



SIMONIN



MILANO 2015
NUTRIRE IL PIANETA
ENERGIA PER LA VITA



www.simonin.com

- **Company presentation**
- Long span structures
- Mid rise buildings
- Other types of timber constructions
- Conclusion

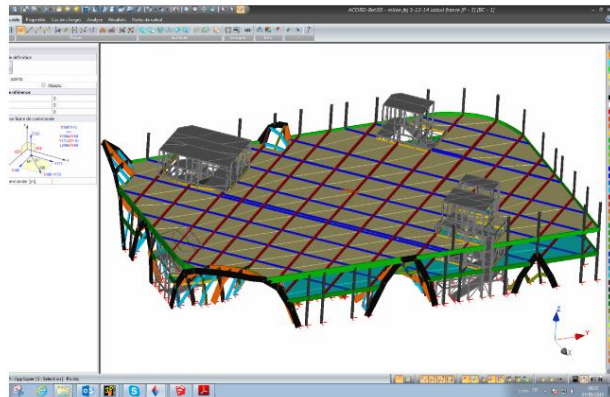
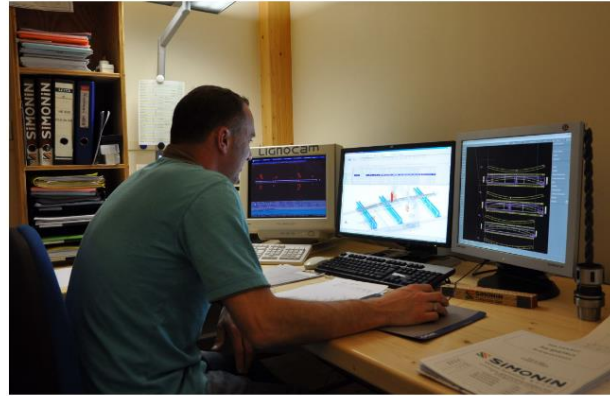


Location



1967	Creation of the company by 4 Simonin brothers
2000	1 st Résix glued in rod connection
2009	4 Brothers retire, company taken over by employees and family
2023	130 employees, 4 modern CNC machines, 20 000m2 of buildings

From design to production

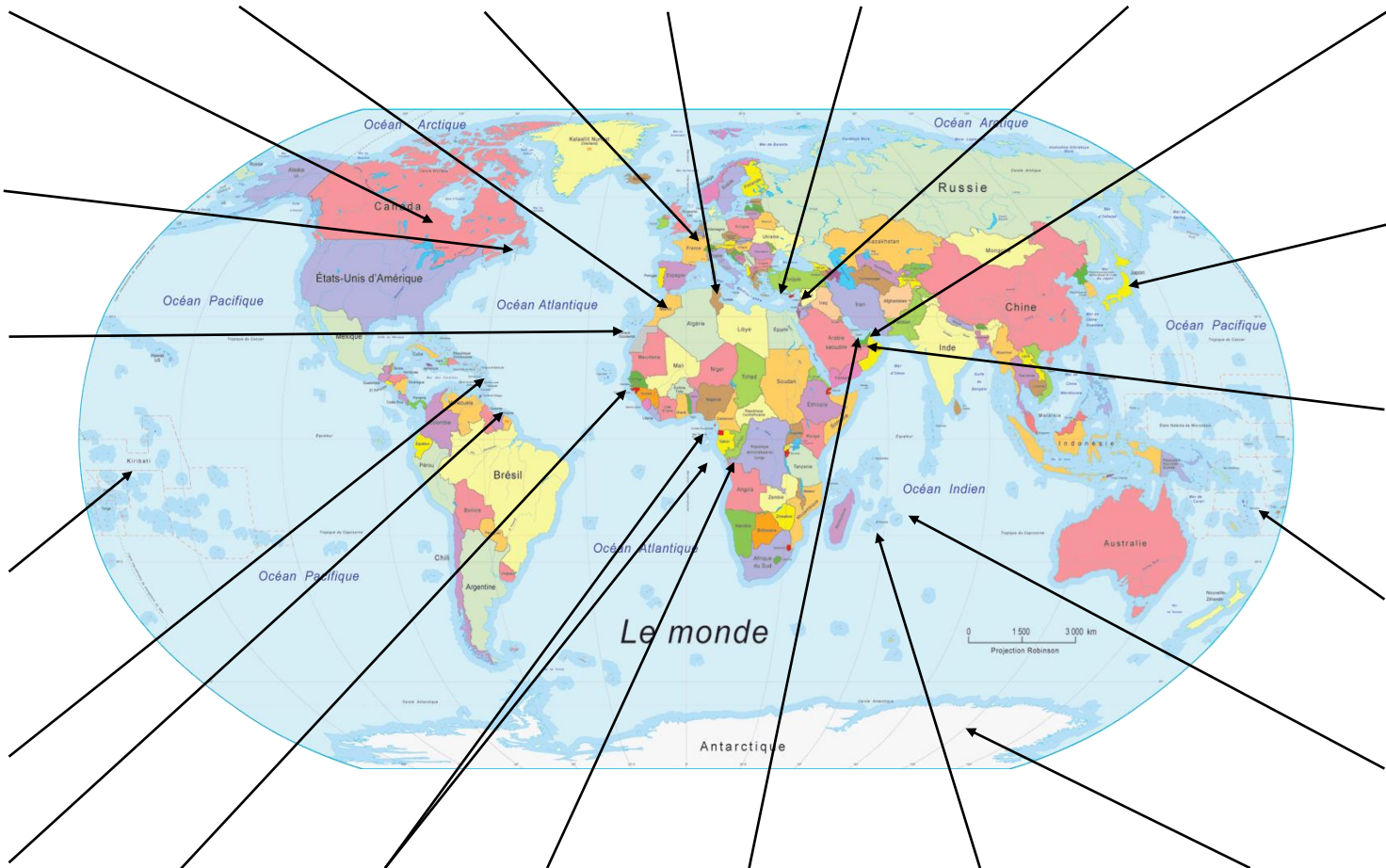


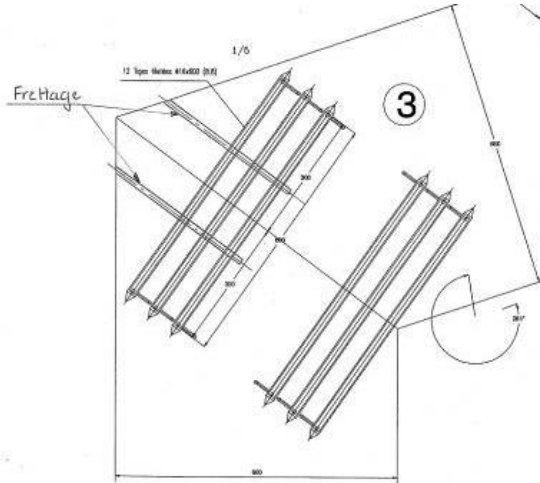
Manufacture in controlled workshop
Unique Swiss CNC milling machines

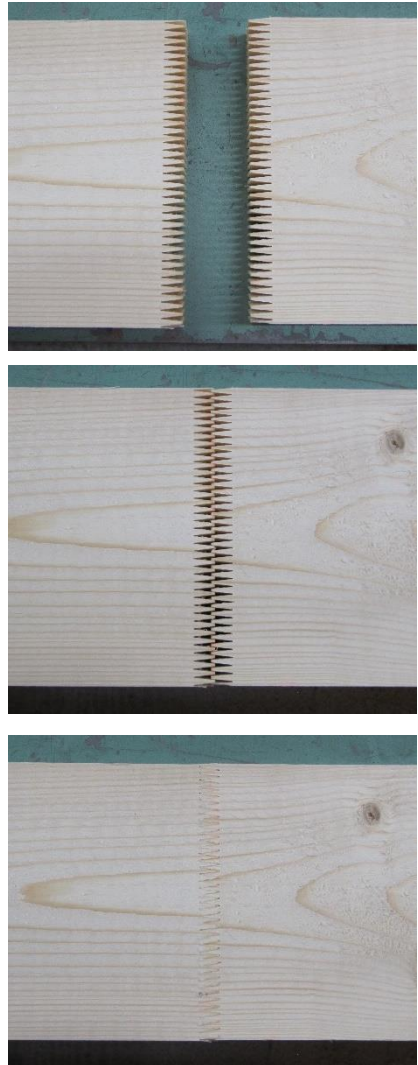


Logistics
Assistance for erection

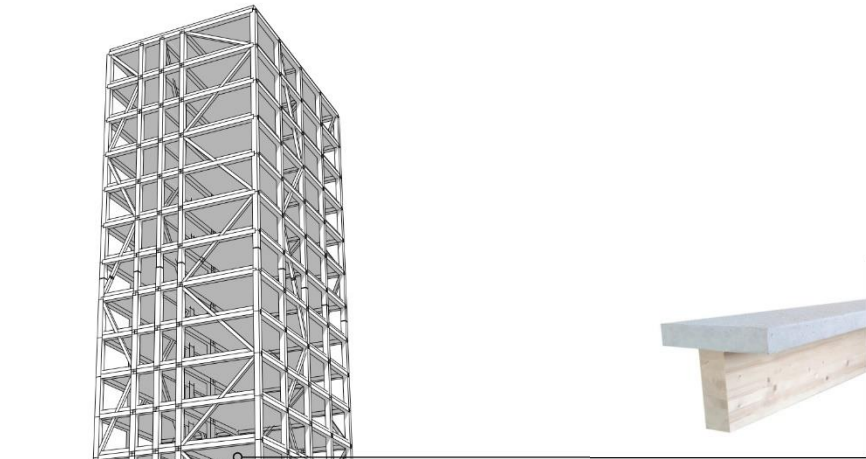






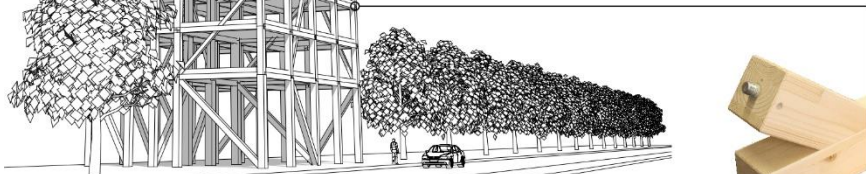






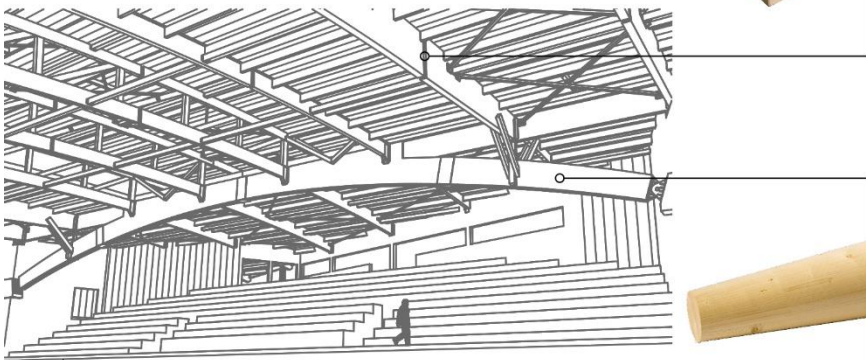
RBB
Résine Bois Béton

Haute résistance mécanique
Grandes portées
Acoustique améliorée
Résistance au feu



