



Integrating data from the past to build the future: heritage as a source and showcase for innovation

Bourgès Ann

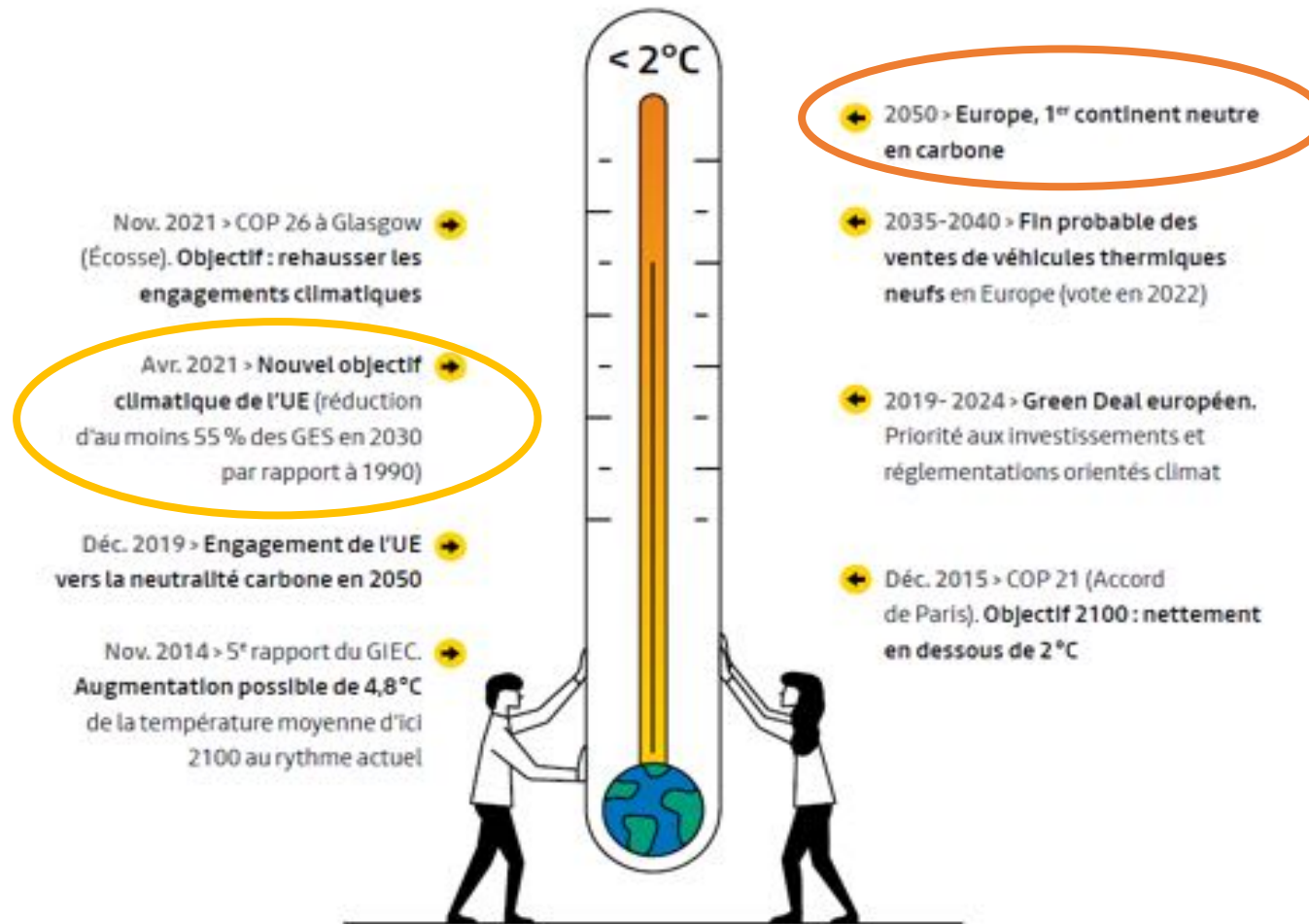
C2RMF - MC



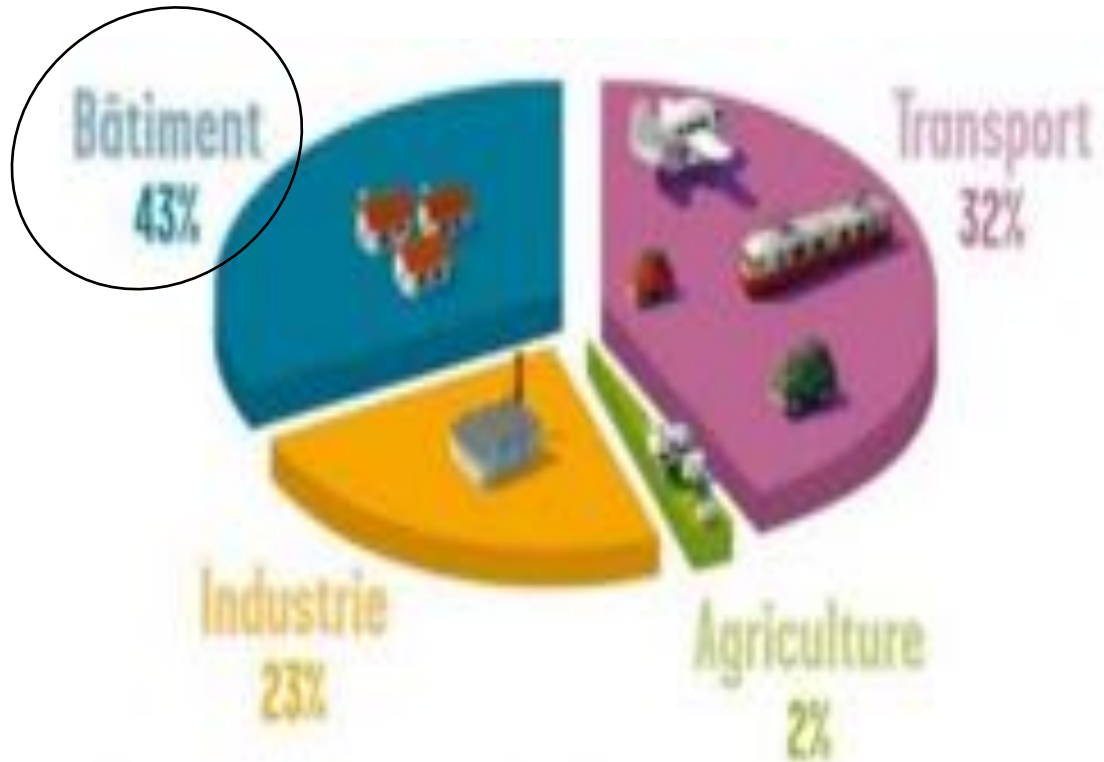
La cooperazione bilaterale italo-francese nelle scienze per il patrimonio: il patrimonio culturale nella transizione verde
Coopération bilatérale franco-italienne en sciences du patrimoine : le patrimoine culturel dans la transition verte

Consiglio Nazionale delle Ricerche, Piazzale Aldo Moro 7, Roma
giovedì, 15 settembre 2022 / *jeudi, 15 septembre 2022*

