

Double skin façade, semi-unitized system for  
improving architectural flexibility

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# BIFF FACADE CONSULTANT

## Swiss global specialist for façade envelopes

### New construction & refurbishment complex projects.



- **TECHNICAL ANALYSIS:**
- Engineering and technical design development for bespoke façade projects.



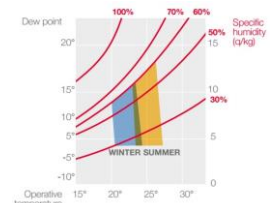
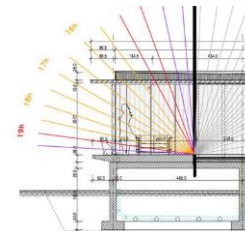
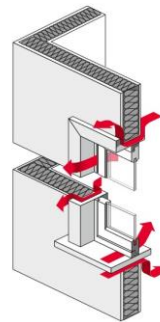
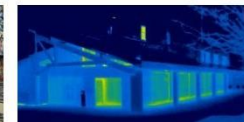
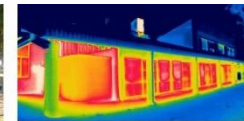
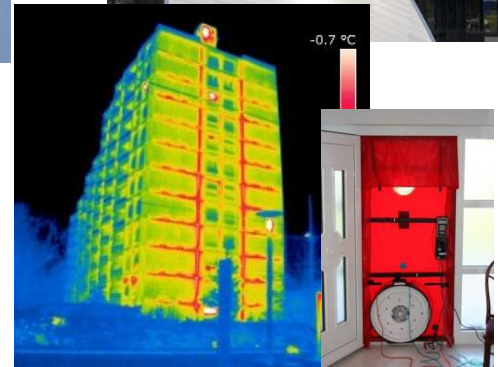
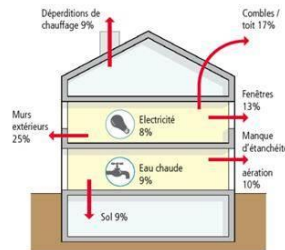
- **BUILDING PHYSICS:**
- Studies and analyses of existing buildings achieving tailored sanitation solutions



- **WORKS SUPERVISION:**
- Project management and prototype supervision with special attention to programme and cost



- **EXPERTISE**
- Determinate faults, seek out their cause, suggest remedies and budgeting cost repair. Address responsibility.