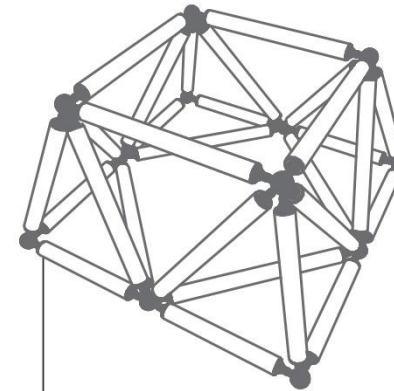
RÉSIX

Assemblage haute performance
Résistance mécanique exceptionnelle
Diffusion de l'effort uniformément répartie
Absence totale de jeu dans les assemblages
Adapté au transport (joint de continuité)

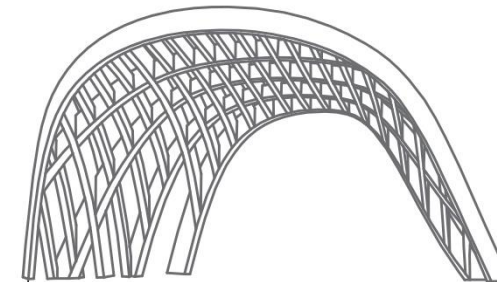


LAMELLÉ

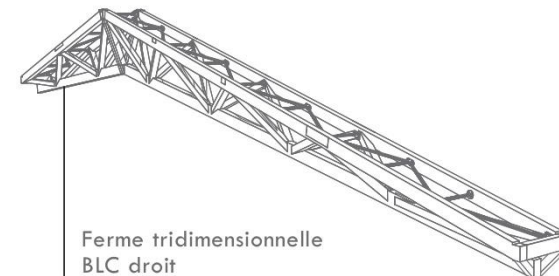
Ingénierie intégrée : calculs, dessins, programmation CN
Essences : résineux (GL24, GL28, GL32) et feuillus
Taillé sur mesure, prêt à poser
Formes spéciales : tournage, double courbure



Structure tridimensionnelle
BLC Cylindrique



Portique
BLC double courbure



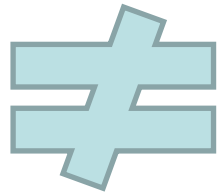
Ferme tridimensionnelle
BLC droit

Gymnase Evariste de Parry, Saint Paul, La Réunion, 2010
Arch. PIHOUEE





**Fire
resistance
REI**



**Spread
of flame
BS EN
13-501-1**

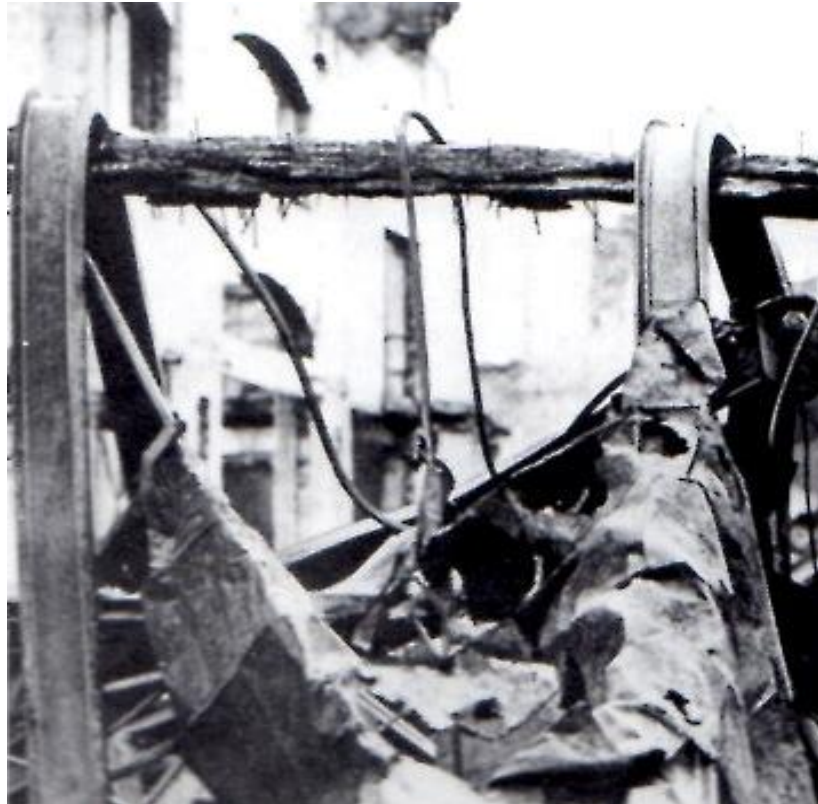




Fire resistance In minutes or hours



Timber



Steel on a timber beam

Spread of flame

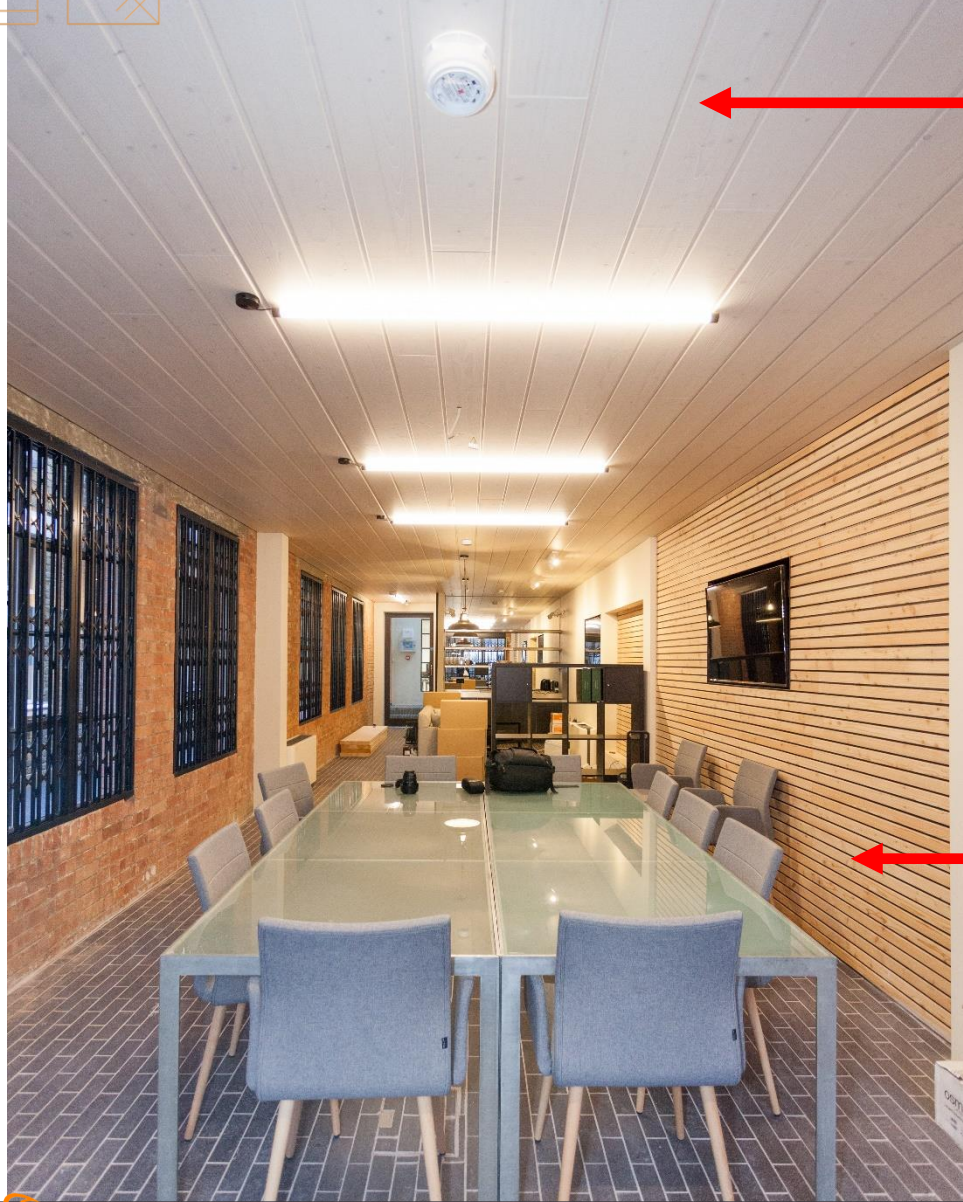
BS EN 13-501-1

Table 2 shows the approximate equivalence of the classifications.

<i>National class</i>	<i>European class</i>
Non combustible	A1
Limited combustibility	A2
0	B
1 and 2	C
3	D
4	E
Unclassified	F

Table 2: Classifications for surface resistance to spread of flame





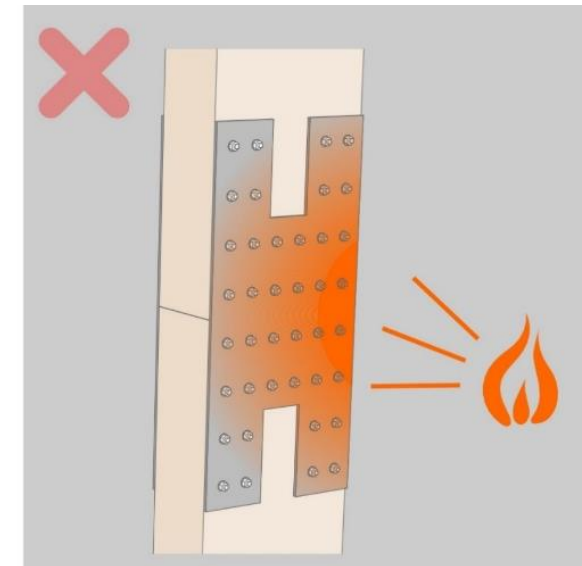
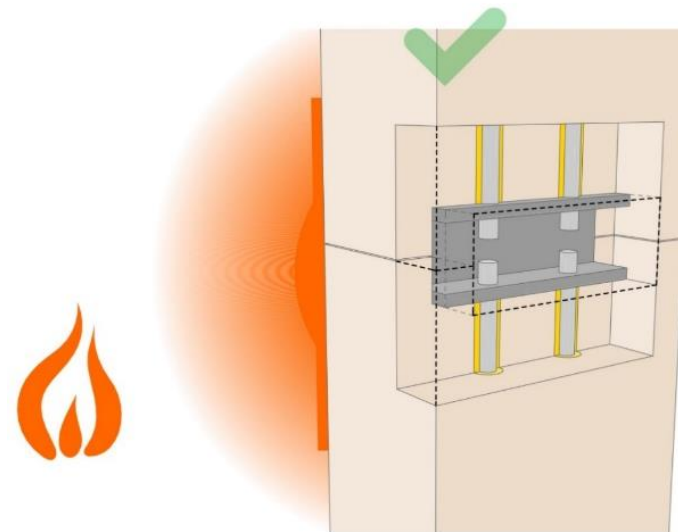
**Fire resistance
REI 60 or more
+
Spread of flame
D-s1,d0 or B-s1,d0**



