

**STRUCTURAL SPACER FOR THERMAL BRIDGES**

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# RENOVATION OF METAL CLADDING



## INTRODUCTION

### RENOVATING EXISTING CLADDING



**BACACIER** has collaborated with a renowned group with extensive experience, the **ROCKWOOL Group**, to offer you a **unique solution in the metal façade renovation market**.

The **ROCKZED® CLADDING** system has been designed for the renovation of metal façades on industrial, commercial and public buildings.

**ROCKZED® CLADDING** is a combination of a **Z Thermique®**, BACACIER structural breaker for thermal bridges and a **ROCKBARDAGE RENO** panel made by **ROCKWOOL**.

We are entering an era where many double-skin metal buildings constructed before 2000 are going to need extensive renovation work, for thermal performance as well as esthetic reasons.

The proposed system meets this need offering a cost-effective and rapid renovation solution. During the renovation work, activity inside the building can continue as normal as the existing façade is not dismantled.

The system brings considerable savings:

- no waste treatment costs for the existing façade
- reduction of energy costs thanks to the insulation slabs and **Z Thermique®**

Thermal renovation can also improve the appearance of a building as there is a huge choice of metal cladding.

This procedure is under ATEX (Technical Evaluation of Experimentation) no. 2233.

## BEFORE



## AFTER





## ROCKZED® CLADDING

### APPLICATION/DESTINATION

The **ROCKZED® CLADDING** is intended for the renovation of:

- vertical single-skin metal cladding with a minimum nominal thickness: of 0.63 mm
- double-skin cladding with no spacers, with a vertical outer skin with a minimum nominal thickness of 0.63 mm

The fitter is responsible for ensuring that the existing structure is suitable for the renovation process.

**BACACIER** and **ROCKWOOL** can provide technical assistance in the diagnostic phase, test phase and during the installation of the system.

### COMPOSITION OF THE SYSTEM

#### Z Thermique® 70

The **Z Thermique® 70** is a profile in the shape of a Z equipped with a thermal break area

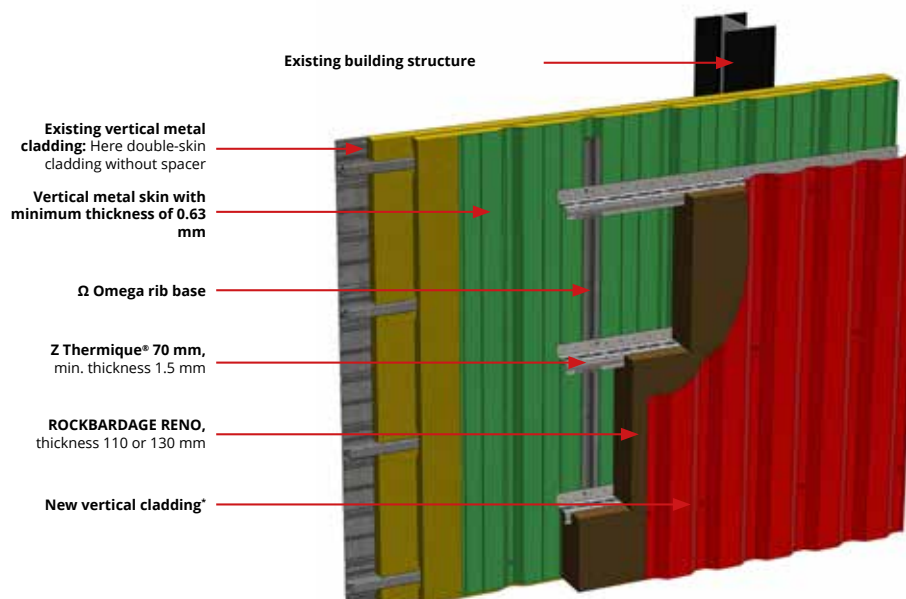


#### ROCKBARDAGE RENO

The **ROCKBARDAGE RENO** insulation panel is a bare mineral wool panel with a density of 50 kg/m³, machined to fit the geometry of the Z Thermiques®.

**Two panel sizes are available:**

- 1250 mm x 600 mm x 110 mm – spacer 40 mm
- 1250 mm x 600 mm x 130 mm – spacer 60 mm