# Double skin thin façade

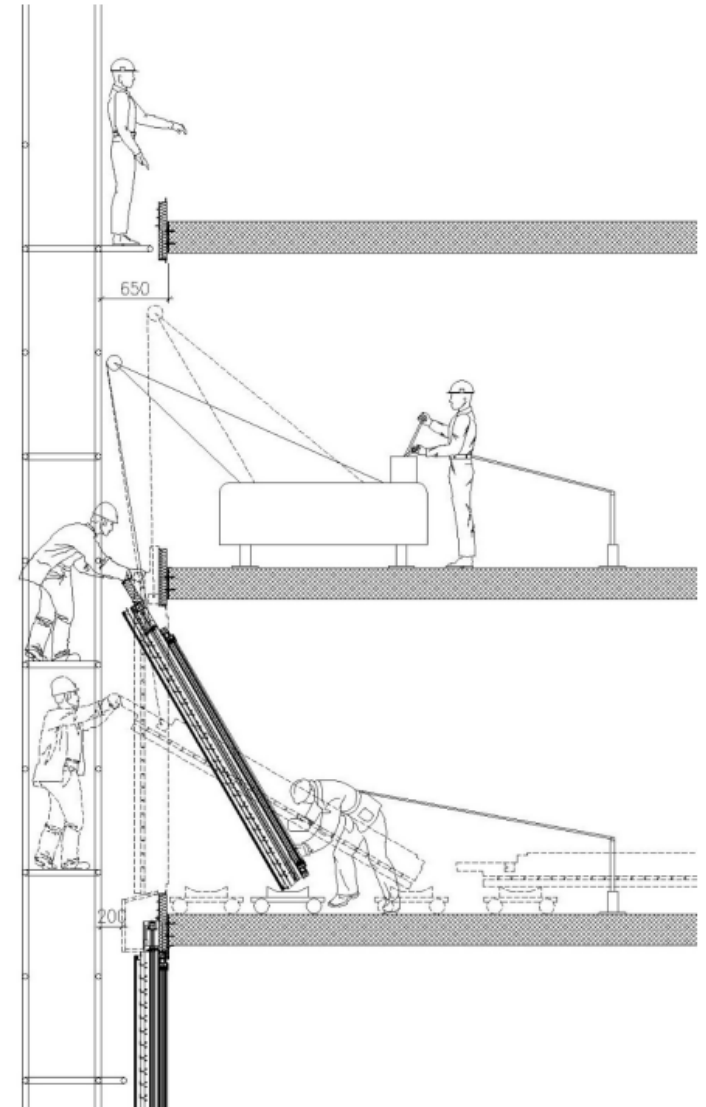
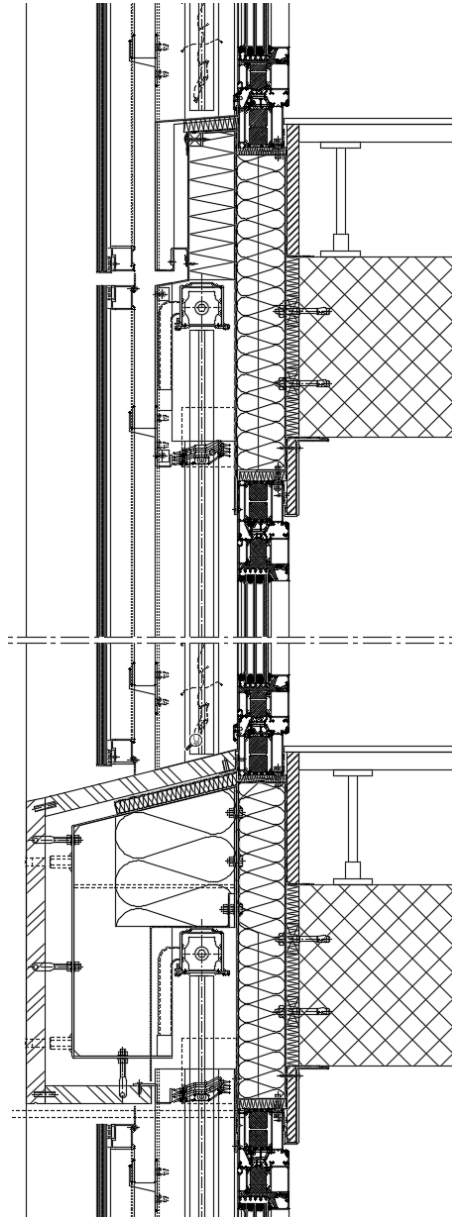
- **Technical issues**

- Glass aesthetic continuity every two levels
- Mineral façade discontinuity
- OPAM: Fire and blast resistant façade
- High rise building with scaffoldings
- Workshop assembly for improving final quality and installation programme
- Acoustic performance
- Avoid intermediate climatic cavity overheating
- Maintenance access
- Flexibility for internal renting and layout options
- Fire resistance and floor connections and double skin façade



