Project management.

The design and construction of ventilated facades with XLIGHT slabs by URBATEK, are complex challenges in which architecture and engineering go hand in hand to create the building envelope. In any case, we can sum up the work in the following stages:

· General project of the building, with specification of the areas to be covered with ventilated facade. Selection of the type of substrate for the building skin, and thermal insulation for it.

· Choosing of model and format of XLIGHT ceramics by URBATEK.

· Initial design of the facade determining position of the ceramic, placement joints, and trims, along with the rest of elements that make up the facade.

· Adapting measurements and positions of the different elements in the façade, to the modulation of the XLIGHT ceramic by URBATEK.

· Technical project of the facade which includes the position of each of the elements that make it up.

· Design of the construction details of the ventilated facade, as well as of its singular points.

· Technical specifications with calculations justifying the correct behavior of the system to the foreseen stresses.

Butech's Technical **Department** offers the clients of **PORCELANOSA Group** the following services:

· Technical consultancy for adapting the XLIGHT ventilated facade system to the requested project.

· Initial design or lay-out of the façade.

· Technical project of the façade, with the position of each facade element.

· Development of construction details for final project of the ventilated facade.

· Depending on the project, a CGI of the facade.

· Static load, and wind pressure and suction technical calculations.

· Material supply estimate, technical assistance, and installation of the ventilated facade.

· Depending on the agreement, technical assistance at work site.

· Depending on the agreement, installation of the ventilated facade:
    Initial construction layout.
    Installing the ventilated façade substructure.
    Installing the thermal insulation layer.
    Installing the XLIGHT slabs by URBATEK.
    Cutting and machining of ceramics on site.
    Building site final cleaning.

For the above procedure, it is necessary to fill out the **study sheet** along with the delivery of the corresponding project drawings.

Consumer information
Technical guide
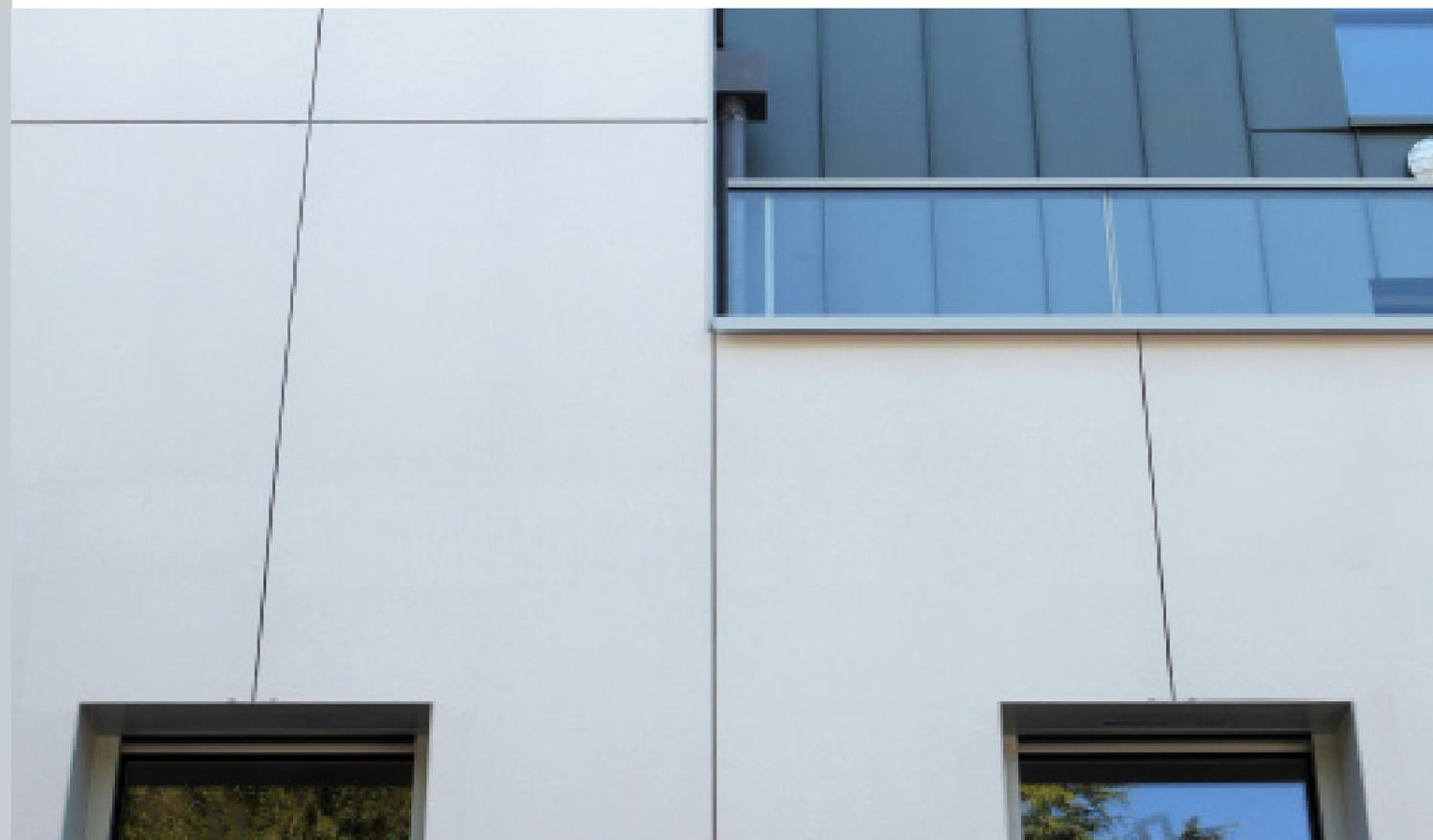
XLIGHT ventilated facades with visible clips
butech building system