EUROPEAN GREEN DEAL: 2050, OBJECTIVE ZERO CARBON



THE CONSTRUCTION SECTOR IS THE FIRST ENERGY CONSUMER



Energy consumption by sector in France
in 2014

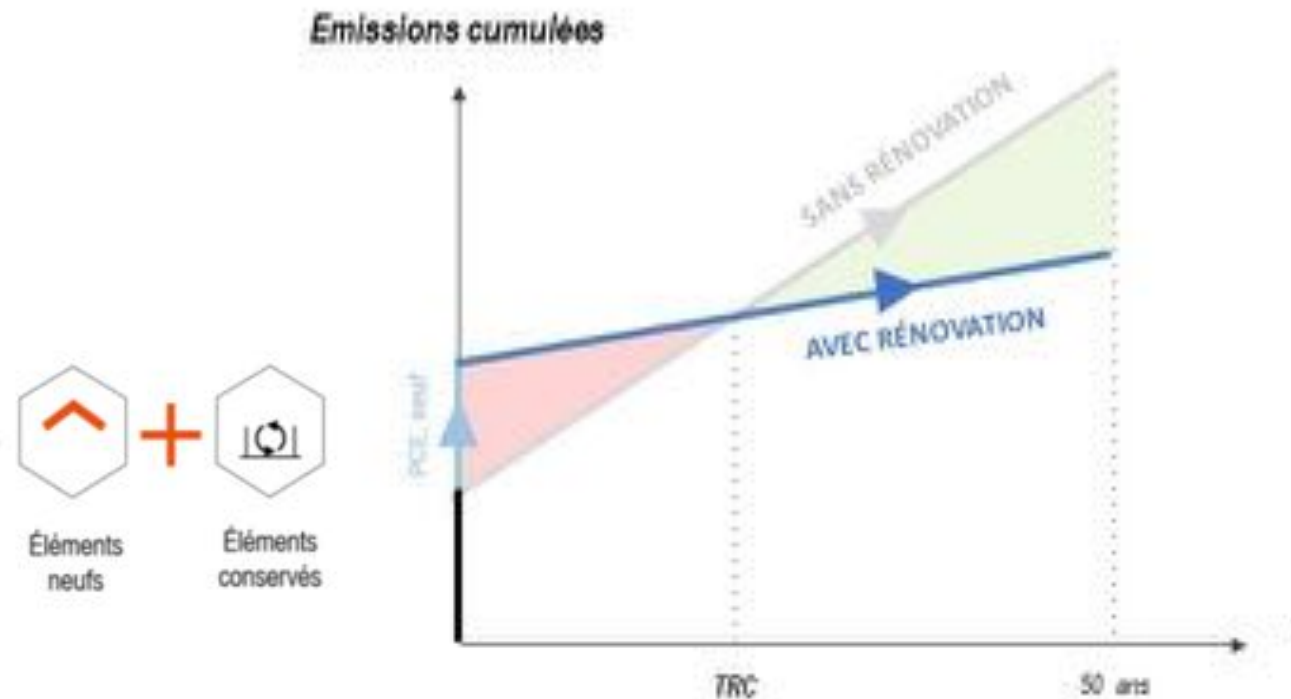


RE2020 environnemental national law:
Applied on January 1st. 2022
For new constructions

OPERATIONAL CARBON, A KEY ITEM IN THE LIFE CYCLE ASSESSMENT FOR BUILDING RENOVATION



RENOVATION IMPROVES ENERGY BALANCE OF THE BUILDING, BUT CONSERVATION IT IS ALREADY A GREEN ACTION



Source : NZC Renovation, 2021. Alliance HQE-GBC, AIA Environnement

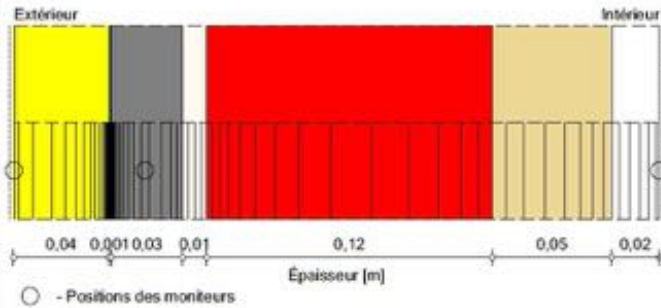
AN ADAPTED DIAGNOSIS OF CULTURAL HERITAGE TO TARGET INTERVENTIONS AND FOR MORE EFFICIENCY