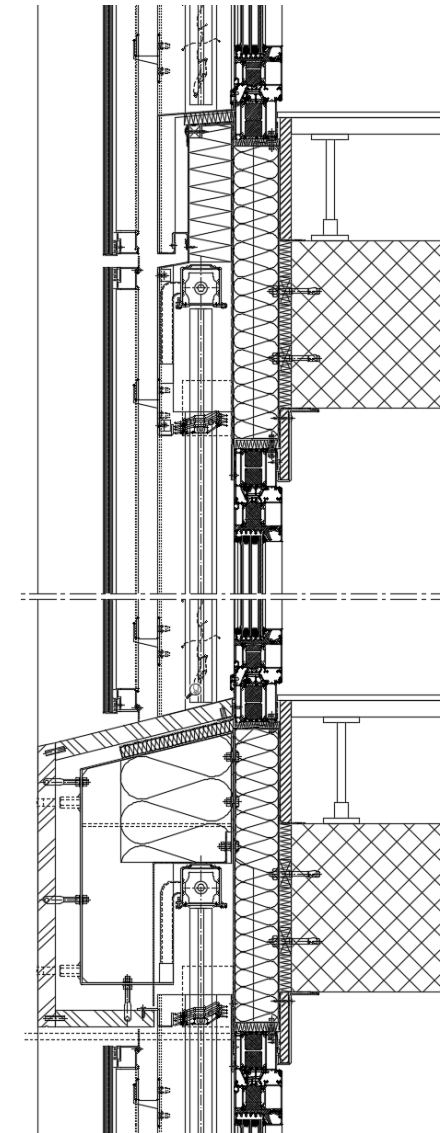
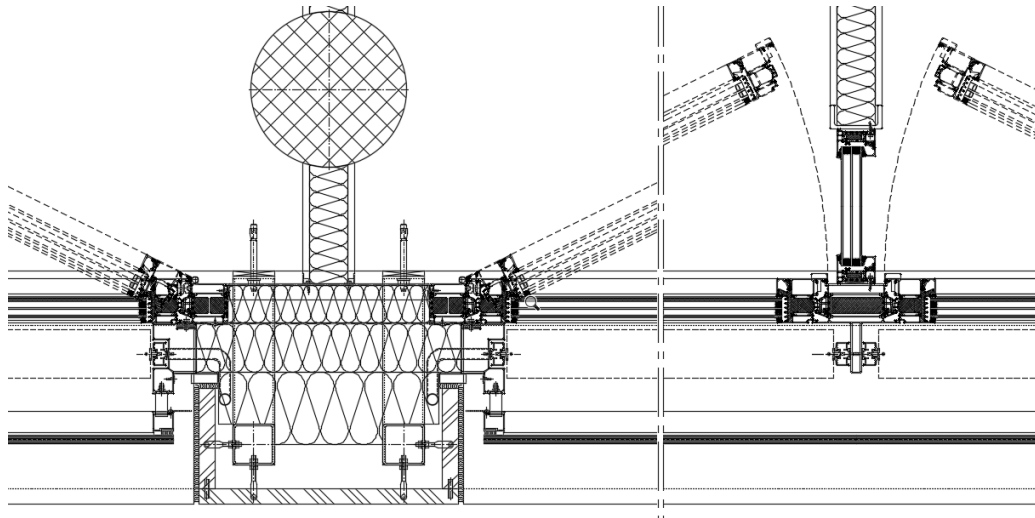
# Double skin thin façade Design & Concept

- High pre-assembly level
- Method statement, scaffoldings



# Double skin thin façade Design & Concept

- Maintenance: Cleaning and internal maintenance (Store, LED, etc) from the inside
- Glass replacement
- Fire resistant
- Acoustic performance