butech®

PORCELANOSA Group

butech®

1. General recommendations.

XLIGHT placement in facades requires qualified personnel. It is only recommended to use professionals with proven experience in this type of work.

Follow the instructions of the site management, and check the information in data sheets or packaging before using any product. Using the appropriate tools for each type of work is essential.

Comply with occupational safety regulations.

2. Facade design.

Choose the XLIGHT slab format between the sizes available: 300 x 100 and 100 x 100 cm. We only recommend 3 mm thick slabs back-reinforced with fibreglass mesh.

Determine the position of the slabs, the placement joint width (5 or 8 mm), and the facade modules. Adapt the measurements of all facade elements to reduce the number of cuts and material breakage.


3. Preparing the substrate.

Check that the base or placement substrate is stable, non-deformable, and with no risk of cracking. The base cannot have deviations equal to or greater than 3 mm per meter vertically, and equal to or greater than 10 mm per 2 meters horizontally.

Determine the final level of the facade, taking into account loss of verticality, overhangs, or any element that protrudes from the facade's vertical line.

Heed structural joints and consider making expansion joints.
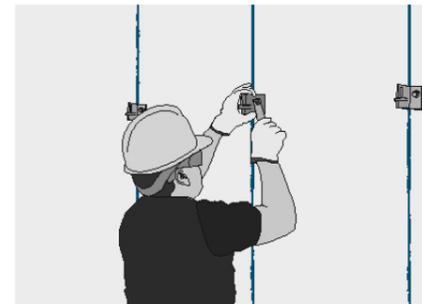
4. Installing the façade substructure I.

The vertical section axes will be installed depending on the slab dimensions, at a distance equal to or less than 60 cm.

Choose separators of the right length for each point of the façade and install them aligned vertically, distributed between floor slab edges with a distance not exceeding 90 cm.

In seismic areas, double the number of primary separators on floor slab edges.
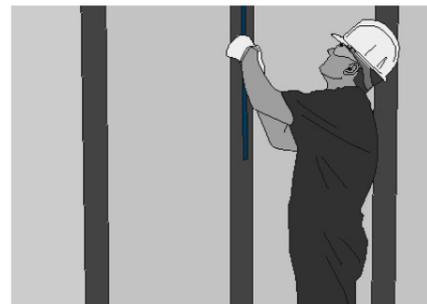

5. Installing the façade substructure II.

Screw the vertical sections to the separators in the apposite hole for each case: circular in the upper primary separators, and mounting hole for the rest.

Check that the sections are perfectly aligned and define a perfectly flat structure.

The minimum horizontal joint between adjacent vertical sections will be 2 mm per section meter.
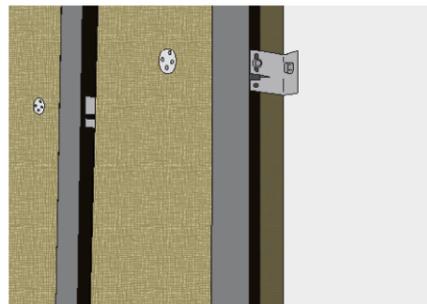
6. Ventilated air chamber.

The air chamber must have a minimum space of between 3 and 10 cm to allow a natural upward convection behind the wall covering to take place.

The total effective area of ventilation openings shall be 120 cm² for every 10 m² of façade area between floor slabs.

The thermal insulation thickness and properties will be defined as per the project.

7. Installing the XLIGHT slabs.

Apply a p-404 adhesive bead on the vertical sections and the area where the ceramic will be touching.

Place the XLIGHT slabs on the putty while it is still fresh, and install the right clip for each case. Each slab will be fixed by 4 clips placed on each corner, plus one clip every 60 cm horizontally.