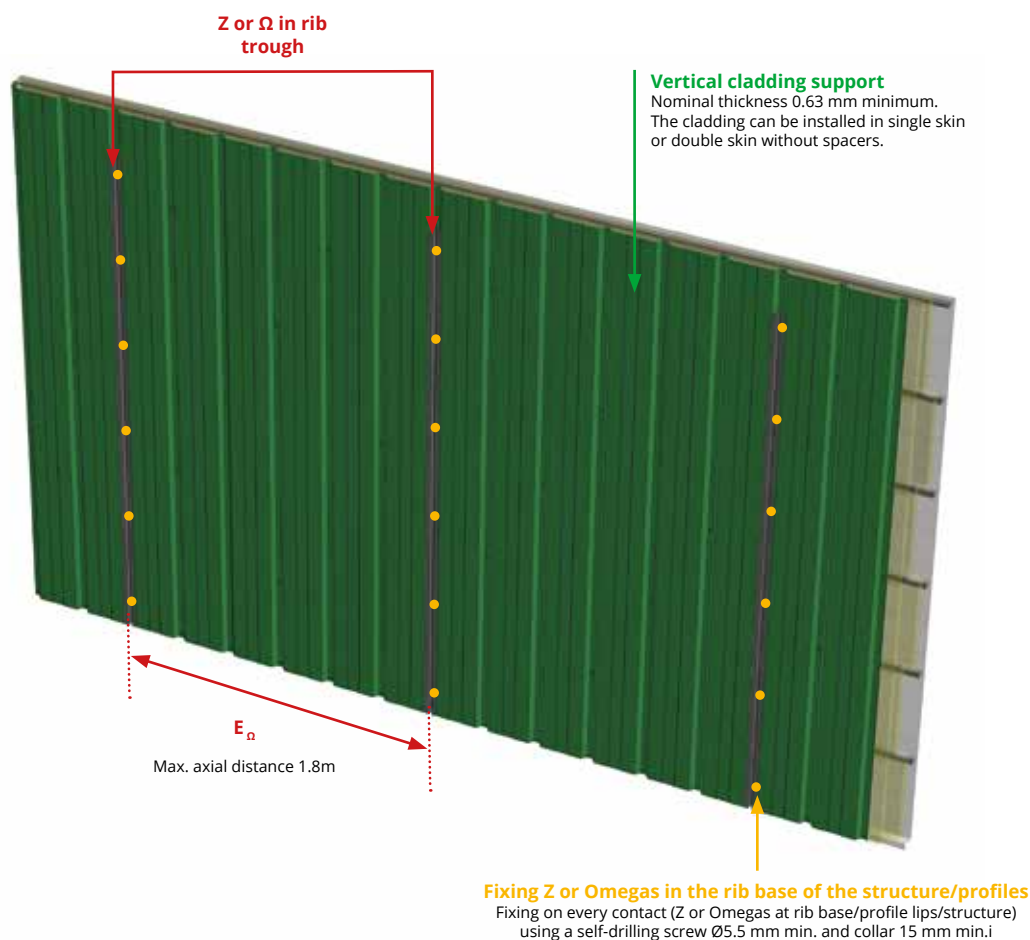


### ADVANTAGES

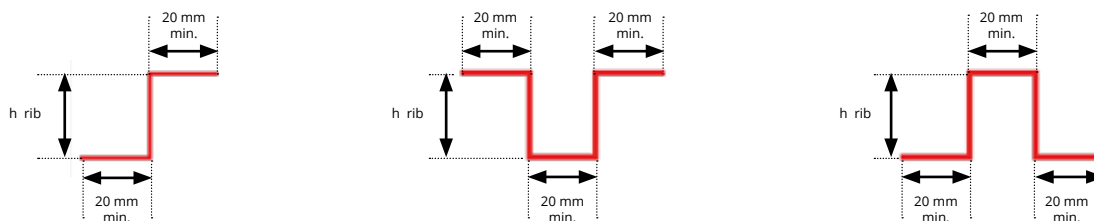
- Reduction of overall cost of work and energy bill
- Existing system does not to be dismantled = less interruption of activity inside the building
- No waste from the existing façade to be treated
- Thermal performance of the wall maximised thanks to the combined effect of the ROCKBARDAGE RÉNO spacer and the Z THERMIQUE®

\* The outer skin can be vertical or horizontal. In the case of a horizontal skin, the skin will be mounted on a series of omega or Z sub-frames to ensure a minimum air space of 20 mm between the cladding and the insulation. The minimum thickness of the horizontal cladding is 0.75 mm and 0.63 mm for the vertical cladding.

## Z OR OMEGA IN RIB BASE



### Z or omega in rib base



The nominal thickness of Z or  $\Omega$  is 1.5 mm.

**h rib** should be adjusted to the height of existing cladding rib to create a flushed support with the cladding to renovate. Make sure to adjust the dimensions to enable the insertion of the Zs or  $\Omega$ s in the rib base of the cladding to renovate.

### Positioning Z or omega in rib base

The Z or  $\Omega$  are fixed at a constant axial distance  **$E_{\Omega}$**

This axial distance is determined according to fixing capacities used and can go up to 1.8 m.

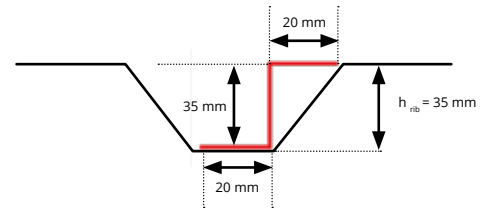
Consult ATEX 2233 for more information



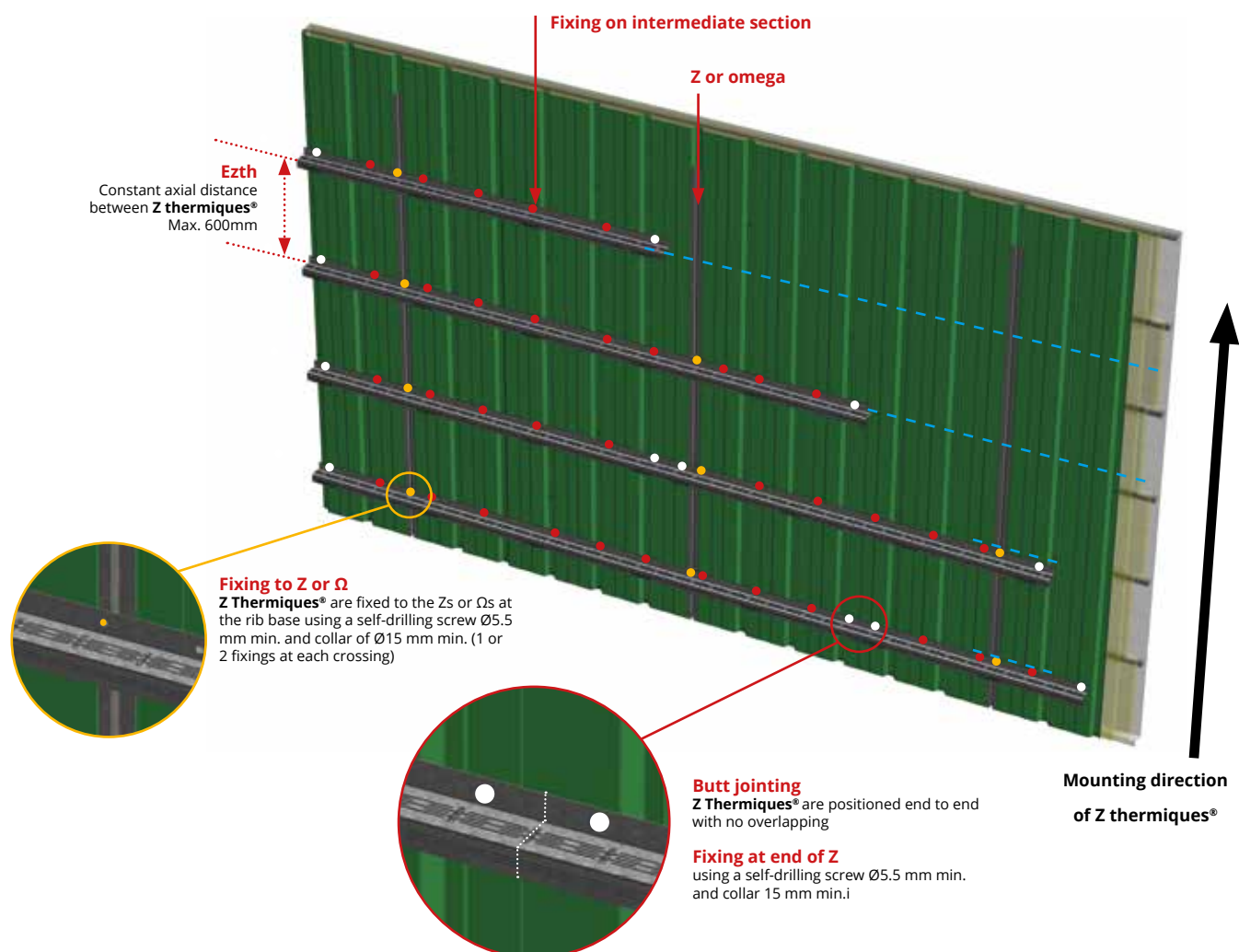
The Z or  $\Omega$  systems are fixed in the rib base using a self-drilling screw  $\varnothing 5.5$  mm and collar  $\varnothing 15$  mm