**Spread of flame
BS EN 13-501-1
Euroclass C-s1,d0**

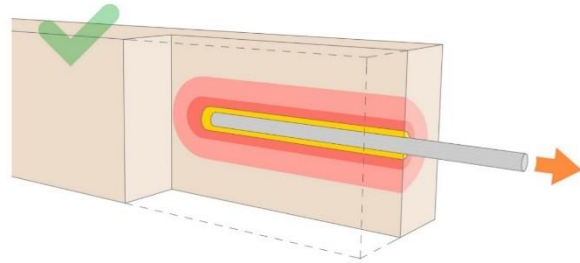


RESIX glued in rods

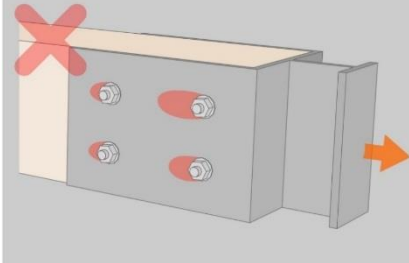


RESIX avantages

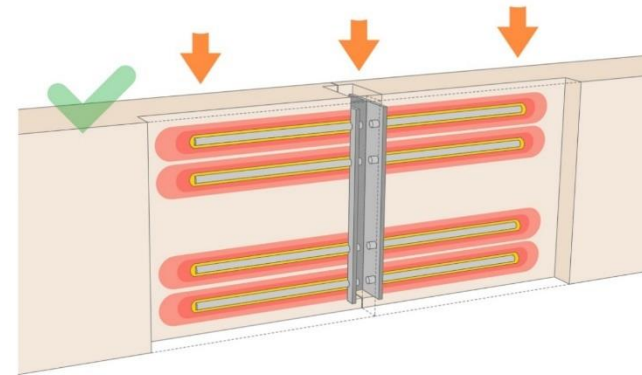
Assemblage Résix
Solicitation en traction et/ou compression



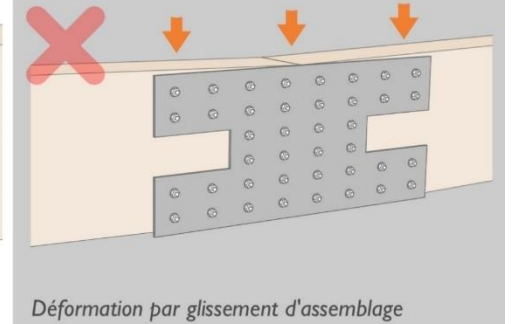
Assemblage traditionnel
Solicitation en traction et/ou compression



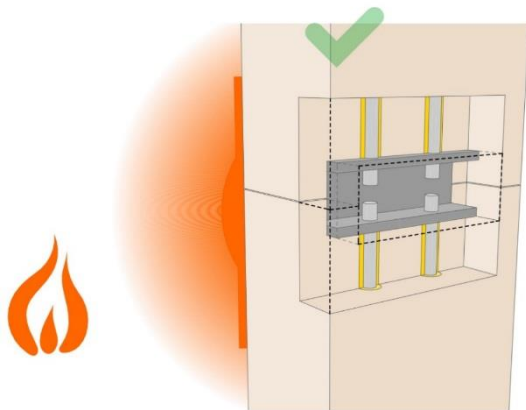
Assemblage Résix
Solicitation en flexion



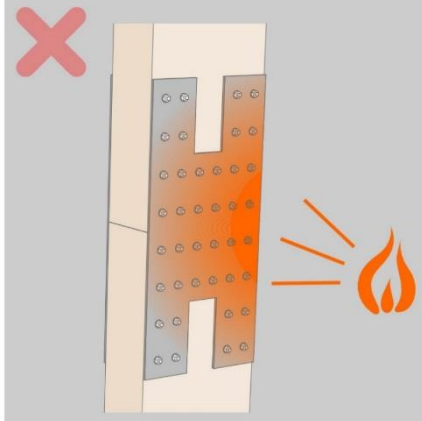
Assemblage traditionnel
Solicitation en flexion



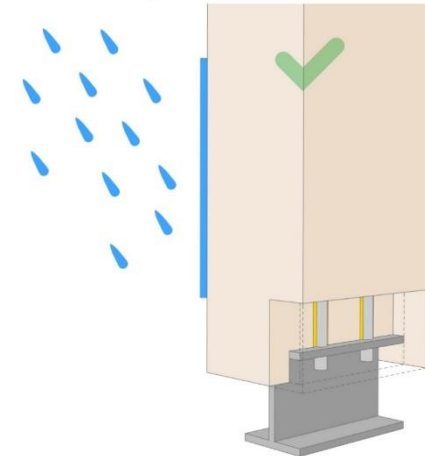
Assemblage Résix



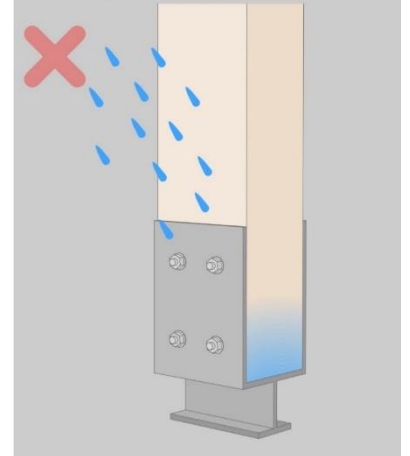
Assemblage traditionnel



Assemblage Résix

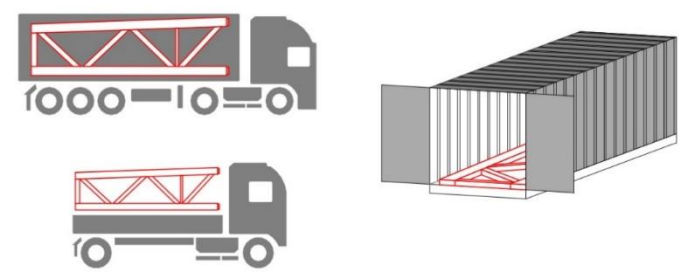


Assemblage traditionnel

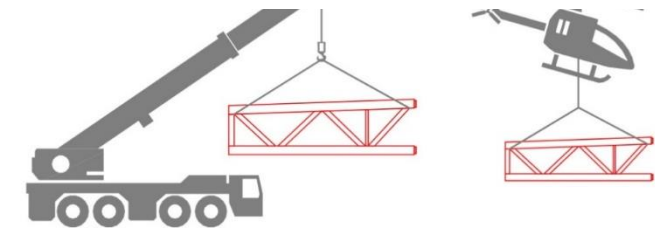


RESIX transport

Adaptation au transport

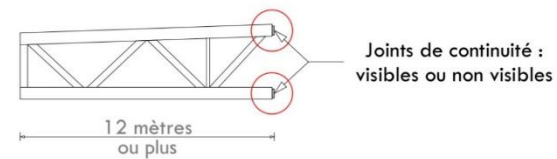
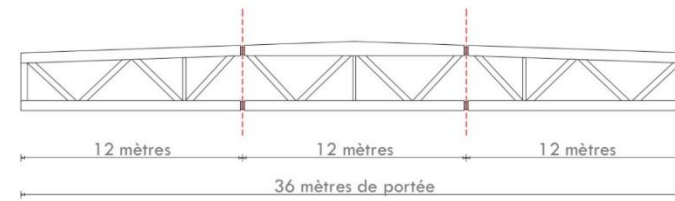


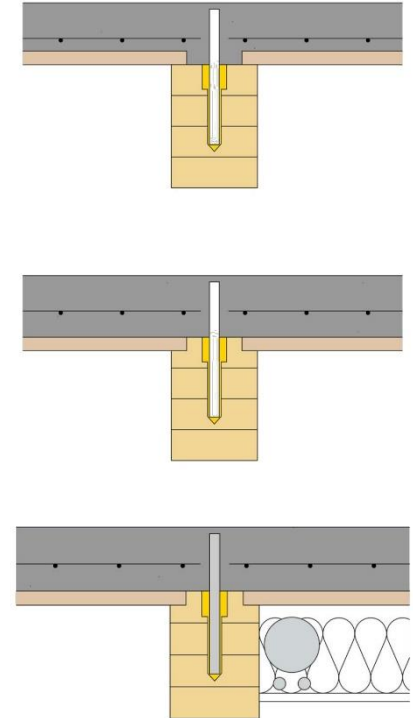
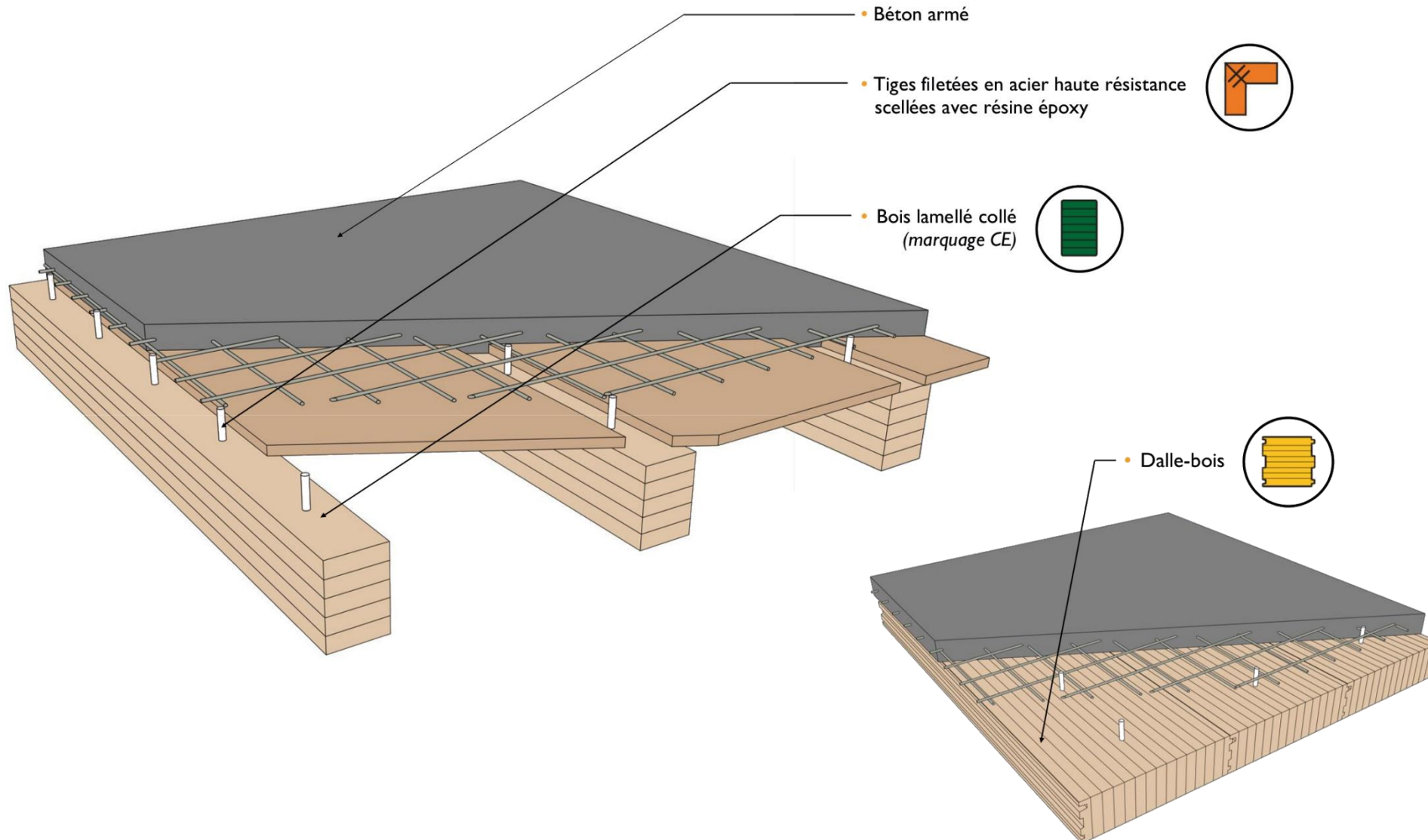
Adaptation au montage