# Double skin thin façade OPAM – Fire & Bomb blast resistance

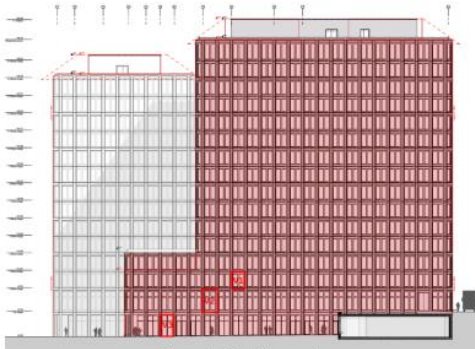
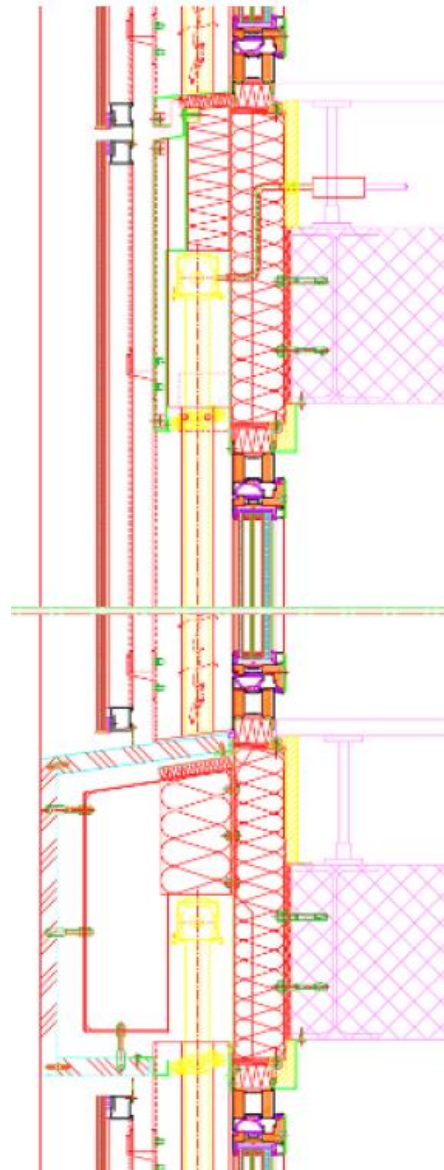
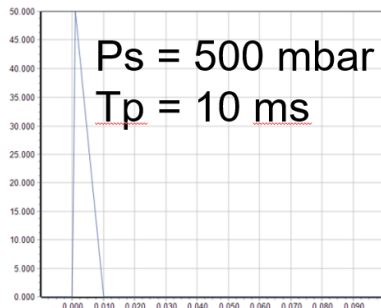


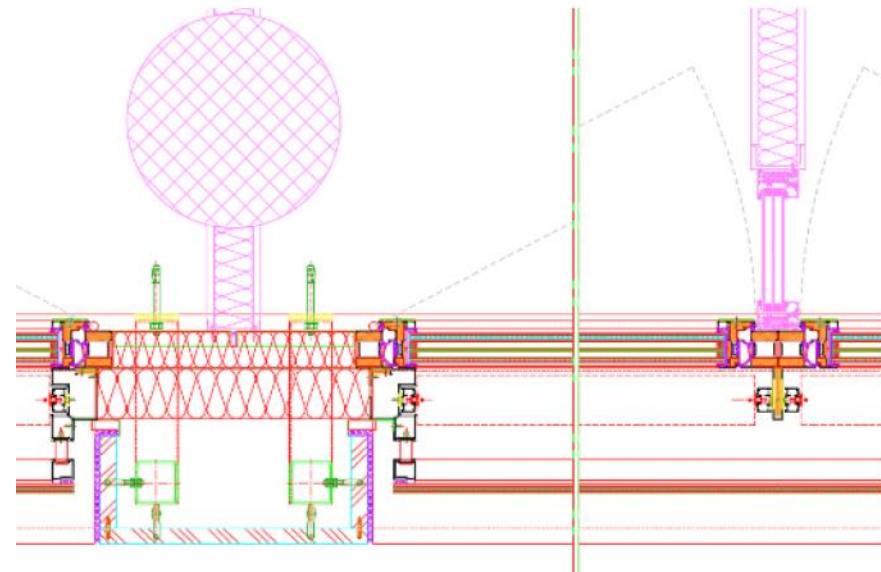
Figure 6 : Élévation ouest



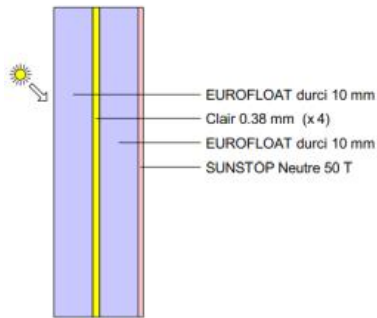
Figure 7 : Élévation nord



- Close to shock tube test ISO 16934:2007 classification EX30(X)
- New system development but same aesthetics
- Double skin façade, difficulty to calculate response of shock pressure in the middle air ventilated cavity.
- Work with different hypothesis
- $P_s$  on the inner skin is reduced to 25% of external pressure with Ideal gas hypothesis