## Z OR OMEGA IN RIB BASE

For this renovation, the existing cladding is type **FACADEO 4.35**.  
The Z in the rib base positioned every 1.5m has the following dimensions:



## Z THERMIQUES®



### Positioning Z thermiques® / Axial distance

The axial distance **Ezth** of **Z thermiques®** is constant on all of the renovated façade. It can go up to 600 mm  
**The horizontality of the Z thermiques® should be checked throughout installation.**

### Fixing Z Thermique®

Fixing of the **Z thermiques®** in the intermediate section should be done according to the provisions in the table below:

Fixings	Density
Rivets 4.8 x 12mm, head 14mm	3 rivets per linear metre
Screw SFS INTEC SLG/2-5-S-S16-6.5x20 Screw ETANCO FASTOVIS TTCS 4T TH8 2C 6.5x20 G16	1 screw* per linear metre

\* Fixing with screws is not covered by ATEX 2233

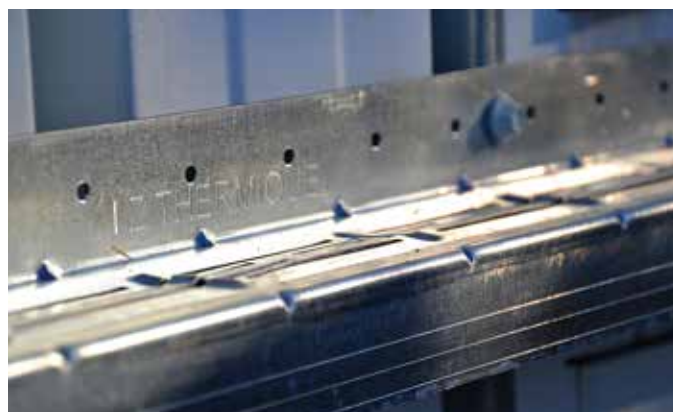




## Z THERMIQUES®

Z Thermiques® 70 are positioned every 600mm in the top of the building.

Z Thermiques® 70 are fixed using self-drilling screws to the elements in the rib base and riveted directly onto the cladding to be renovated.



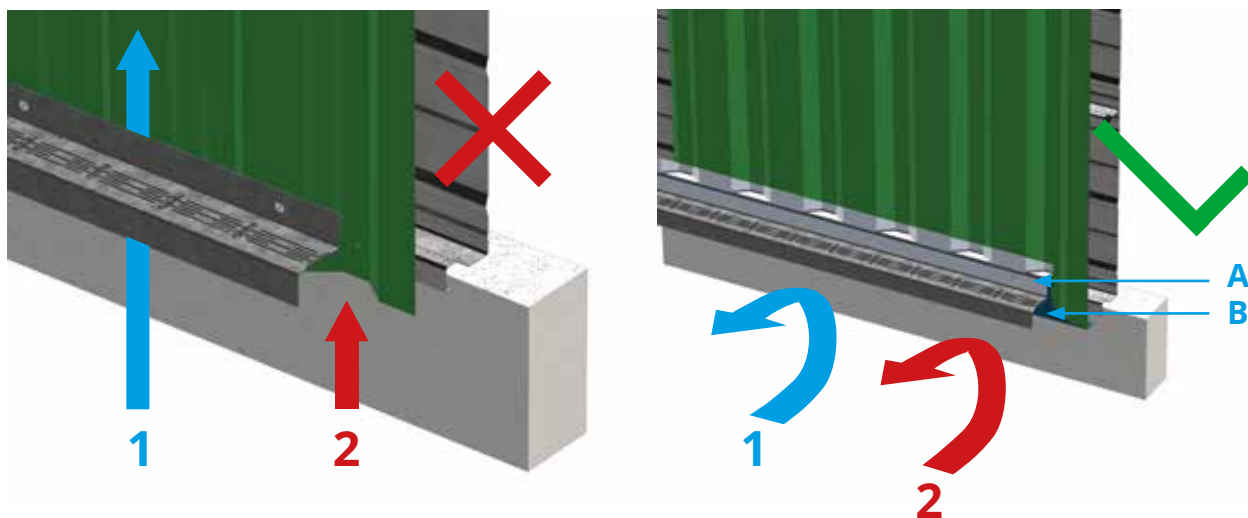


## AIR SPACES & INSULATION

### MANAGING AIR SPACES

The existing cladding creates different ventilated air spaces which adversely affect the thermal performances of the façade. In renovation projects, the air spaces need to be plugged at the top and bottom of the cladding.

- 1- The air space created by fixing horizontal **Z thermiques**® onto the existing profiled cladding are dealt with a foam filler, aluminium adhesive (A), or perforated micro-adhesive for example
- 2- In the case of double-skin renovation, the air spaces contained between the inner face of the metal cladding to be renovated are treated with a metal filler (B), aluminium adhesive or a steel strip for example



### INSULATION

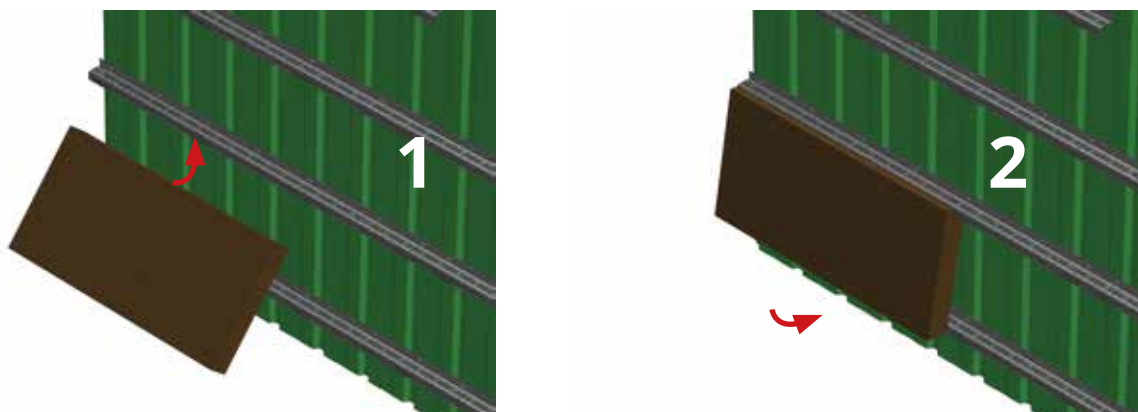
#### Insulation used

There are two types of insulation that can be used depending on your insulation requirements (please consult our thermal solution documentation)

- **ROCKBARDAGE RENO** 110 mm, spacer 40 mm
- **ROCKBARDAGE RENO** 130 mm, spacer 60 mm

This insulation is available in widths of up to 600 mm.