Résix

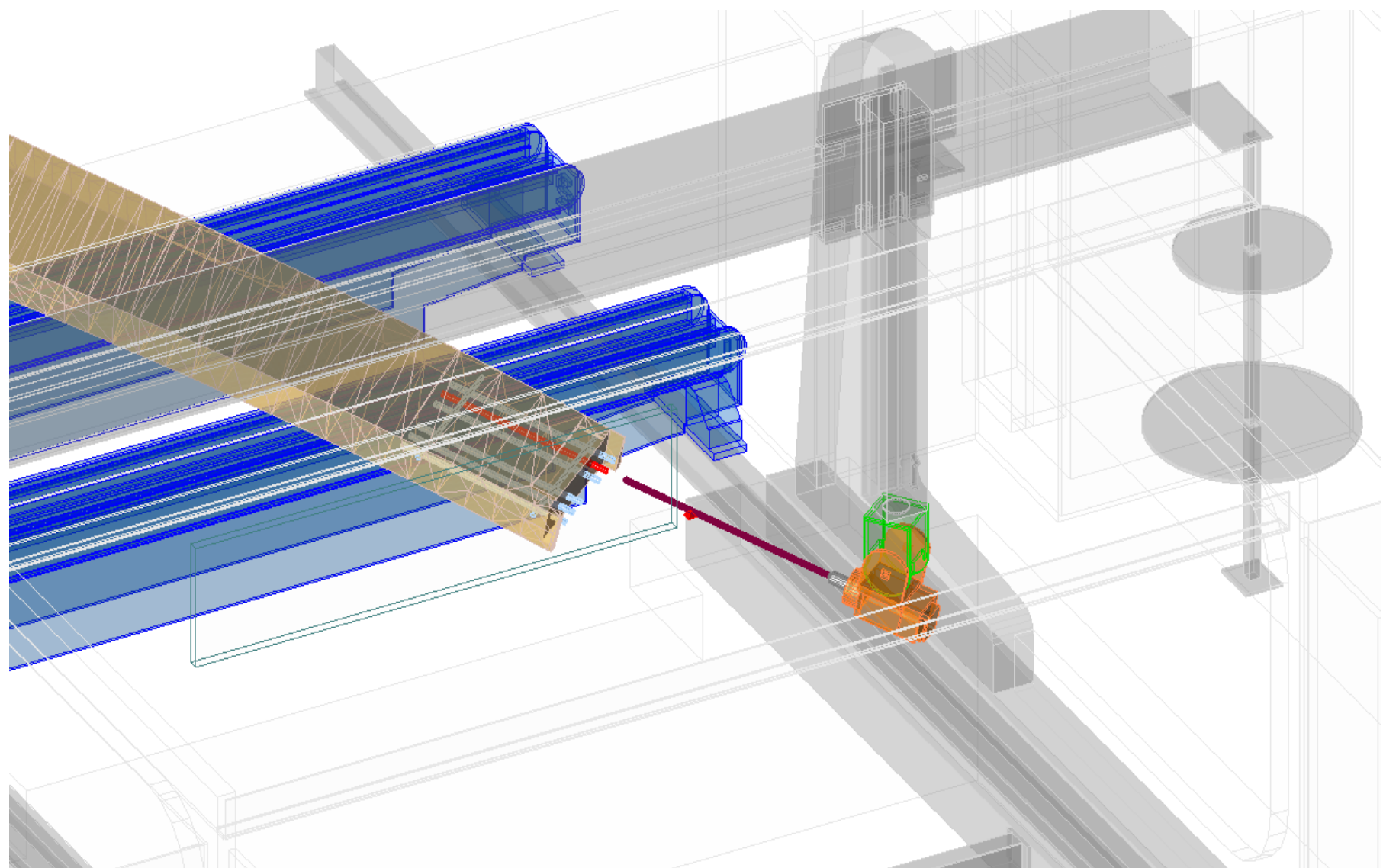
Exemple :





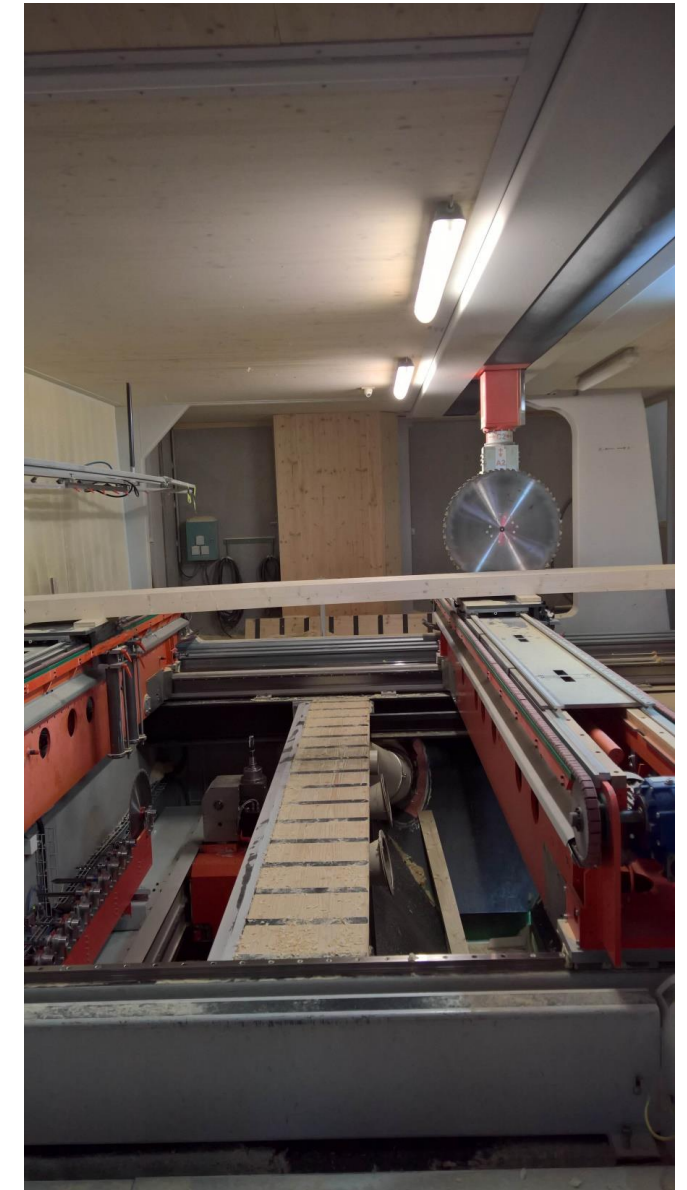
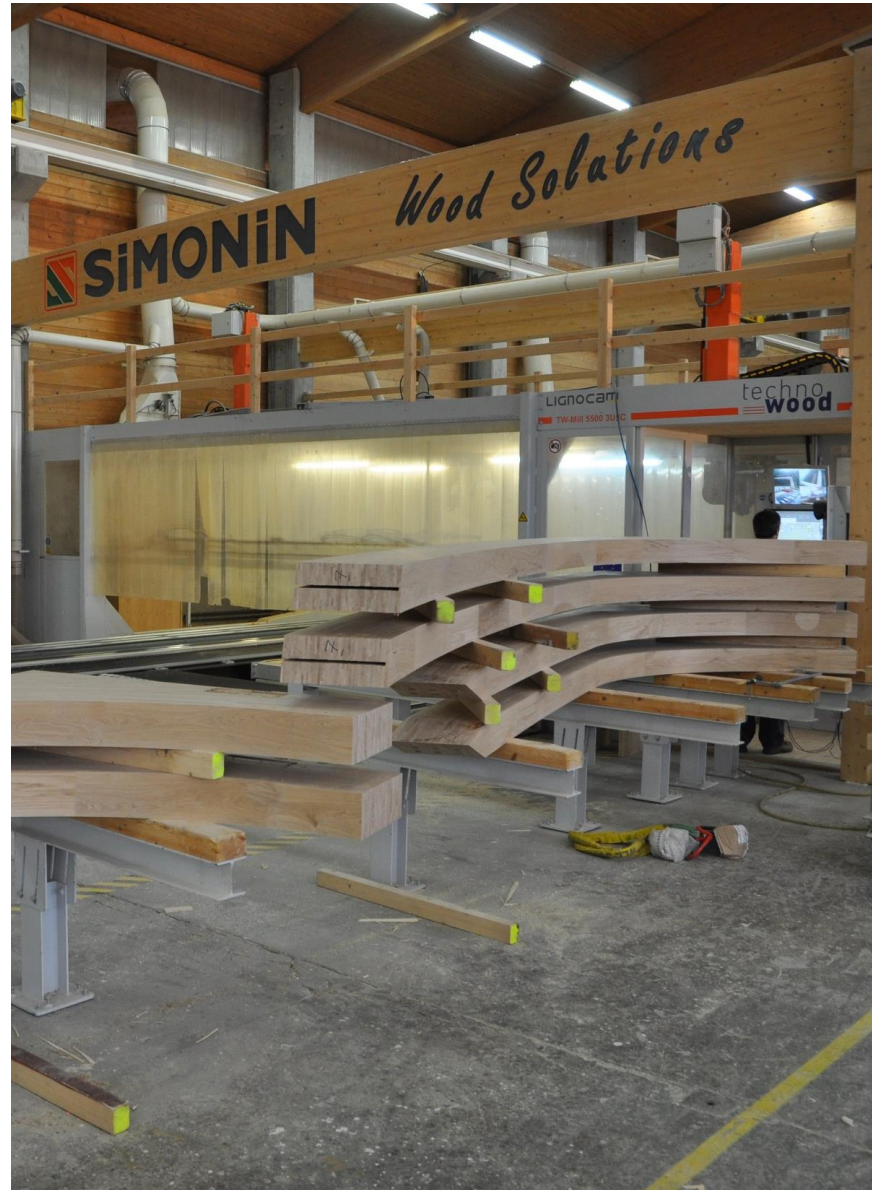
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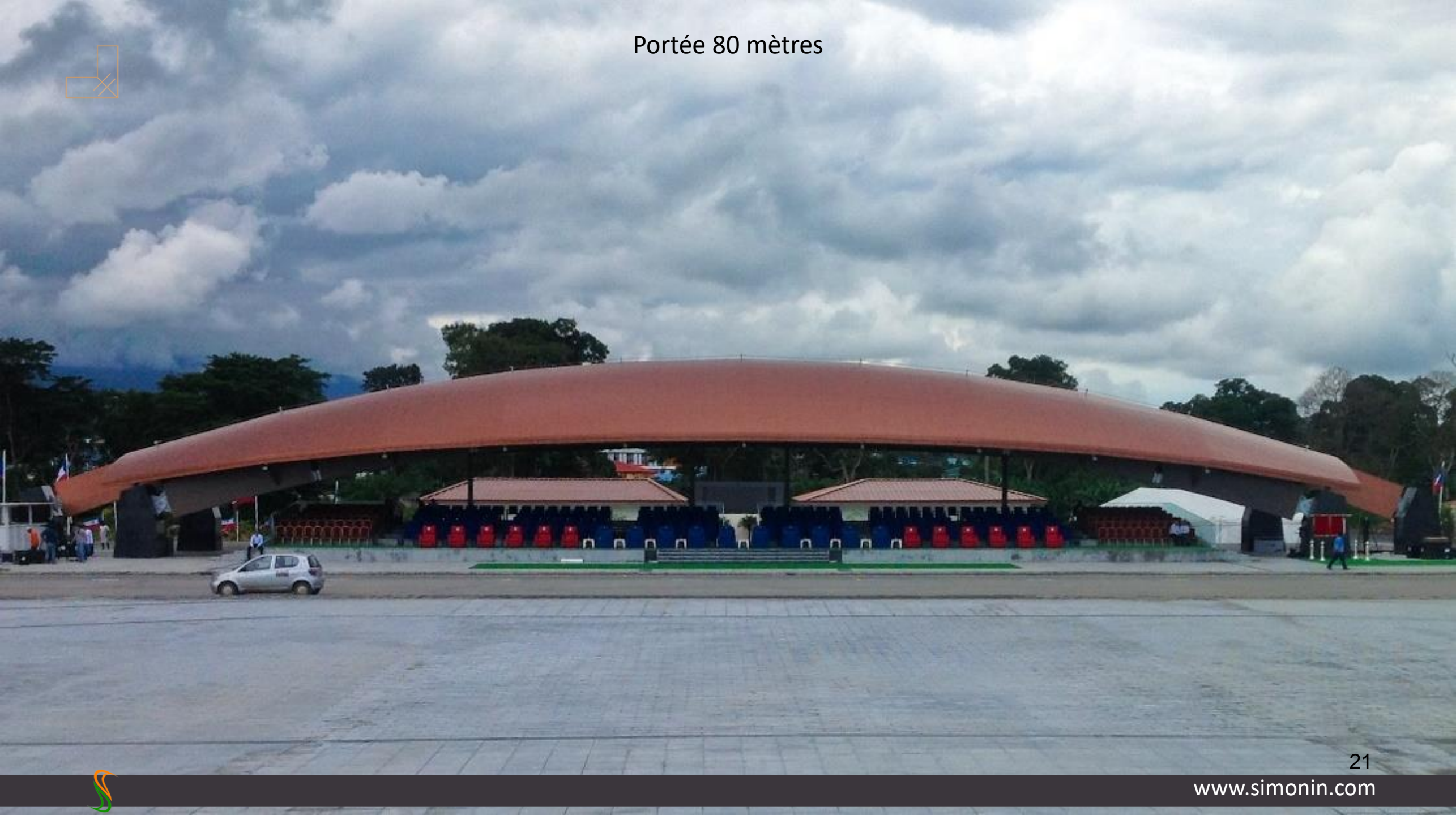
CNC milling