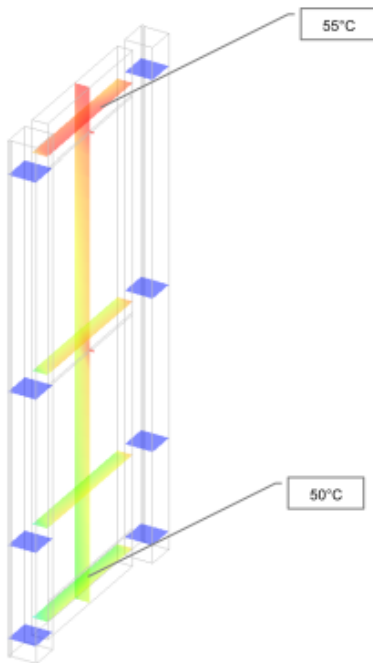


# Double skin thin façade Ventilation, colors and temperatures

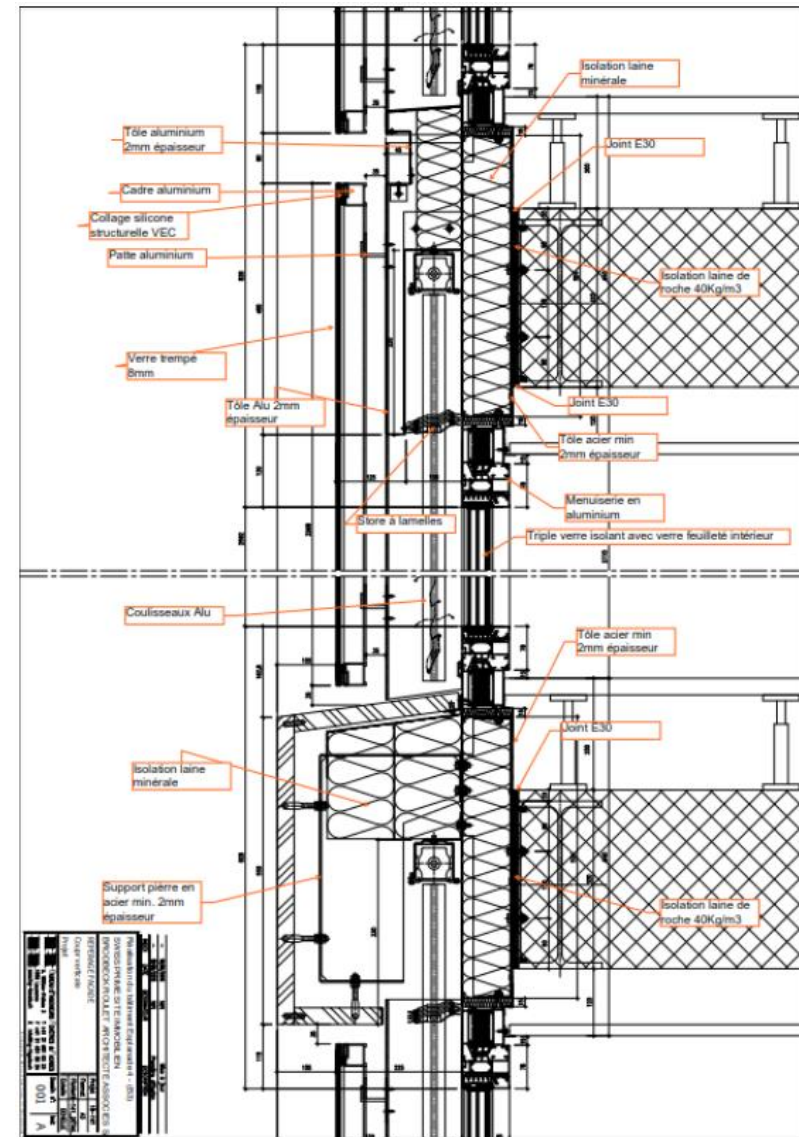


## Valeurs caractéristiques du vitrage:

Coefficient de transmission thermique Ug:	5.2 W/m <sup>2</sup> K
Transmission totale de l'énergie solaire g:	47 %
Transmission lumineuse:	48 %
Réflexion lumineuse (extérieure):	11 %
Réflexion lumineuse (intérieure):	15 %
Absorption lumineuse:	40 %
Transmission directe de l'énergie solaire:	34 %
Réflexion directe de l'énergie solaire (extérieure):	8 %
Absorption directe de l'énergie solaire:	58 %
Réémission thermique vers l'intérieur:	14 %