#### Installation of insulation (the panels are laid in staggered rows)



## AIR SPACES & INSULATION

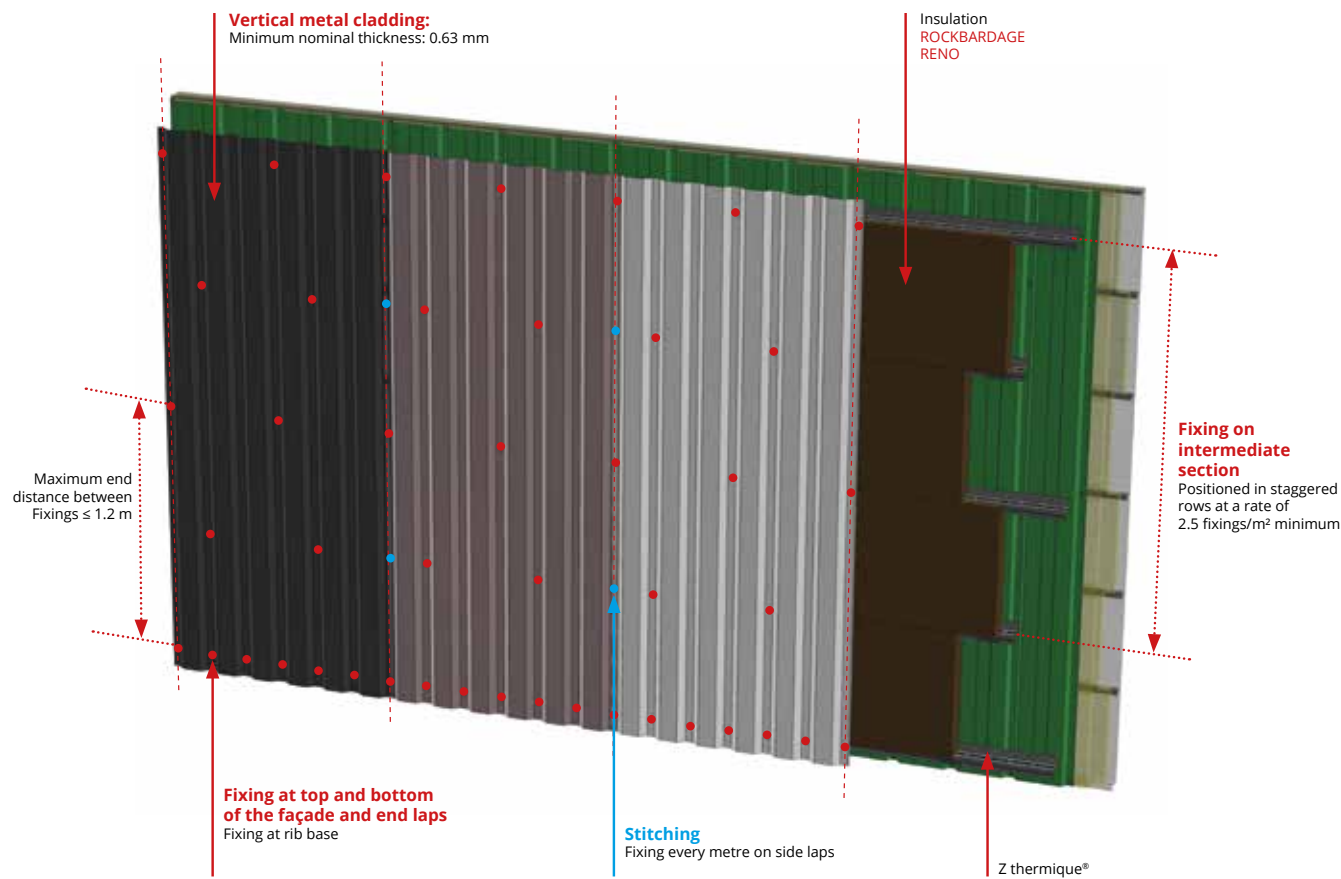
The air space at the foot of the cladding is filled in to ensure optimal thermal performance. The ROCKBARDAGE RENO insulation panels are inserted between the Z Thermiques® 70.



VERTICAL EXTERNAL SKIN

The cladding outer skins are sized according to the Professional Recommendations for Cladding in Protected Steel and in Stainless steel - July 2014

Installation is shown in the diagram below:



Fixings used in the ROCKZED® Cladding process:

Fixing of the outer skin is done using a self-drilling cladding screw with spacer:



Manufacturer	Spacer 40 mm	Spacer 60 mm
Etanco	Fastop 5.5 x 70	Fastop 5.5 x 90
SFS	SDRT2 5.5 x 64 SDRT2 5.5 x 64	SDRT2 5.5 x 84 SDRT3 5.5 x 84

For more information on installing the outer skin, please refer to the documentation page 302