- Custom made machine
- Milling on all sides
 - from the top
 - from underneath
- Timber sizes
 - width: 5,5 m
 - height : 0,6 m
 - length: ∞





Portée 80 mètres







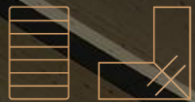






40m

































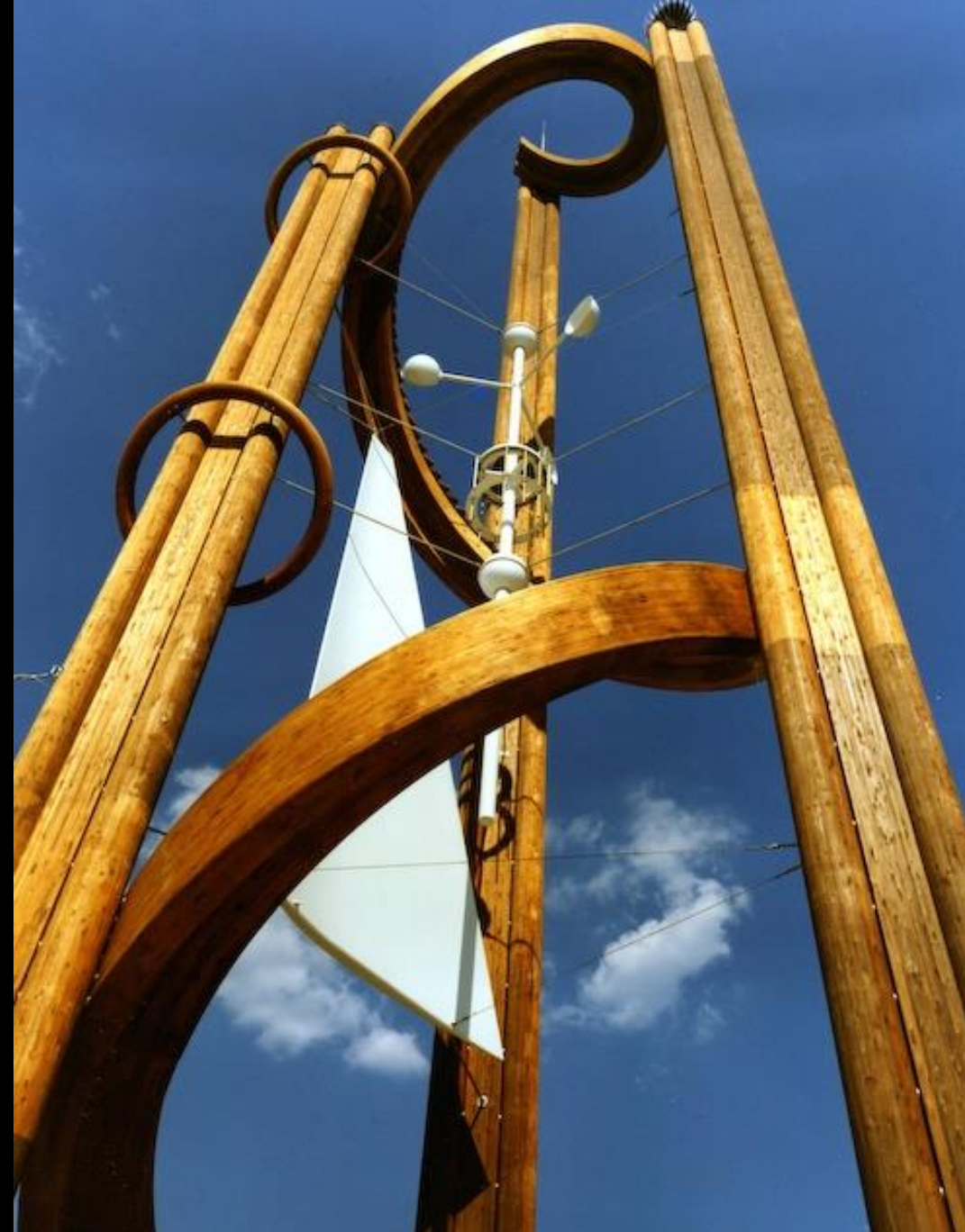
LE DRUGEON

Avec la participation de RTE









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Designing Buildings Wiki

[https://www.designingbuildings.co.uk/wiki/Mediu...](https://www.designingbuildings.co.uk/wiki/Medium-rise_building)

Medium-rise building

22 Apr 2022 — A medium-rise or **mid-rise building** is loosely defined as a structure that has between **five and 10 storeys** and is equipped with a lift.



Wikipedia

https://en.wikipedia.org/wiki/Tower_block

Tower block

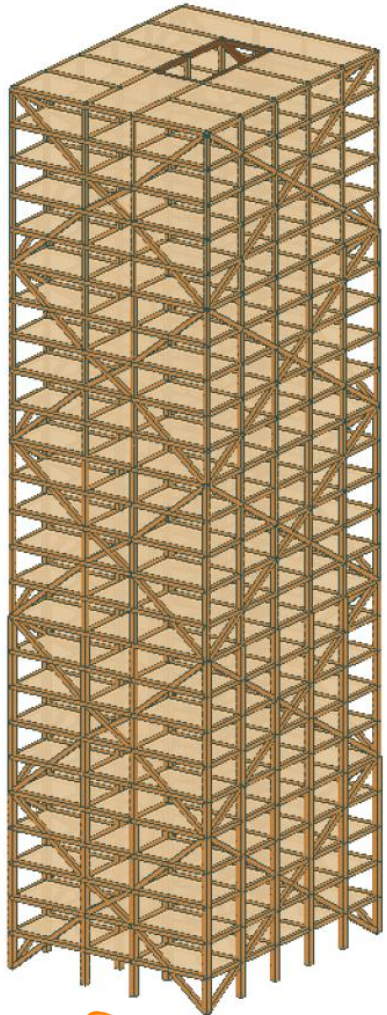


Emporis defines a **high-rise** as "A **multi-story** structure between 35–100 metres (115–328 ft) **tall**, or a **building** of unknown height from **12–39 floors**." According ...