Appartement Le Corbusier – Fondation Le Corbusier et Sté A-BIME

assemblage des composants

Cas : #5 Etat1 Partie Basse Voute



Matériaux:

	- FOAMGLAS T4+	0,04 m
	- Freine vapeur (sd=100m)	0,001 m
	- Béton C12/15	0,03 m
	- Enduit au ciment (valeur A: 0.51 kg/m2h0.5)	0,01 m
	- Bloc terre cuite alvéolé (Masse vol. 650 kg/m3)	0,12 m
	- copeaux de bois	0,05 m
	- Mortar (historical): Gypsum	0,02 m

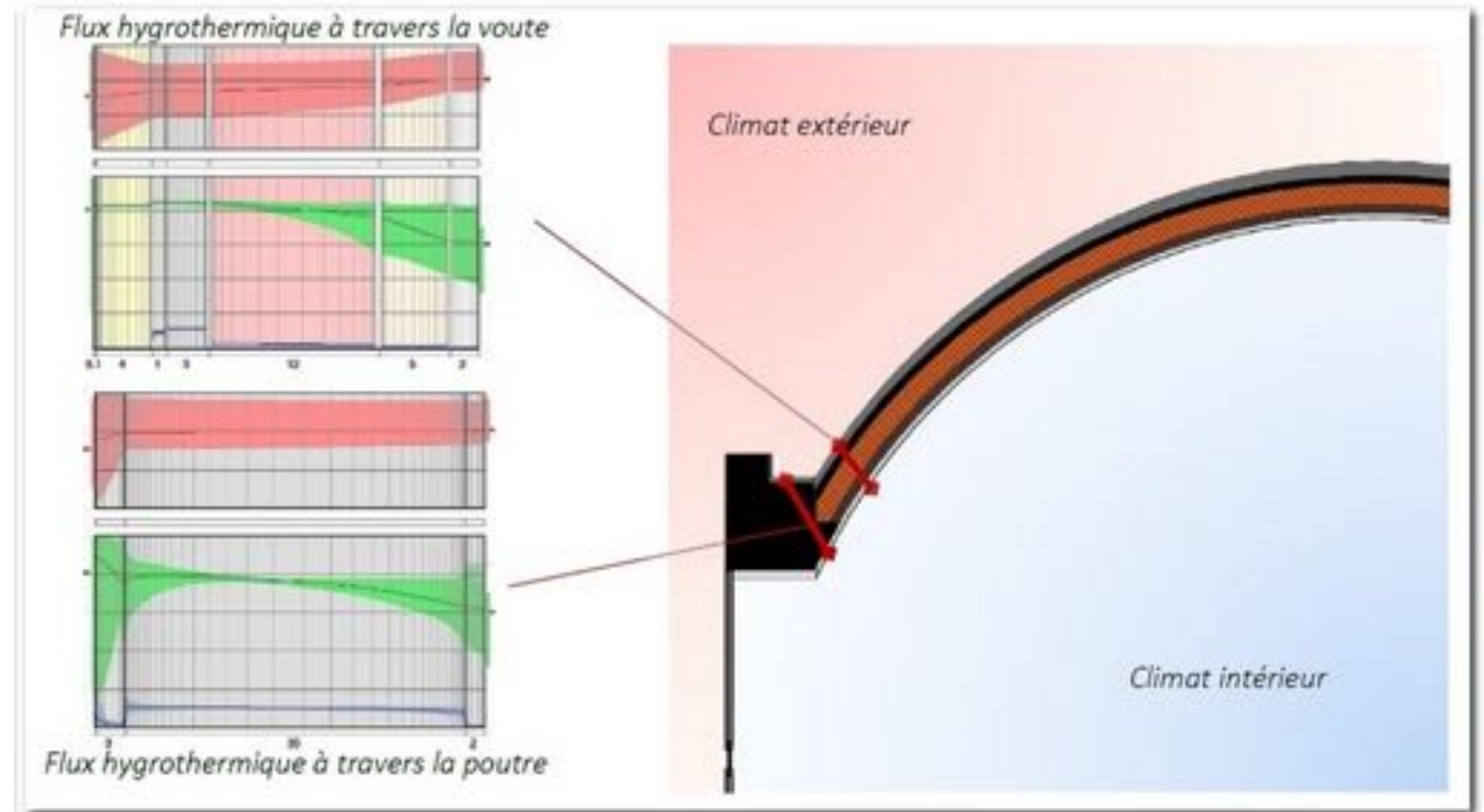
Valeur Sd ext. [m]: 50.0

Valeur Sd int. [m]: 0.1

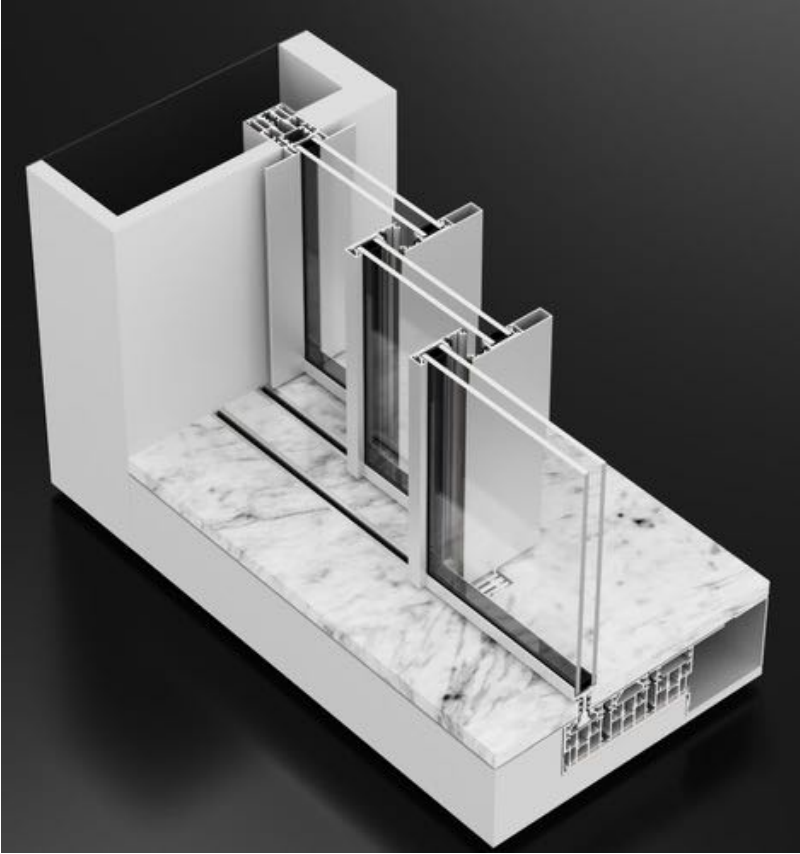
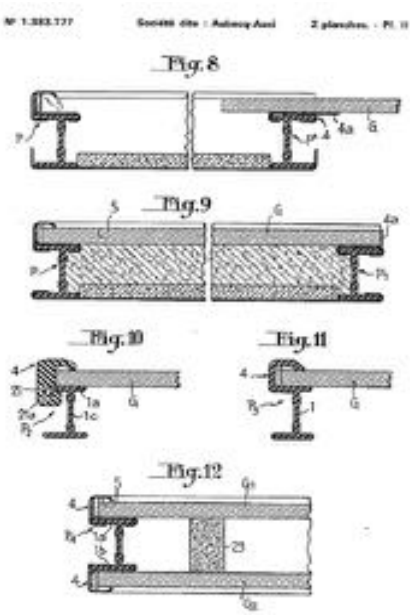
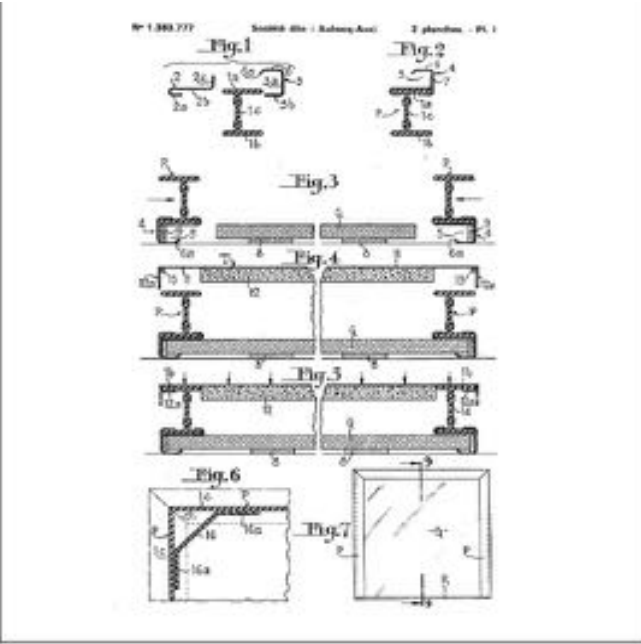
Épaisseur totale: 0,271 m