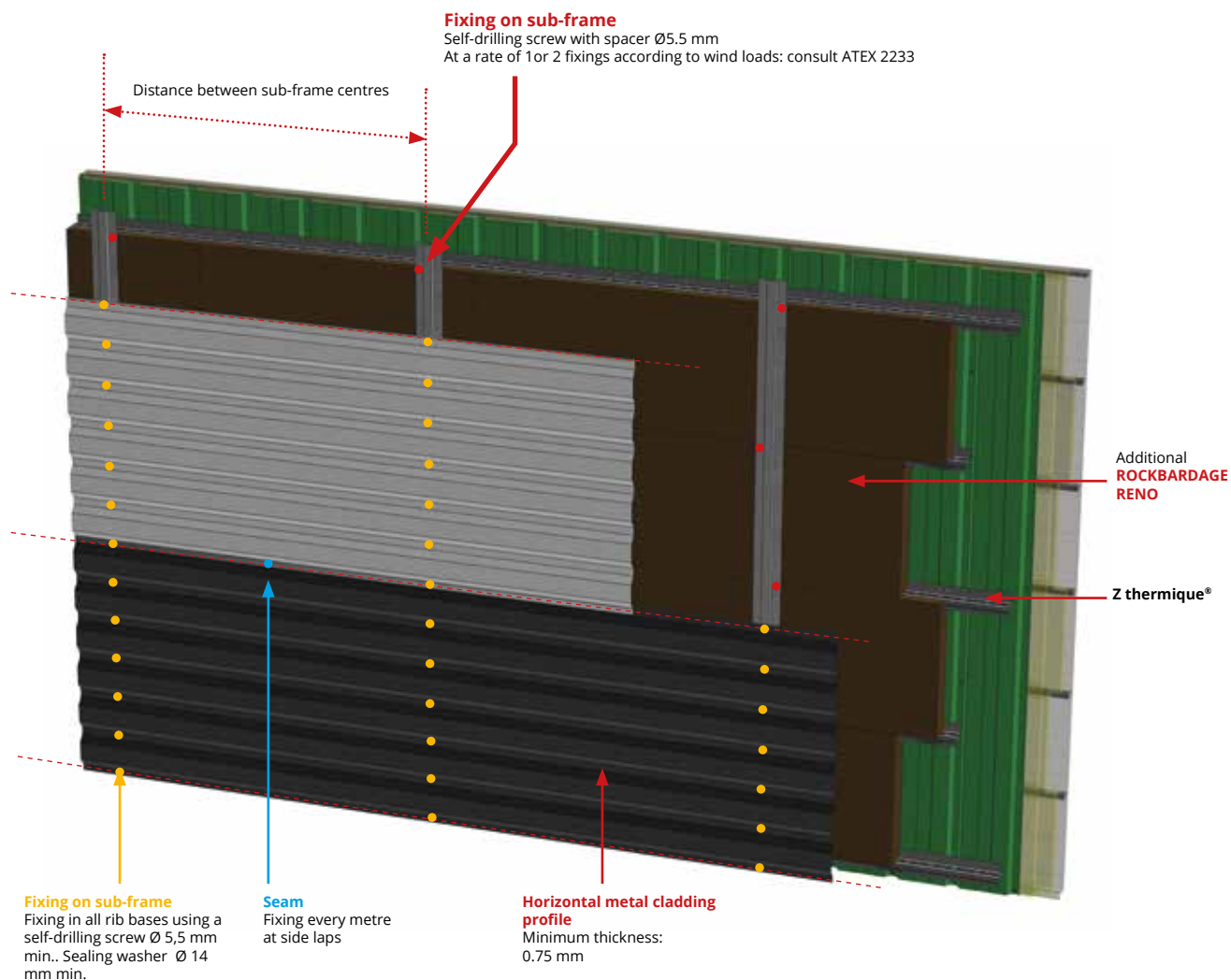


## HORIZONTAL EXTERNAL SKIN

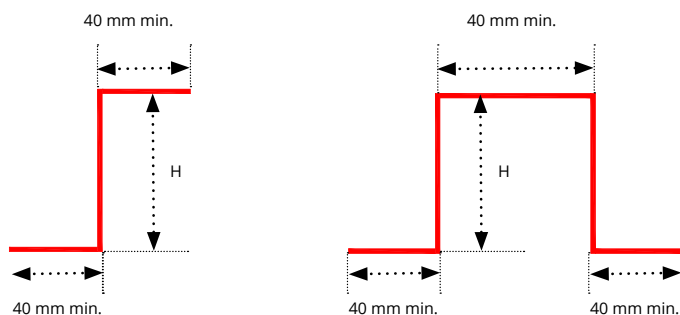
The cladding outer skins are sized according to the Professional Recommendations for Cladding in Protected Steel and Stainless Steel - July 2014

The **ROCKZED® CLADDING** system does not include the addition of extra insulation between frames and sub-frames  
An air space of at least 20 mm should be provided between the insulation and the horizontal metal cladding

**Installation is shown in the diagram below:**



### Sub-frames



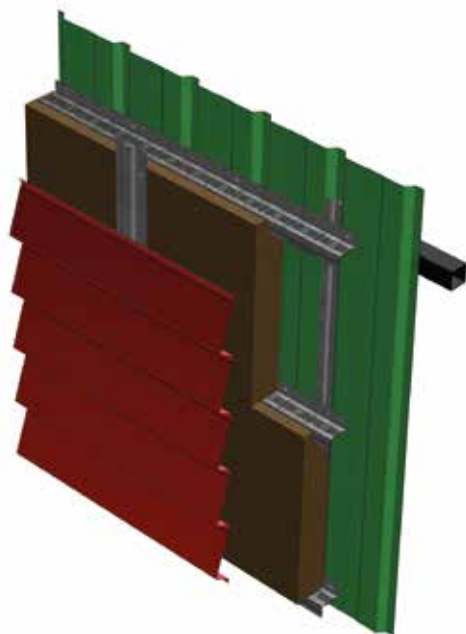
The nominal thickness of the spacers must be 1.5 mm minimum

H = 20 mm min.

## THERMAL PERFORMANCES

### RENOVATION OF SINGLE SKIN CLADDING

For installation of new horizontal cladding:



(a) Min. thickness subject to mechanical verification

(b) If installed horizontally, there should be a continuous and ventilated air space of 20 mm

Framework	Insulation	Up thermal performances
<b>Z Thermique® 70</b>	ROCKBARDAGE RENO 110mm	0,31W/m².K
	ROCKBARDAGE RENO 130mm	0.26W/m².K

EXISTING CLADDING

- Existing single skin cladding (min. thickness 0.63mm)

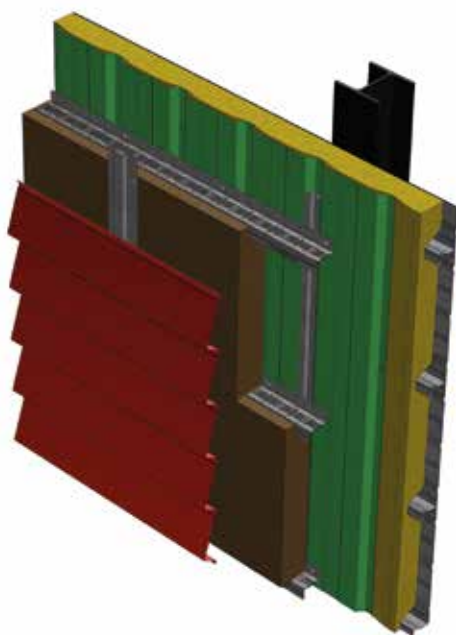
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RENOVATION