Type of structures

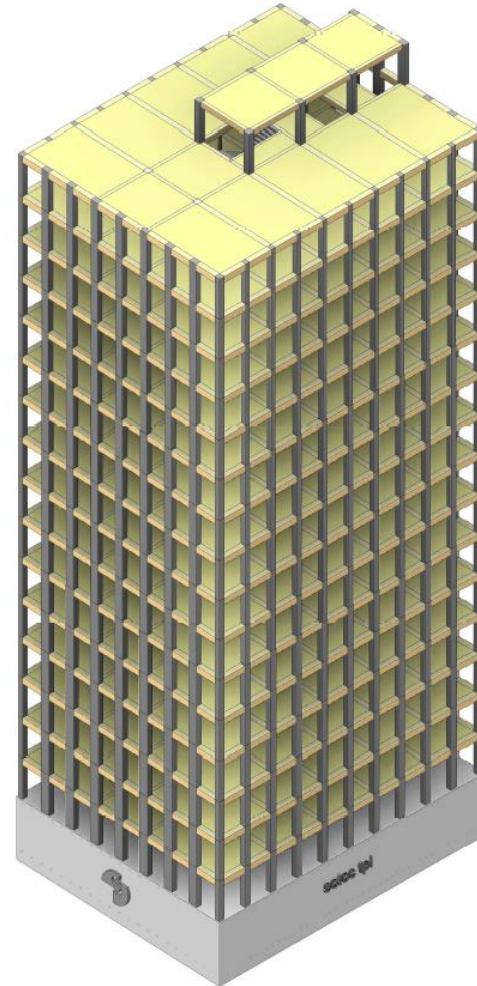
Exosquelette



CLT

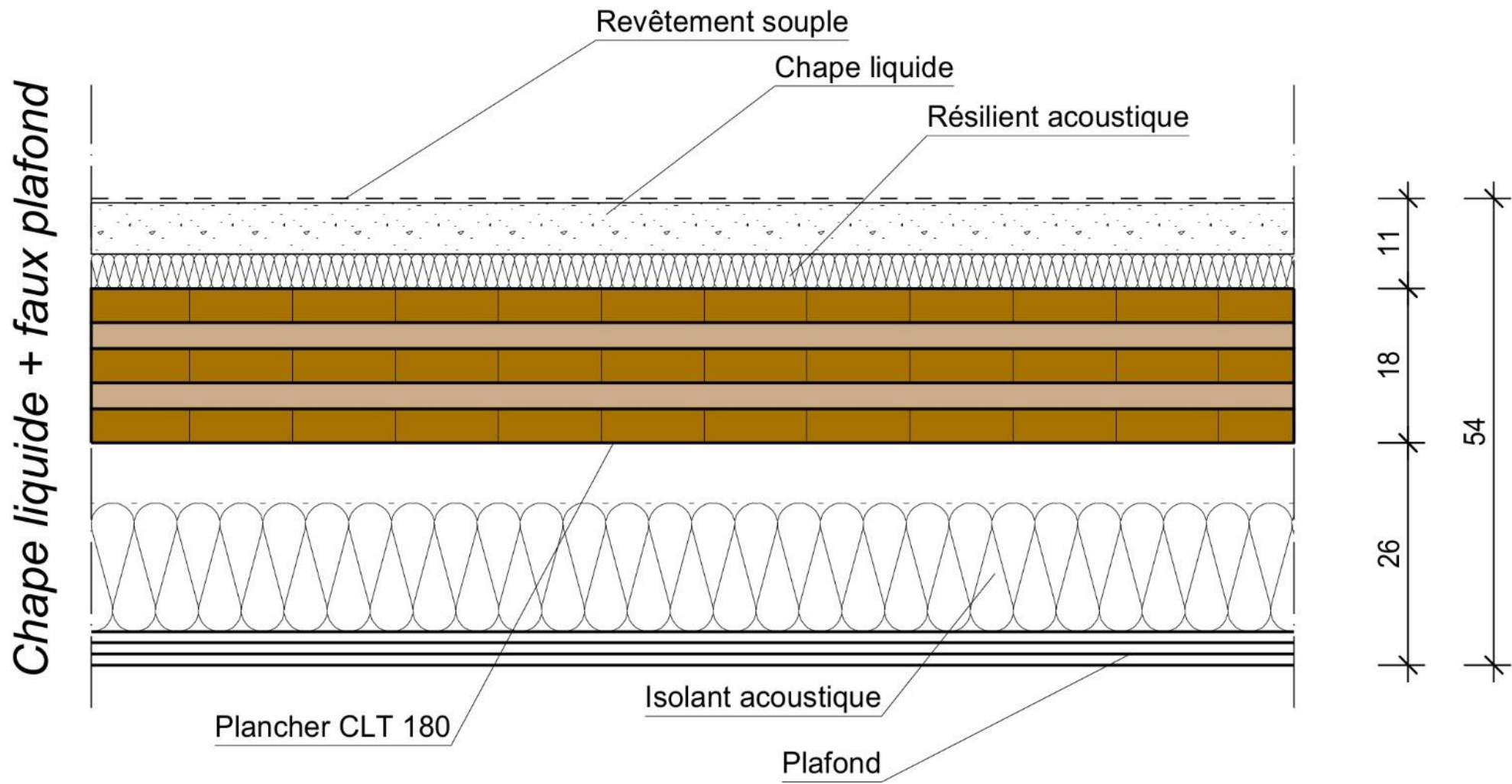


Post and beam



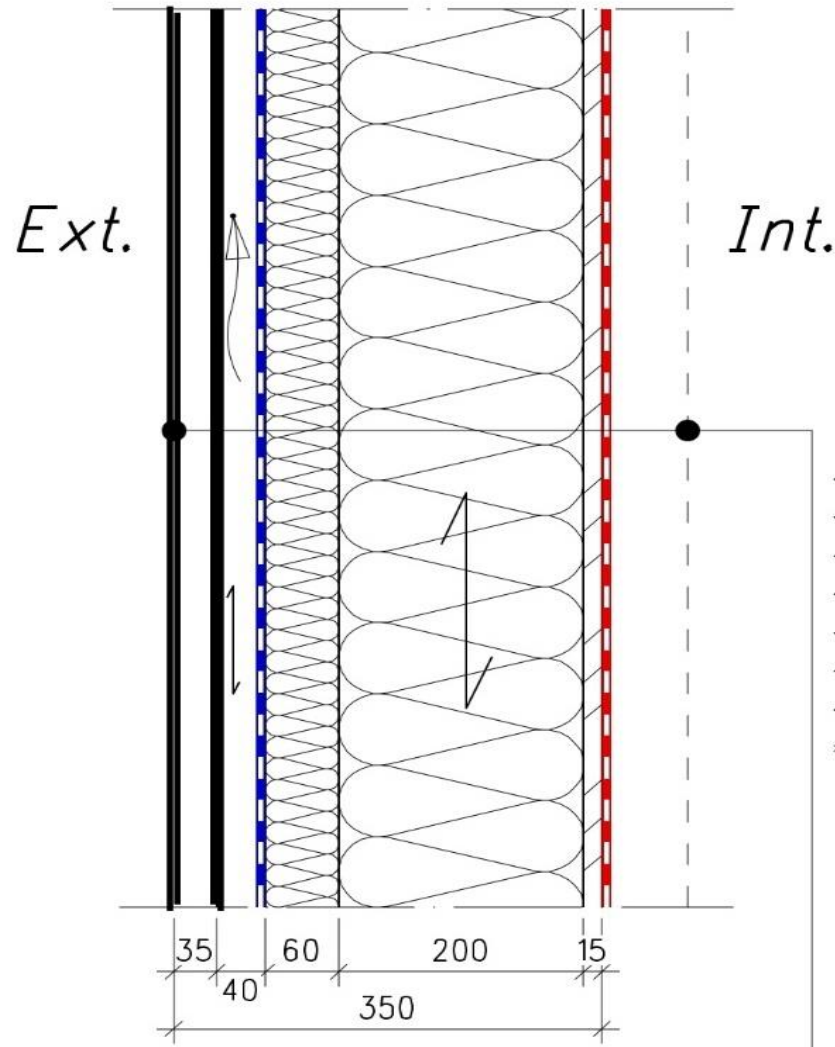
Concrete





Commerce 1-2





Coupe verticale





LÉGENDES

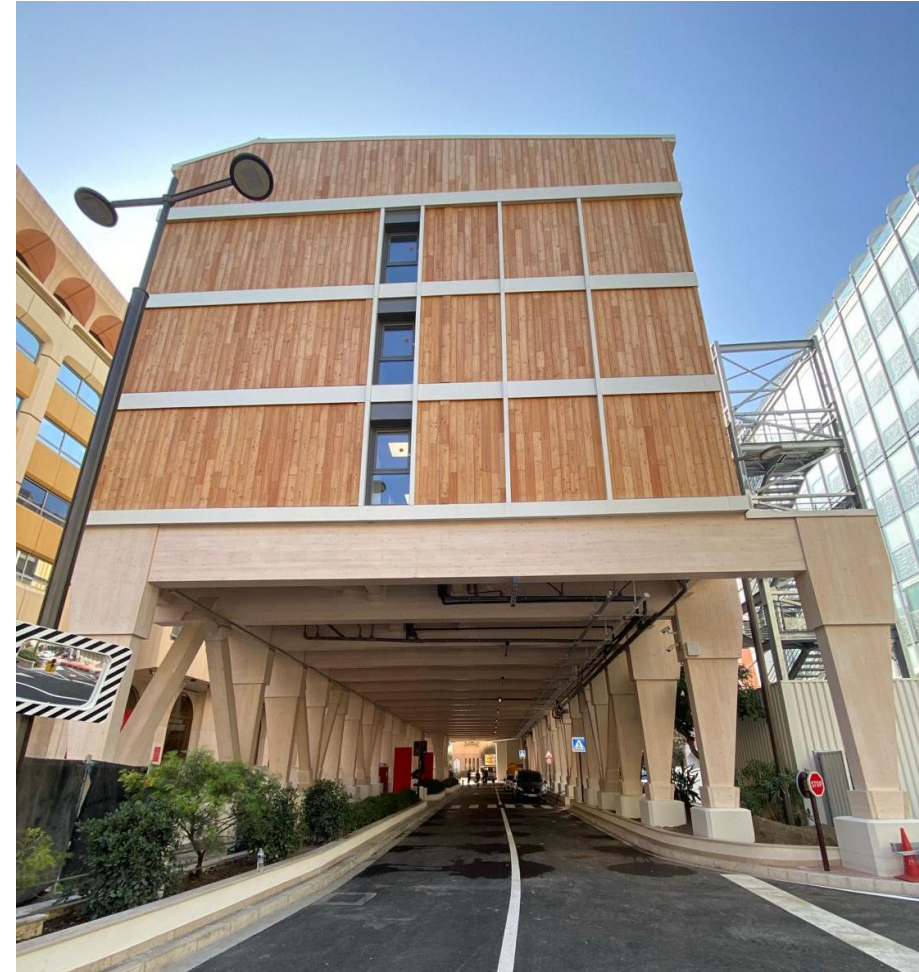
○ R+4 à R+5
○ R+6 à R+7

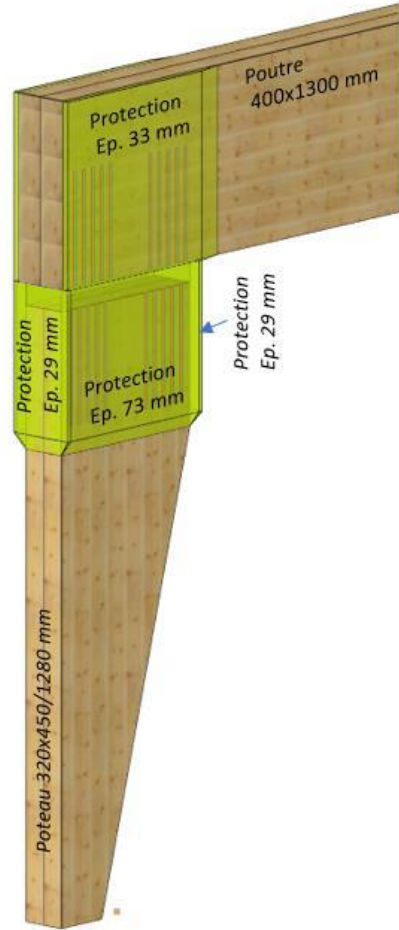
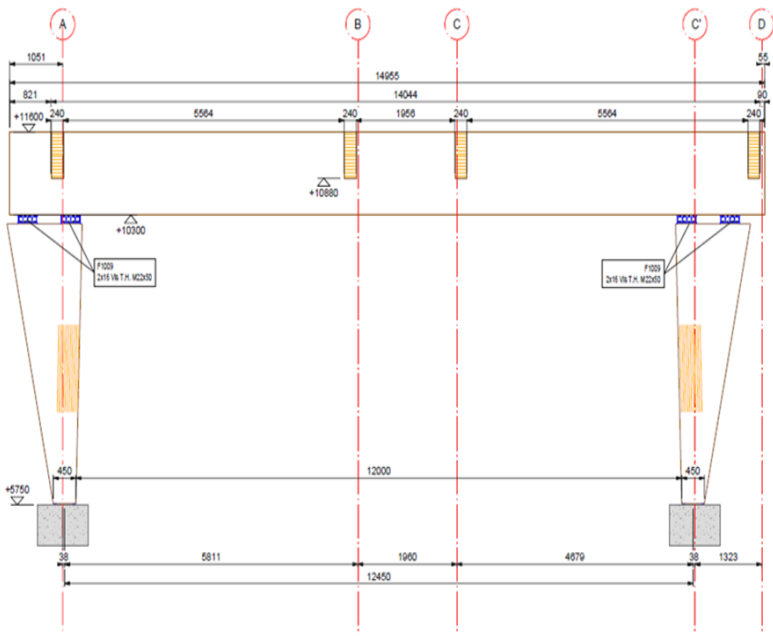
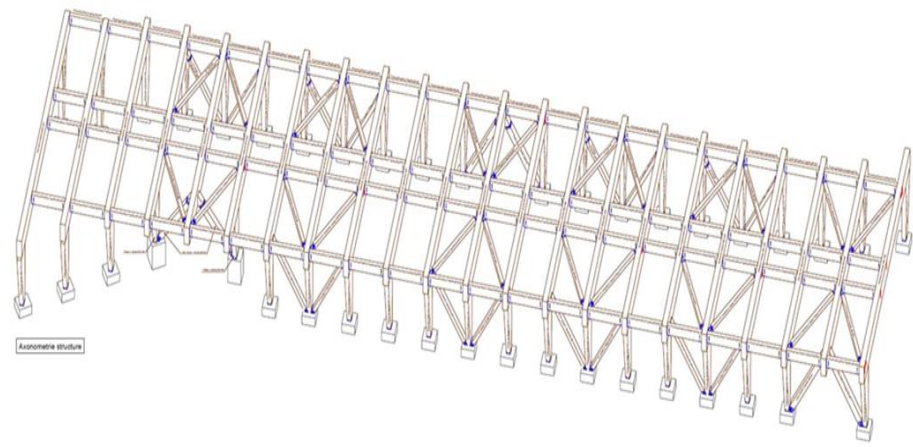
● R+8 à R+9
● R+13

● Immeubles de plus de 8 niveaux (R+7 à R+17) étudiés dans le cadre du parangonnage
● Immeubles en projet : aux Etats-Unis, en Angleterre, au Canada et 36 en France



Police station Monaco





90 min fire rating is required for the main structure

Carbonisation du bois

R90

Diagram showing wood carbonization with a flame and a cross-section of a laminated wood beam (poutre bois lamellé collé).

$d_{char,2.3} = \beta_{ch} \times t = 0,05 \times 90 = 58\text{mm}$ (épaisseur carbonisée d'une surface) (§3.4.2)
 $d_{char,1.8} = \beta_{ch} \times t = 0,7 \times 90 = 63\text{mm}$ (épaisseur carbonisée incluant les effets d'arrondés des angles) (§3.4.2)
 $d_{ch} = d_{char,1.8} + k_{ch} \times l_c = 7 + 0,7 \times 90 = 70\text{mm}$ (épaisseur de bois à déduire pour le calcul au feu des sections) (§4.2.2)

Références : Eurocode 5 partie 1-2

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 Dessin : JB Jourdain Date : 12/12/2019