Transmission UV:	0 %
Réflexion UV:	5 %
Absorption UV:	95 %
Indice général de rendu des couleurs (trans.):	94
Sélectivité (transmission lumineuse / g):	1.0
Coefficient d'ombrage (g / 0.87):	54 %
Coefficient d'ombrage (g / 0.8):	59 %



- Ventilation, 35mm perimetral opened joints
- External skin glass properties, G value – Delta 15°
- Colour of blinds and system– Delta 10°
- Increased temperatures on the top area



# Double skin thin façade

## Different projects

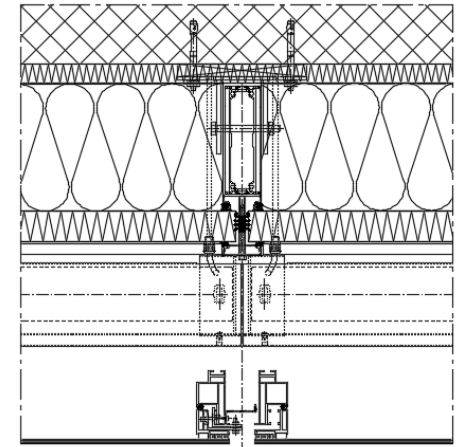
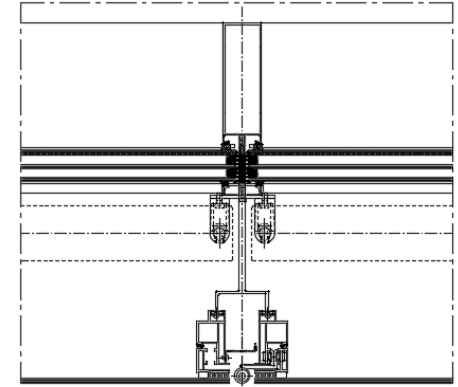
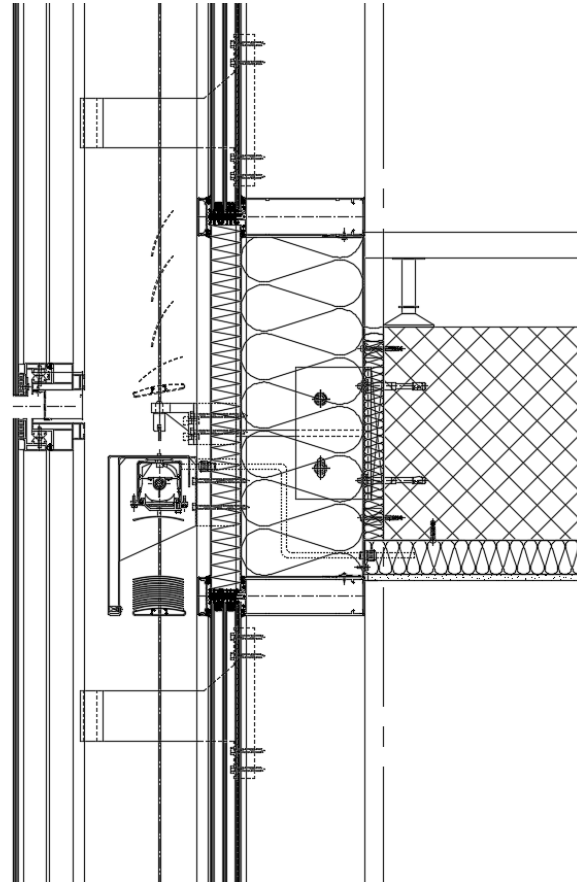
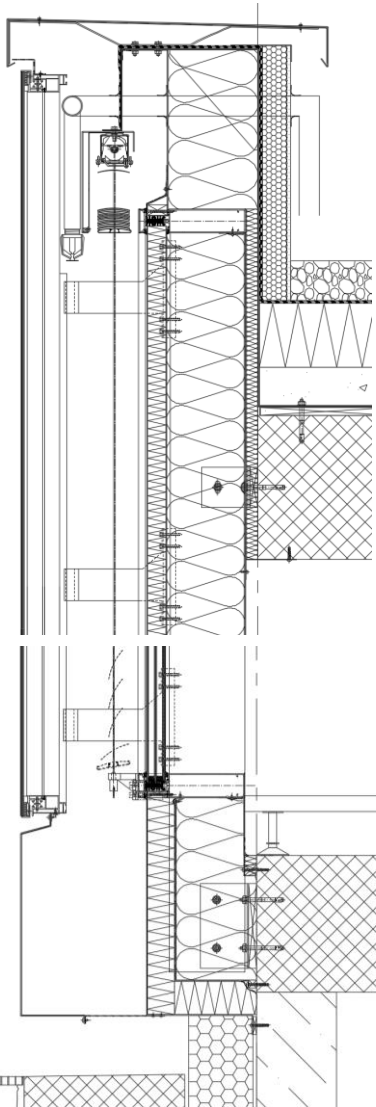