- Z or omega rib base thickness 1.5mm  
 - Z Thermique® 70  
 - ROCKBARDAGE RENO (thickness 110 mm/spacer 40 mm)  
 - Sub-framework Oméga 40/20/40/20/40, thickness 1.5 mm <sup>(a) (b)</sup>  
 - New horizontal metal cladding <sup>(a)</sup>

### RENOVATION OF DOUBLE SKIN CLADDING

For installation of new horizontal cladding:



(a) Subject to mechanical verification

(b) As old mineral wool is difficult to characterise, a degraded conductivity of 0.065 w/m.K is assumed instead of 0.040 W/m.K maximum

Framework	Insulation	Up thermal performances
<b>Z Thermique® 70</b>	ROCKBARDAGE RENO 110mm	0.26W/m².K
	ROCKBARDAGE RENO 130mm	0.22W/m².K

EXISTING CLADDING

**$U_p = 1.20 \text{ W/M}^2.\text{K}$**

- Tray 450.70  
 - Mineral wool insulation 70 mm <sup>(b)</sup>  
 - Metal cladding (min. thickness 0.63 mm)

+

RENOVATION

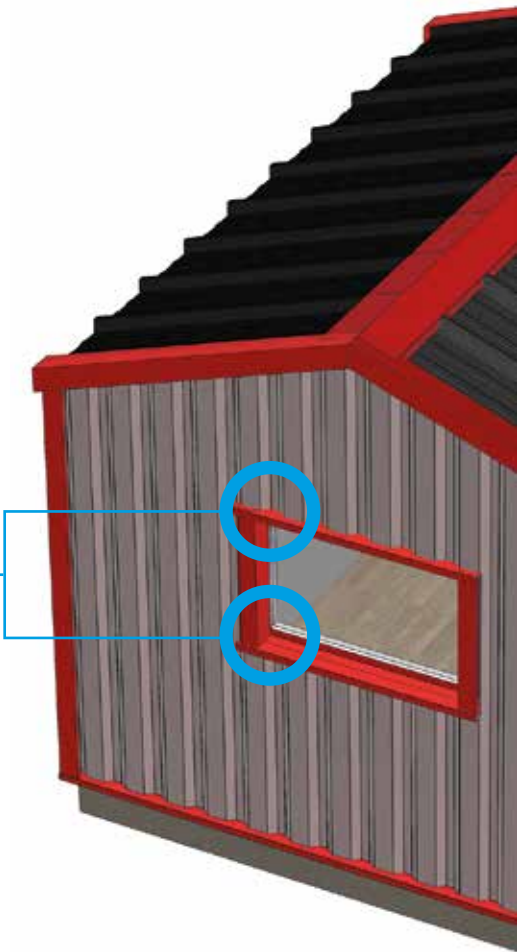
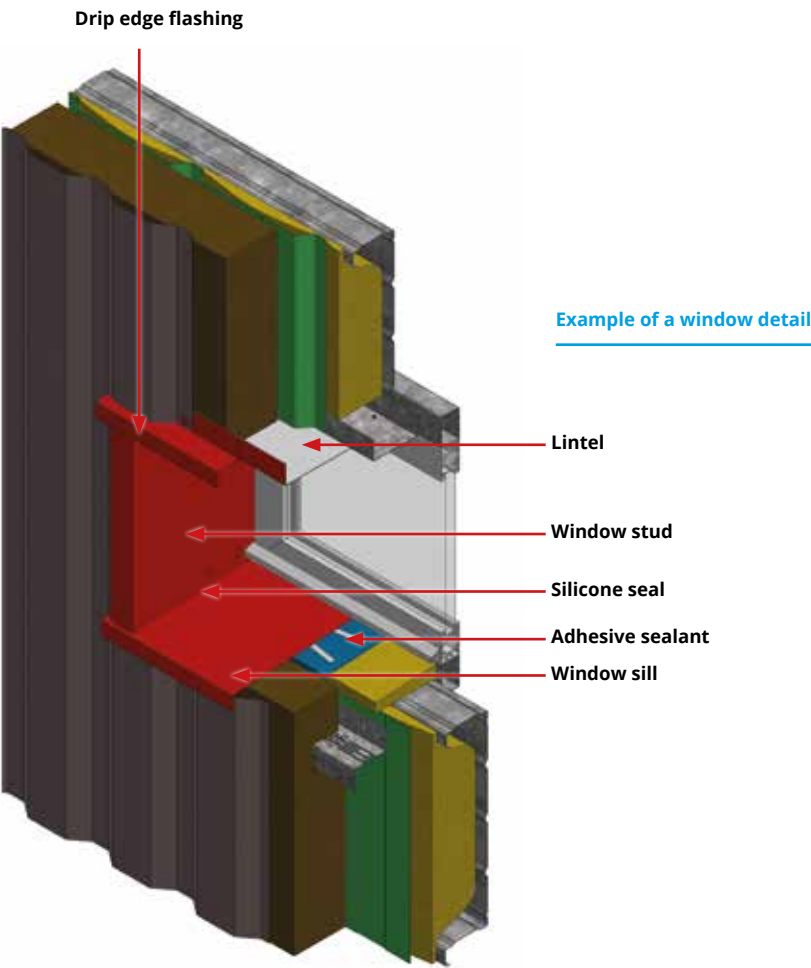
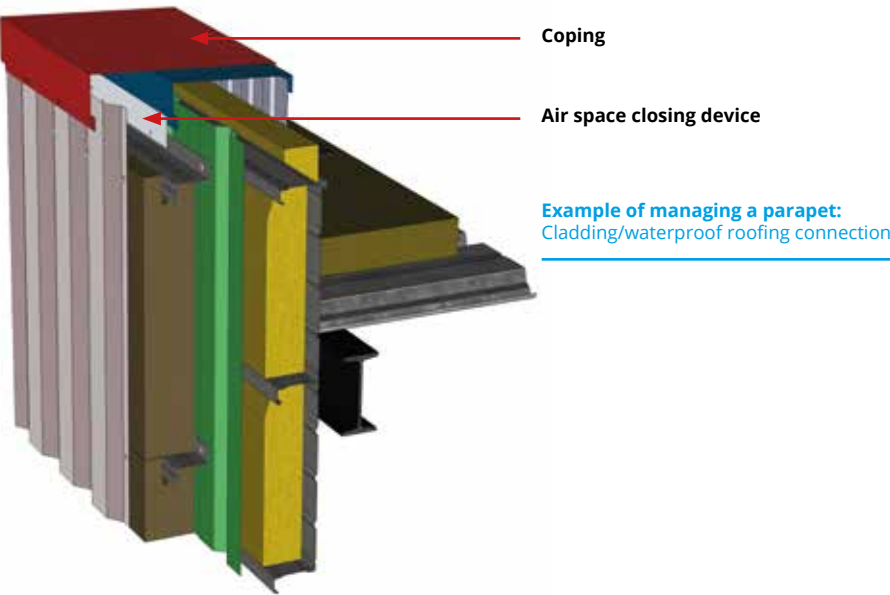
- Z or oméga bottom of rib thickness 1.5mm  
 - Z thermique® 70  
 - ROCKBARDAGE RENO (thickness 110 mm/spacer 40 mm)  
 - Omega sub-framework 40/20/40/20/40, 1.5 mm thick  
 - New horizontal metal cladding <sup>(a)</sup>



