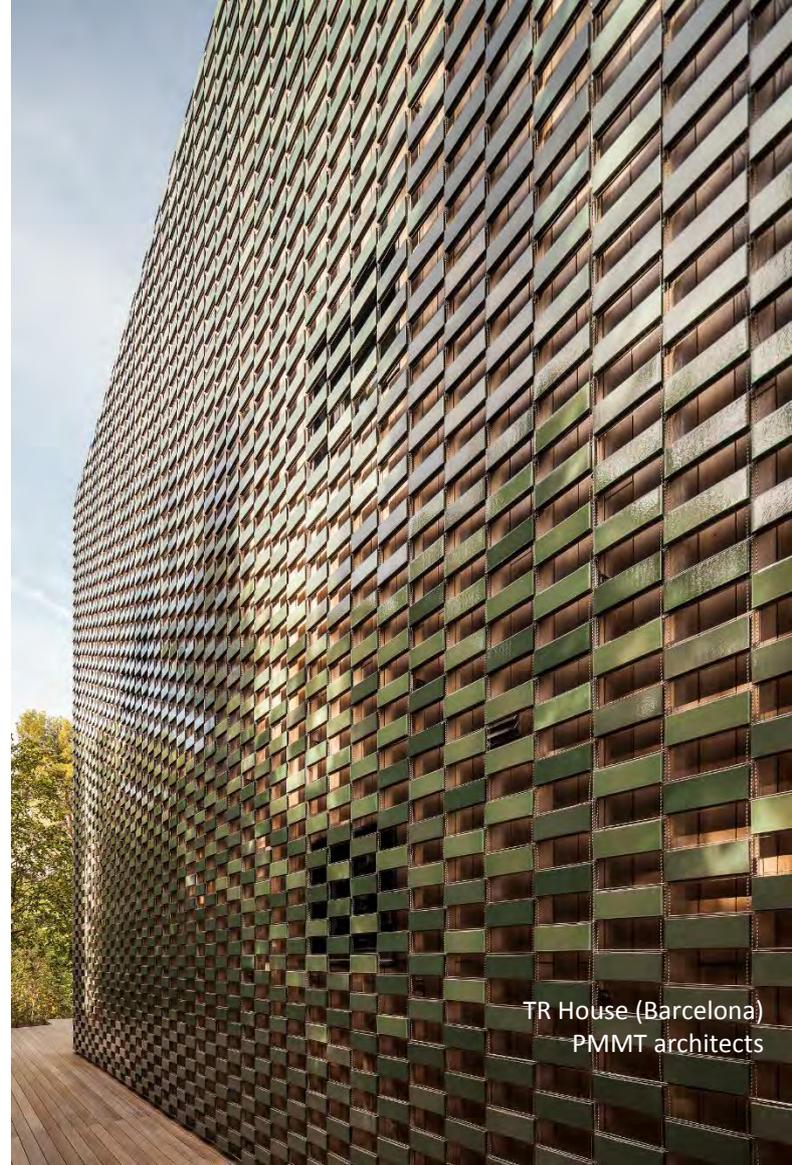
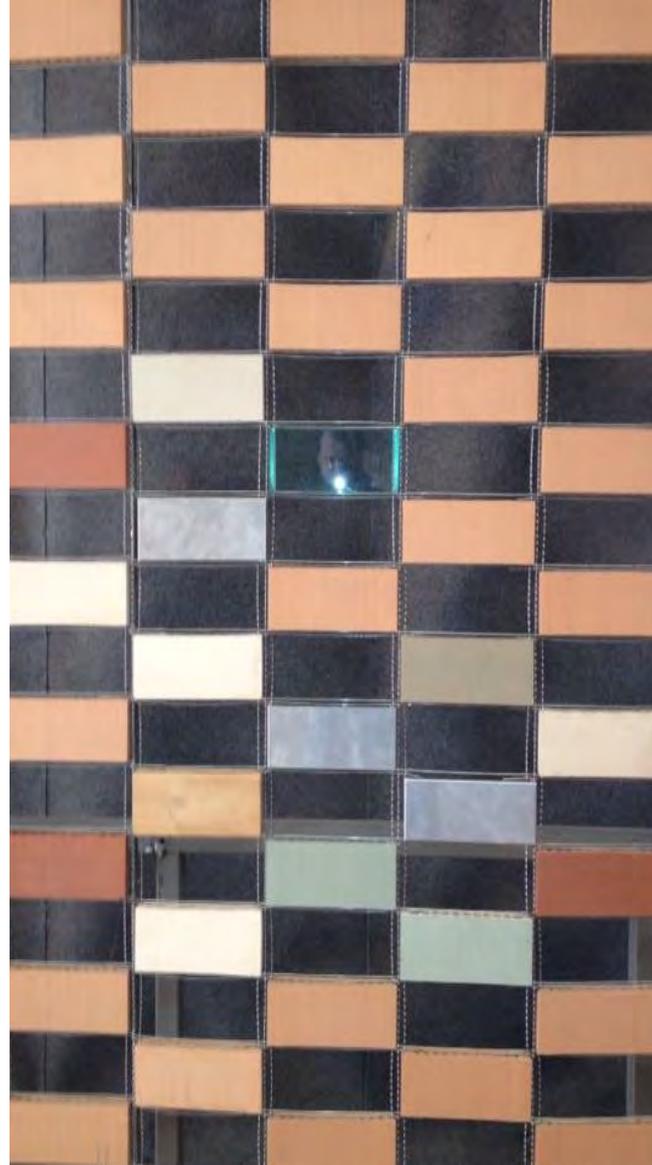


Dyalise Center L'Union, Toulouse  
Pierre Fernandez architecture



Apartamentos Puente y Pellón  
(Sevilla) FAQ architecture

In the case of sunscreens and pergolas, the image provided by the casted shadows could be as important as the design of the pattern itself.