- **Technical issues**

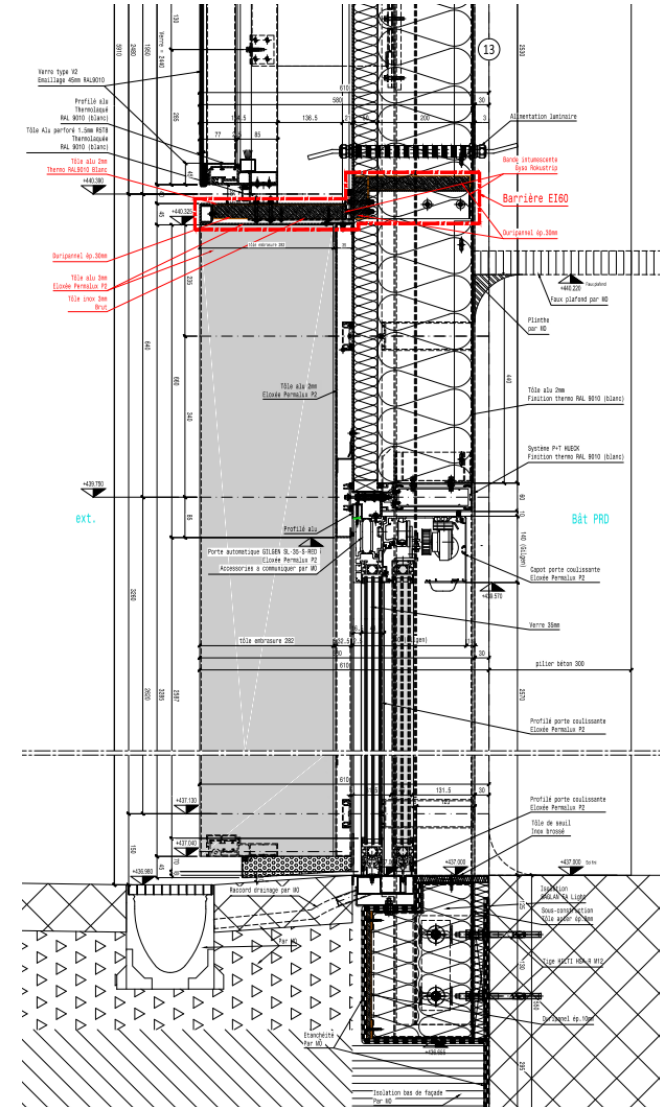
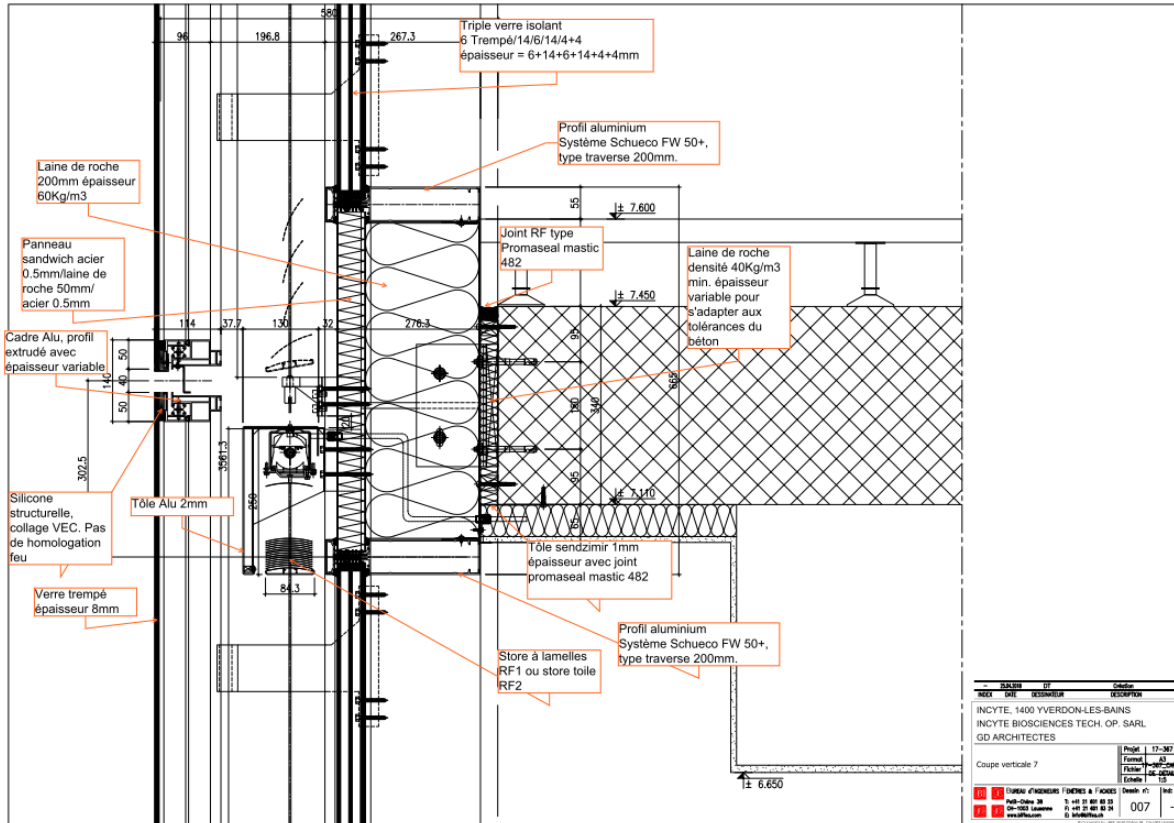
- Glass aesthetic
- Presence of window blinds event for opaque areas
- Chemical industry, maintenance and glass replacement possibilities from the outside
- Fire resistance and floor connections and double skin curtain wall façade
- Necessity of sprinklers and mixed fire resistant solutions for fire issues
- Several fire security escape zones to be protected
- Avoid intermediate climatic cavity overheating



# Double skin thin façade



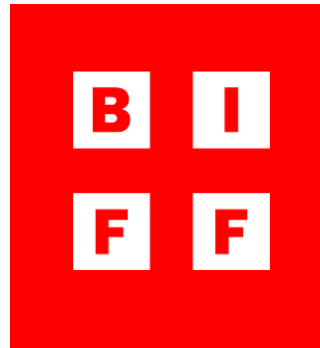
# Double skin thin façade Fire & Thermal performance



# Double skin thin façade

## Fire & Thermal performance

THANK YOU - QUESTIONS?



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