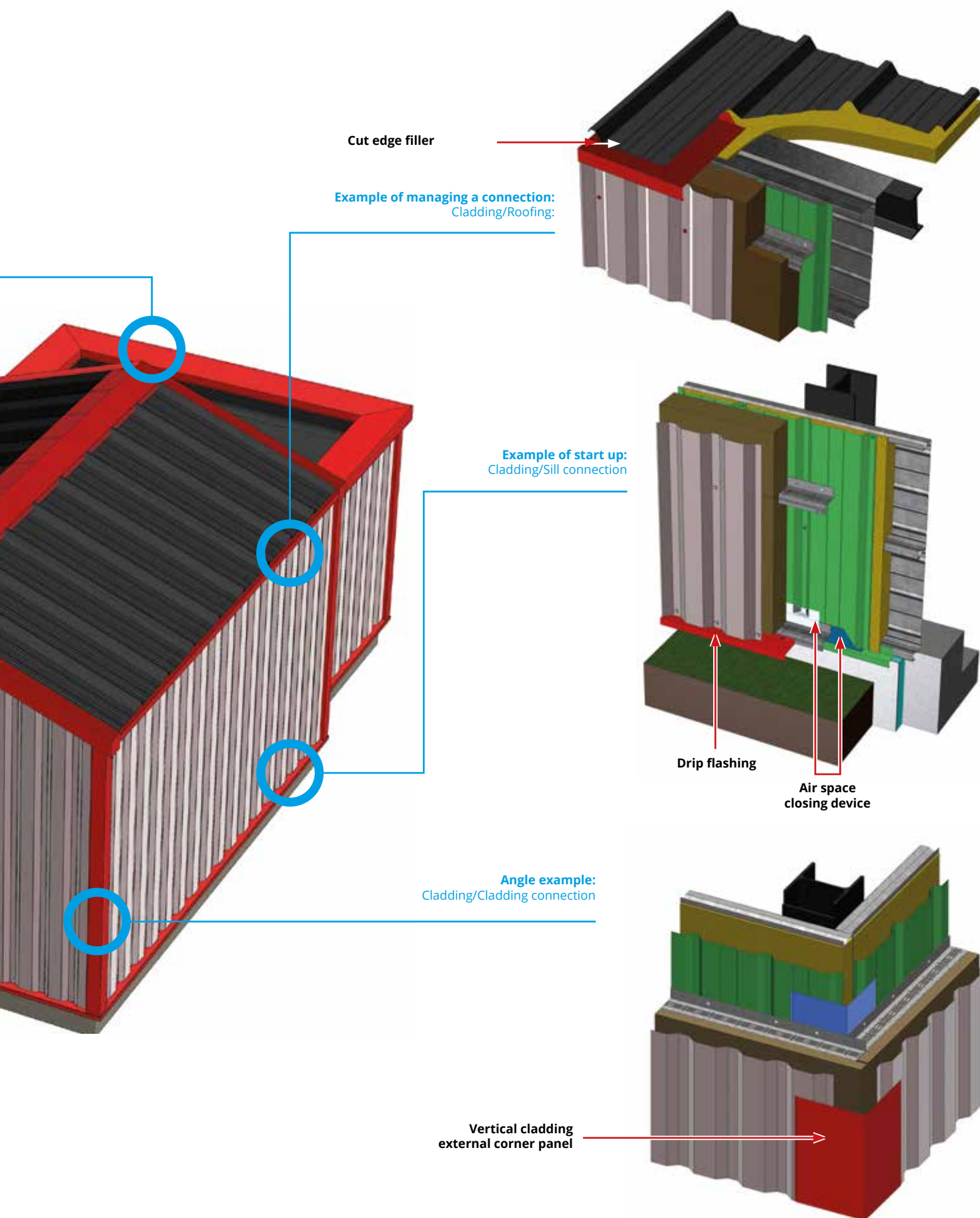


SPECIFIC POINTS

This part outlines the treated specific points in 3D  
*Note: This is just one example of a number of possibilities.*



## IRREGULAR POINTS

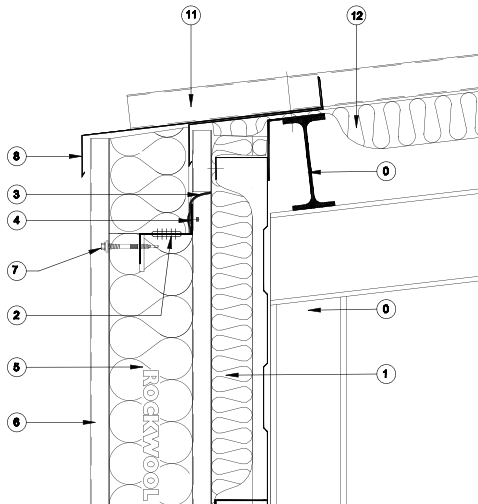


## INSULATION CONTINUITY

### MANAGING SPECIFIC POINTS

This part sets out the various preceding connections in 2D. **Note:** These are just a few examples - please consult ATEX A for more information

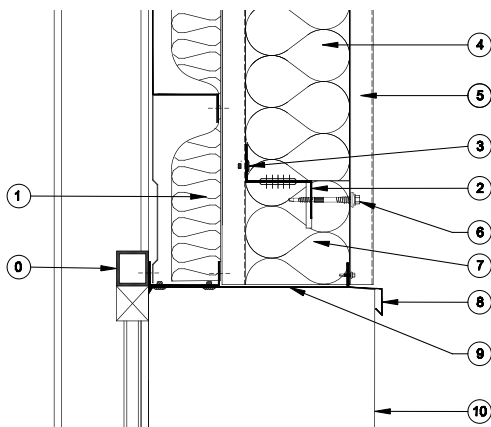
#### DOUBLE-SKIN CLADDING/DOUBLE-SKIN ROOFING CONNECTION EXAMPLE FITTING DETAIL OF A POLE PLATE