The vertical joint shall be ≥ 1 mm, while the horizontal joint shall be from 5 to 8 mm depending on the clip used.

8. Start of the facade and critical points.

Determine the technical solution for the lower strip of the façade: doubling the number of vertical sections or bonding the XLIGHT slabs directly to the base (see XLIGHT bonded façade document).

Determine the type of dressing to carry out: XLIGHT ceramic or metallic carpentry.

Check the solutions catalog with the technical department, for each type of critical point.

Ventilated facades.

The facade is, at the same time, the image of the building and the skin that protects it from the outside.

At present, the ventilated façade is possibly the system that best combines design and technical advantages. This type of construction solution is characterized by the definition of an air chamber that is ventilated to the exterior, where thermal insulation is usually placed, thus improving the building's thermal efficiency.

This excellent technical advantage, along with the quality and design possibilities that PORCELANOSA Group's wall coverings offer, make the ventilated facade the ideal envelope for all types of projects.

Among the advantages of the ceramic ventilated facades we highlight:

· Excellent thermal insulation.
· Excellent steam balance. It eliminates all types of condensation.
· Lightness, low weight per square meter; in the case of XLIGHT facades, less than 17 kg/m².
· Ceramic with zero water absorption, which means maximum durability and minimum maintenance.
· Large format slabs and wide range of designs.

Recommended materials.

Ceramic wall covering.

XLIGHT slabs by URBATEK

XLIGHT stoneware porcelain slabs in +3 mm formats up to 100 x 300 cm, back-reinforced by a fiberglass mesh that enhances the slab's flexural strength.

The large size of this type of porcelain tile, its zero water absorption, its resistance to atmospheric agents, its lightness with less than 10.5 kg/m²as well as its design, make the XLIGHT slabs an excellent solution for all types of facades.

Features:

|		
Thickness:	ISO 10545-2	$3.5 \pm 5\%$ mm
Surface flatness	ISO 10545-2	0.1 %
Water absorption:	ISO 10545-3	< 0.1 %
Bending behavior:	ISO 10545-5	> 120 N/mm²

Metal substructure.

Load-bearing substructure of the ventilated facade, as per DIT 530/11. It is made up of the following elements:

· Aluminum separators for transmitting loads from the substructure to the supporting wall, using anchors. Available from 60 mm to 160 mm in length. Depending on the type of stress they bear, there are two types of anchors: primary and secondary.

· Vertical substructure of vertical aluminium sections for installing XLIGHT slabs. Available in T-shaped sections (100 mm width) or L-shaped sections (40 mm width).

Features:

|	
Tensile strength (R_m)	≥ 270 N/mm²
Yield strength ($R_{p\,0.2}$)	≥ 225 N/mm²
Elongation (A)	≥ 8 %
Brinell Hardness	90
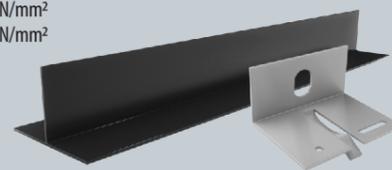
Anchoring system.

Mechanical anchors

Clips for mechanical anchoring, as per DIT 530/11 design. Manufactured in AISI 304 stainless steel and 1 mm (± 0.15) general thickness, they can be supplied lacquered in the RAL color that the customer needs. There is a wide range of different clips available, which adapt to all facade anchoring needs.

Features:

Tensile strength (R_m)	510 - 750 N/mm²
Yield strength ($R_{p\,0.2}$)	≥ 230 N/mm²
Elongation (A)	45%
Brinell Hardness	183
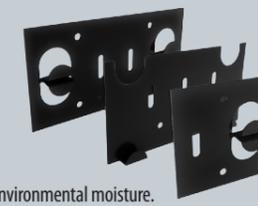
p -404

Polyurethane adhesive. It polymerizes in contact with environmental moisture. Specially recommended for bonding ceramic on metal sections.

Features:
Excellent chemical resistance.
Low elasticity modulus.

Complements.

Self-leveling spacers

Spacers are essential when installing quality ceramic; they make work easier and ensure uniform width joints. Currently, there are self-leveling **spacers available** which facilitate the leveling of the wall covering and avoid ledges between tiles. A special tab has been designed for installing XLIGHT slabs that protects and facilitates the assembly, even with 3.5 mm thick slabs.

XLIGHT Tools

Handling, cutting, and installation of XLIGHT ceramic requires special tools. The essential tools are the following:

XLIGHT Frame / carrier. Aluminum structure of up to 300 cm long, equipped with suction cups for moving large-format pieces.

Cutting guide plus XLIGHT pincers. Tool for cutting XLIGHT ceramic straight, plus pincers for separating marked pieces. It includes diamond point.