Assemblage par broches collées RESIX

R90

Assemblage bois / bois ou bois / métal

Diagram showing a wood joint with glued nails (broches collées M16 à M24 selon avis technique REIF) and fire protection (protection au feu de la ferrure, ferrure de liaison).

Pour éviter la perte de résistance de la résine, les distances des tiges par rapport aux faces exposées au feu sont augmentées. Les valeurs indiquées ci-dessous ont été établies par essais et reportées dans un avis de laboratoire du CSTB.

Distance mini. de 103mm entre le bord du perçage et la face exposée au feu. L'assemblage doit être vérifié en combinaison ELU Feu avec 25% de la résistance des organes d'assemblage à froid (effort normal et cisaillement).

diamètre broches	pinces minis (mm) (axe broches/face)
16	114
20	116
22	117
24	118

Dans le cas d'un assemblage avec ferrure intermédiaire de liaison, la ferrure doit être protégée du feu par :
 - une pièce de bois lamellé-collé d'épaisseur a_{ch} ;
 $a_{ch} = \beta_{ch} \times k_{ch} \times (t_{ch} - t_{ch,d}) = 0,7 \times 1,5 \times (90 - 5) = 75\text{mm}$ (§6.3.2)
 - ou par plaques de plâtre ou équivalent ou peinture intumescente selon recommandation fabricant.

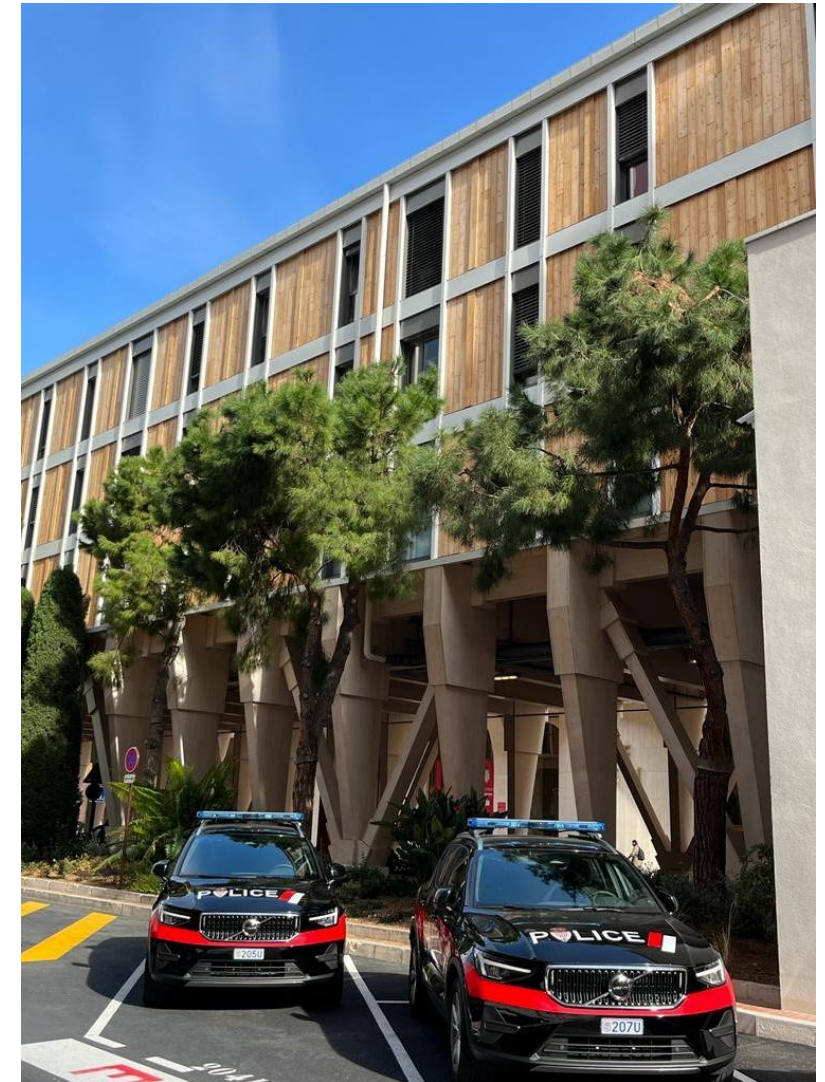
Références : Eurocode 5 partie 1-2 (§6.3) et avis de labo CSTB n°CO11-1998

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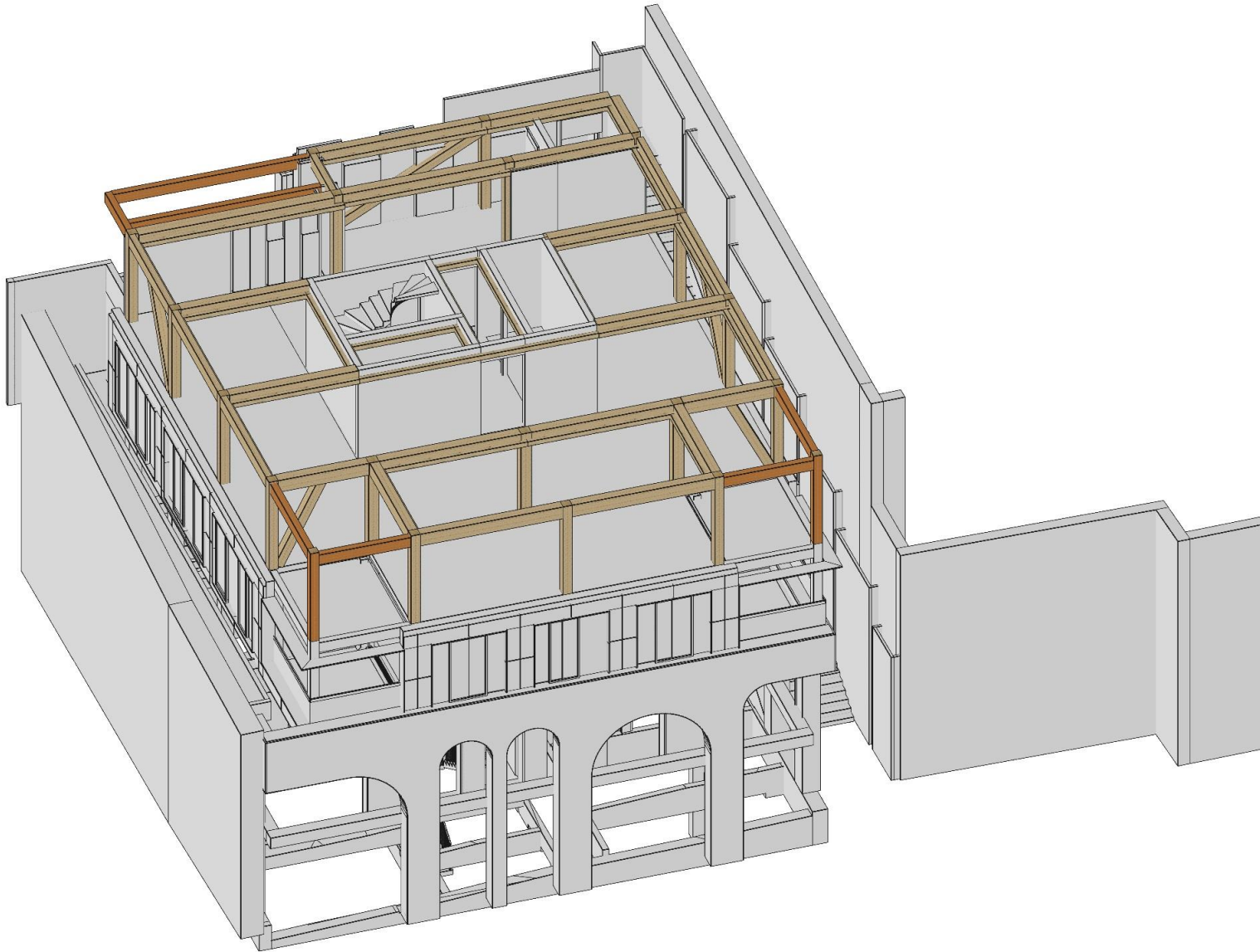