TR House (Barcelona)  
PMMT architects

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

Contrast and combination

## Several materials to combine

*Glazed tiles, wood, steel and glass textiles*



Reig Marti underground watertank (Barcelona)  
ARCHIKUBIK



## Wood textiles as well

*An option to apply in the design of interior spaces*

Wood and bamboo are 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, and bamboo allows outdoor use.

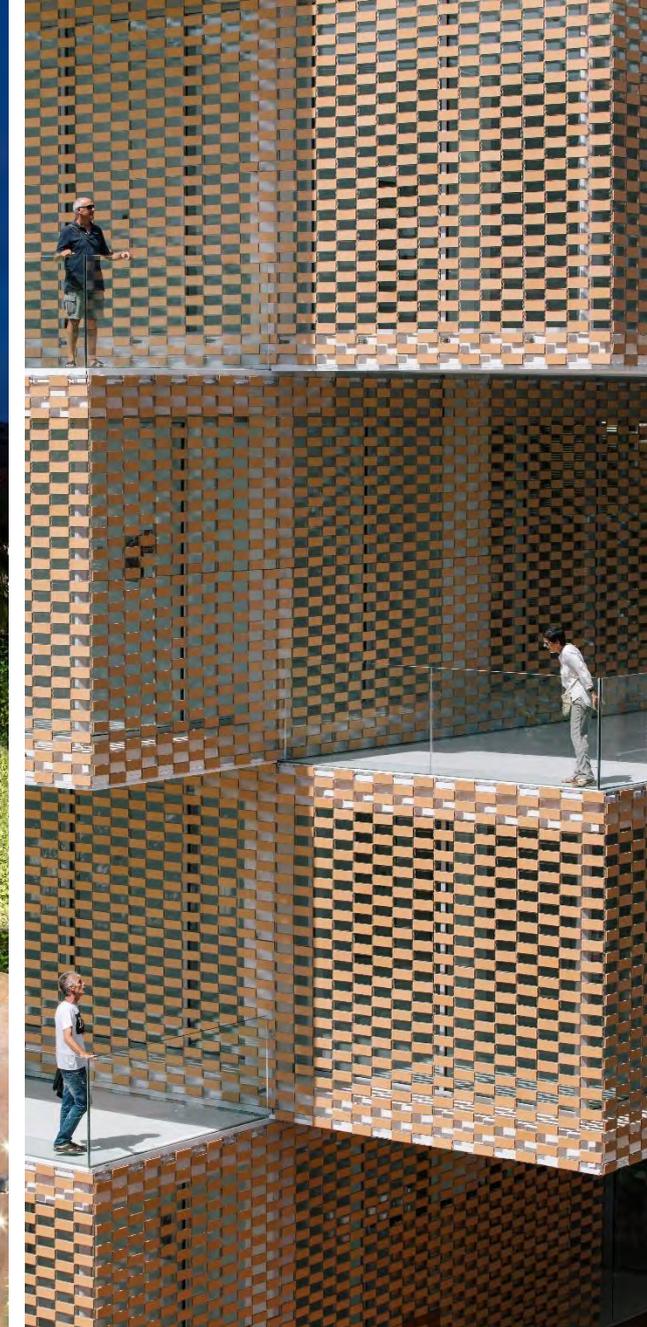


**1ST AWARD  
BUILDING OF THE  
YEAR 2016!**

La Gota Cultural Center won the First Award for the Building of the Year 2016 granted by Archdaily

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

*Award-winning textures for architectural projects*

Saint Roc Car park (Montpellier)  
ARCHIKUBIK



La Gota Cultural Center (Cáceres)  
LOSADA & GARCÍA architects



**A unique and awarded system**

*Make remarkable architecture*



• **Awards to Flexbrick concept:**

2016 - National Award to Best Product in the 13th Spanish Biennial of Architecture 2015

2014 - Honors Plaque of the Spanish Association of Scientists

2011 - Catalunya building award  
Innovation in construction

• **Awards to buildings where architects proposed Flexbrick:**

**Sant Pau Research Institute, Barcelona**  
2019 Finalist at the MIPIM Awards

**Han Ist Building, Istanbul**  
2018 European Property Award 19

**La Gota Cultural Center, Cáceres**  
2016 Archdaily Building of the Year Award

**Saint Roc Car Park, Montpellier**  
2018 Germany Design award  
2016 Mention at the Tile of Spain Awards

**CDS House, Girona**  
2016 Finalist at the Tile of Spain Awards

**TR House, Barcelona**  
2015 First Prize Technal Architecture Awards  
Finalist at the Tile of Spain Awards



[www.flexbrick.net](http://www.flexbrick.net)  
[info@flexbrick.es](mailto:info@flexbrick.es)



Saint Roc Car Park (Montpellier)  
ARCHIKUBIK