- 0 - Structure
- 1 - Existing cladding
- 2 - Z thermique® 70**
- 3 - Stainless steel rivet
- 4 - Air space 1 closing device
- 5 - ROCKBARDAGE RENO insulation**
- 6 - Facadéo, Sinus or Cascadéo profile**
- 7 - Spacer screw
- 8 - Cut edge filler**
- 11 - Existing roof profile
- 12 - Insulation clamped under existing roof profile

#### HEADER/CLADDING CONNECTION

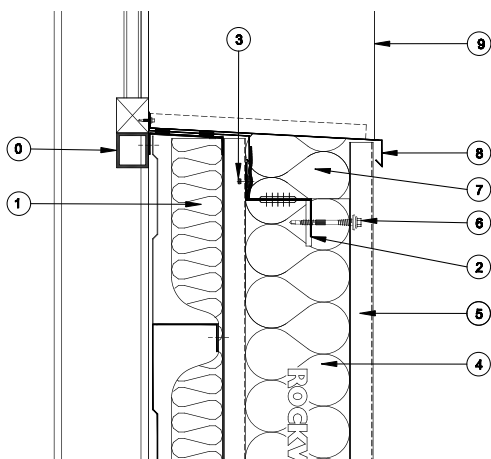
#### EXAMPLE OF A WINDOW DETAIL



- 0 - Structure
- 1 - Existing cladding
- 2 - Z thermique® 70**
- 3 - Stainless steel rivet
- 4 - ROCKBARDAGE RENO insulation**
- 5 - Facadéo, Sinus or Cascadéo profile**
- 6 - Spacer screw
- 7 - Cut ROCKBARDAGE RENO insulation**
- 8 - Drip flashing on sill**
- 9 - Painted underside**
- 10 - Window stud**

#### WINDOW SILL/CLADDING CONNECTION

#### EXAMPLE OF A WINDOW DETAIL



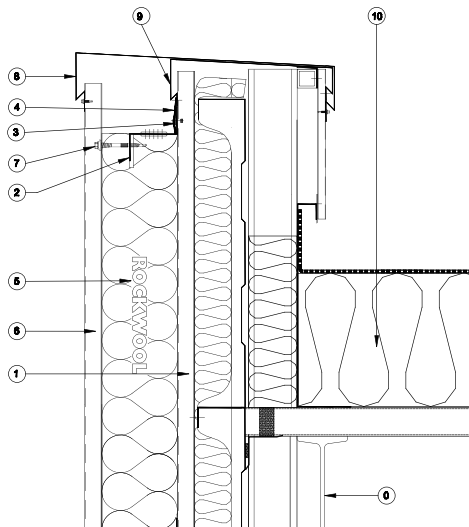
- 0 - Structure
- 1 - Existing cladding
- 2 - Z thermique® 70**
- 3 - Stainless steel rivet
- 4 - ROCKBARDAGE RENO insulation**
- 5 - Facadéo, Sinus or Cascadéo profile**
- 6 - Spacer screw
- 7 - Insulation unrolled under support
- 8 - Support drip edge**
- 9 - Window stud**



## INSULATION CONTINUITY

### MANAGING SPECIFIC POINTS

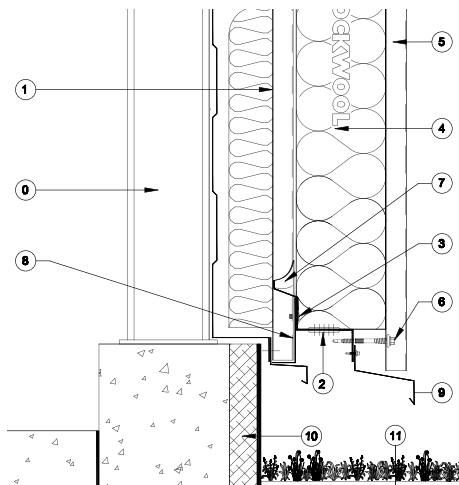
#### DOUBLE-SKIN CLADDING/SUPPORT CONNECTION



#### EXAMPLE OF MANAGING A PARAPET

- 0 - Structure
- 1 - Existing cladding
- 2 - Z thermique® 70**
- 3 - Stainless steel rivet
- 4 - Air space closing device
- 5 - ROCKBARDAGE RENO insulation**
- 6 - Facadéo, Sinus or Cascadéo profile**
- 7 - Spacer screw
- 8 - Existing parapet coping
- 9 - Screwed parapet coping**
- 10 - Existing waterproof roofing

#### SILL/DOUBLE-SKIN CLADDING CONNECTION

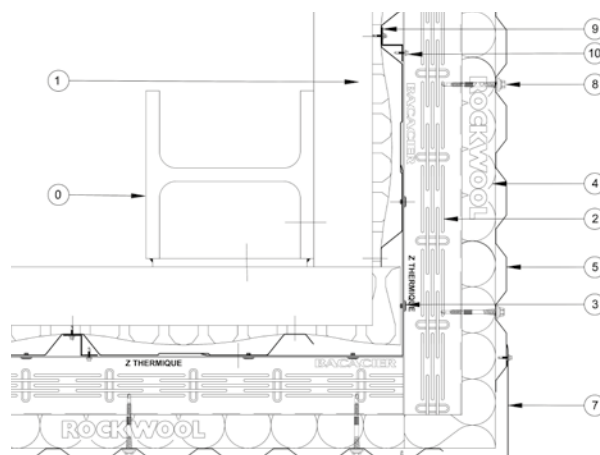


#### EXAMPLE OF START UP:

- 0 - Structure of the building
- 1 - Existing cladding
- 2 - Z thermique® 70**
- 3 - Stainless steel rivet
- 4 - ROCKBARDAGE RENO insulation**
- 5 - Facadéo, Sinus or Cascadéo profile**
- 6 - Spacer screw
- 7 - Air space 1 closing device**
- 8 - Air space 2 closing device**
- 9 - Drip flashing**
- 10 - Sill insulation
- 11 - Floor

#### CONNECTION DOUBLE-SKIN CLADDING/DOUBLE-SKIN CLADDING

#### EXAMPLE OF EXTERNAL CORNER PANEL



- 0 - Structure of the building
- 1 - Existing cladding
- 2 - Z thermique® 70**
- 3 - Stainless steel rivet
- 4 - ROCKBARDAGE RENO insulation**
- 5 - Facadéo, Sinus or Cascadéo profile**
- 7 - Vertical cladding external corner panel**
- 8 - Spacer screw
- 9 - Z or omega in rib base**
- 10 - fixing the support in rib base**

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