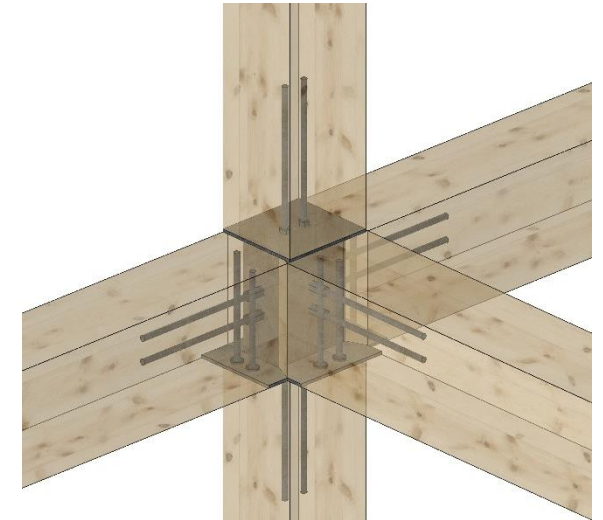




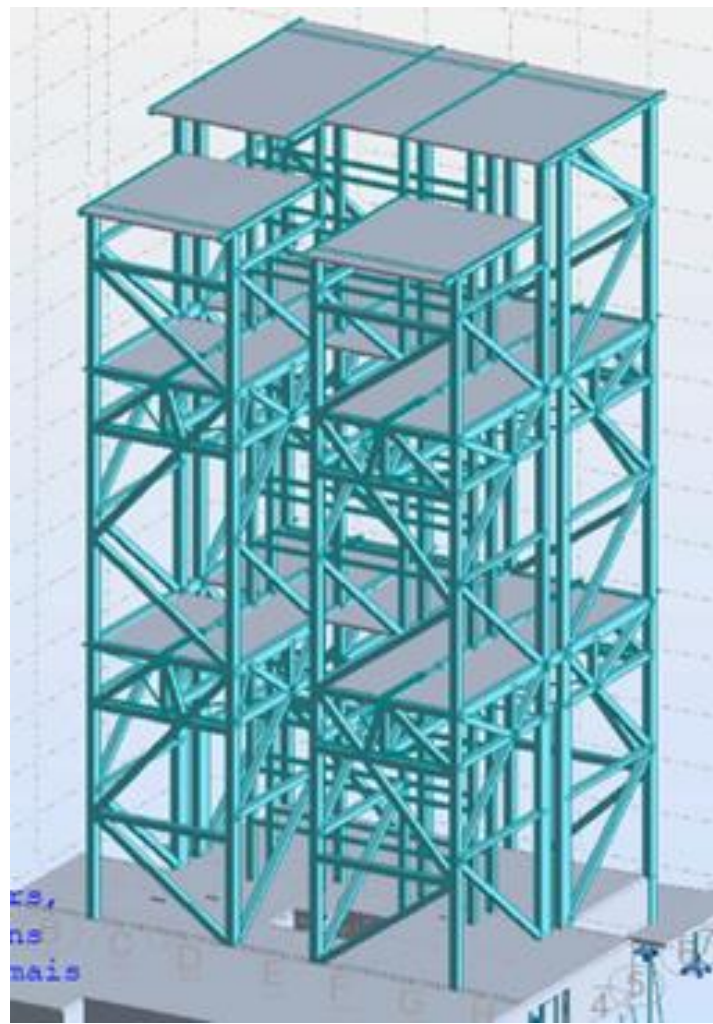




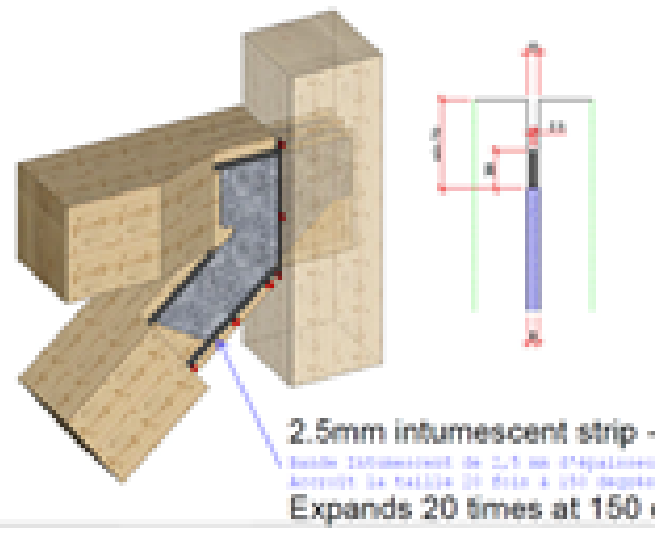
Meilleure pérennité des ouvrages
avec le système d'assemblage Résix



- *Rigidité assurée*
- *Esthétique*
- *Excellent comportement au séisme*
- *Stabilité au feu confirmée*

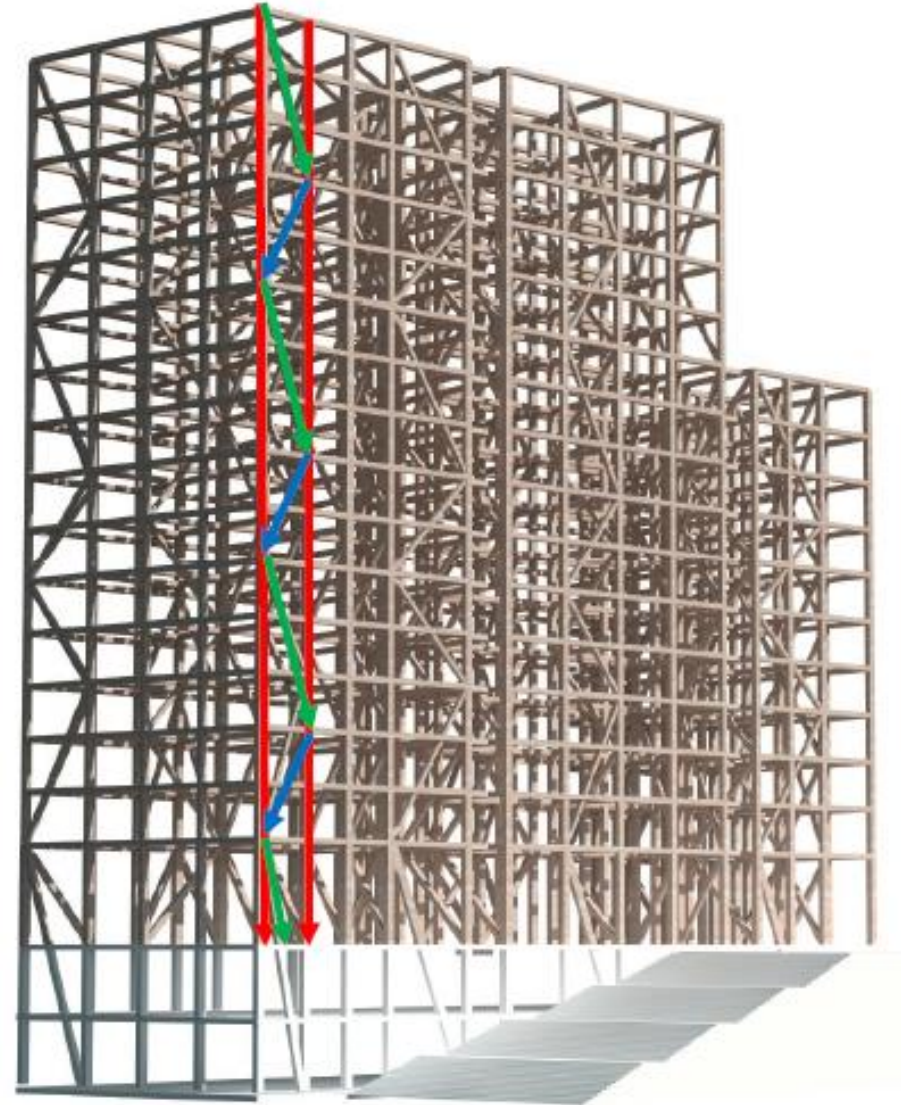


Norvège





Poutres treillis – Atelier SIMONIN













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YQB

AÉROPORT INTERNATIONAL JEAN-BESADE INTERNATIONAL AIRPORT



AEROPUERTO DE ANNOBON





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20809

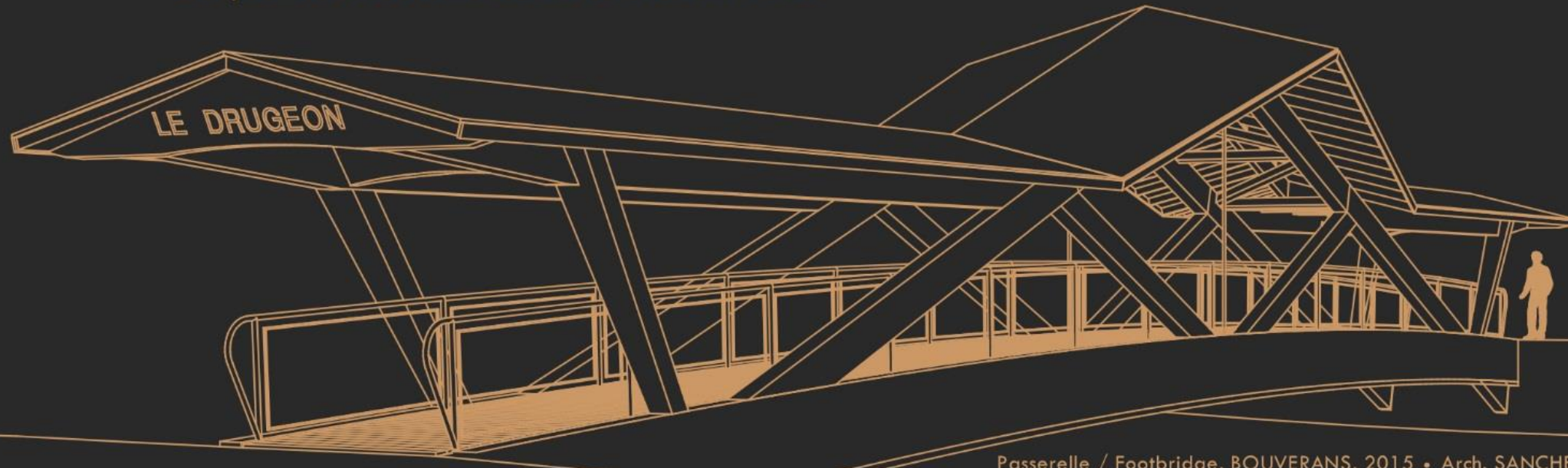




Timber a natural material for any type of work



Acteur de la construction bois à travers le monde depuis 50 ans.
50 years of wood construction all over the world.



Passerelle / Footbridge, BOUVERANS, 2015 • Arch. SANCHEZ

Thank you for your attention