Valeur de la résistance thermique R: 2,89 m²/K/W

Coefficient U: 0,326 W/m²/K



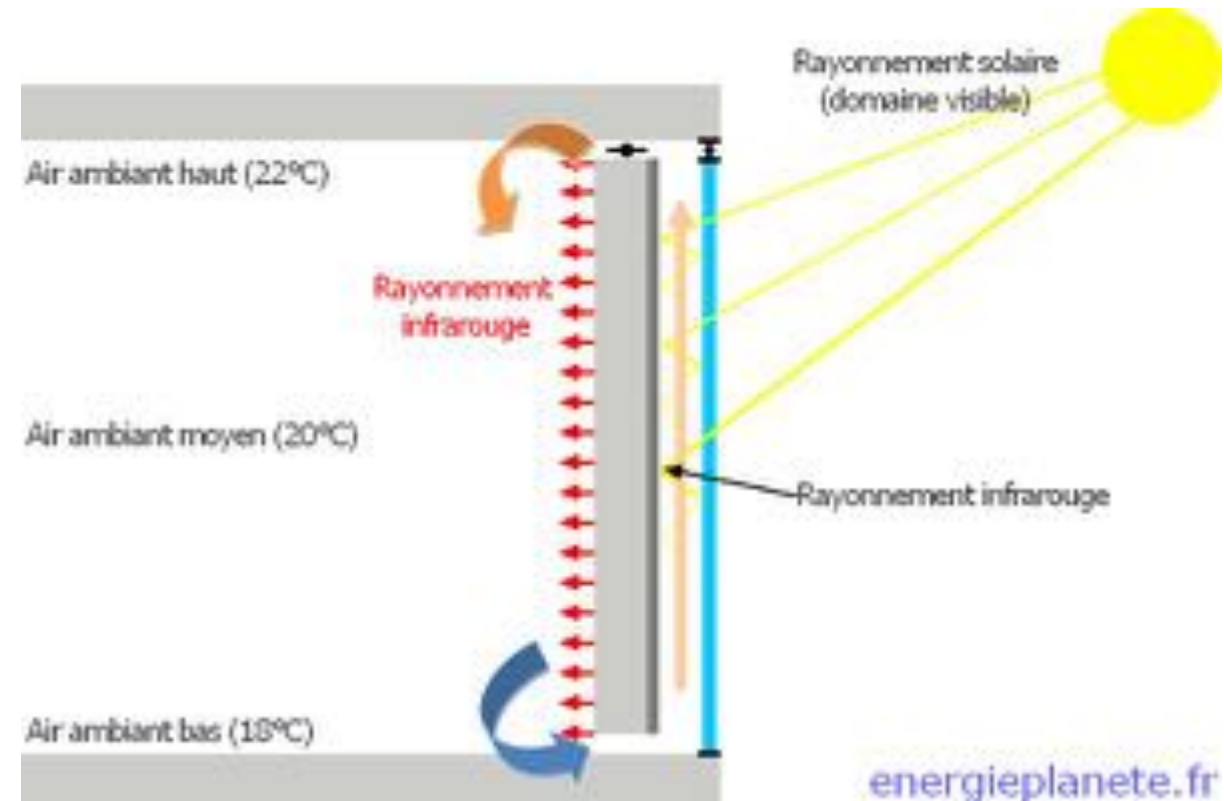
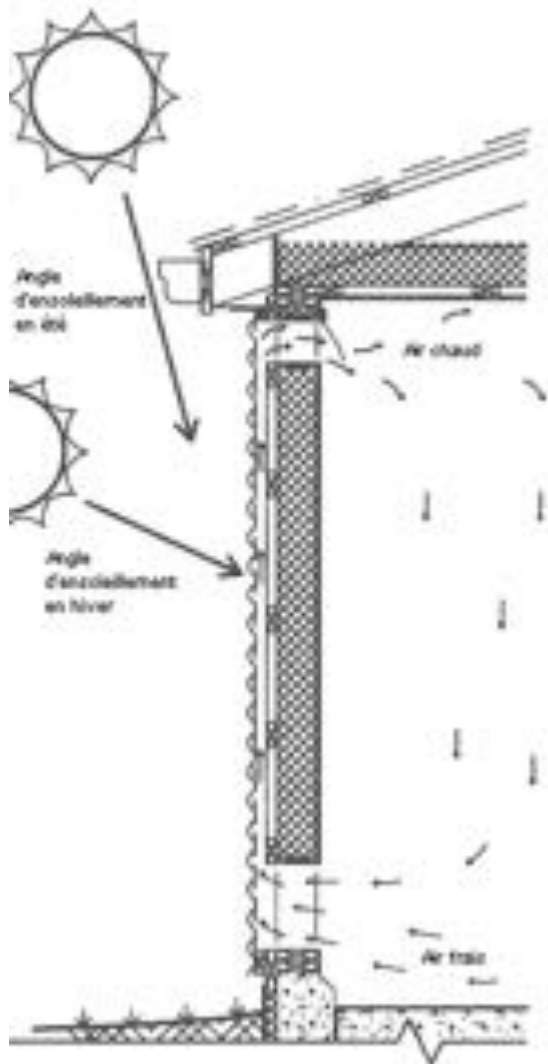
AS ANDRÉ WOGENSCKY INVENTED THE WATERPROOF WINDOW IN 1969 WHICH WILL BE TAKEN UP BY PEDRO PARREIRA IN 2019...



André Wogenscky invented the watertight window in 1969 which will be taken over by Pedro Parreira in 2019

INTEGRATING DATA FROM THE PAST TO BUILD THE FUTURE: HERITAGE AS A SOURCE AND SHOWCASE FOR INNOVATION

Passive heating



Implemented and experimented by Professor Felix Trombe and architect Jacques Michel in the 1950s and 1970s, this device takes advantage of the free energy of the sun through the greenhouse effect.

INTEGRATING DATA FROM THE PAST TO BUILD THE FUTURE: HERITAGE AS A SOURCE AND SHOWCASE FOR INNOVATION

Passive heating



Thanks to a sunshade adapted to the solar inclination, the Trombe wall in raw earth of the mediatheque of Betton diffuses heat only in winter, not in summer.

Liard & Tanguy

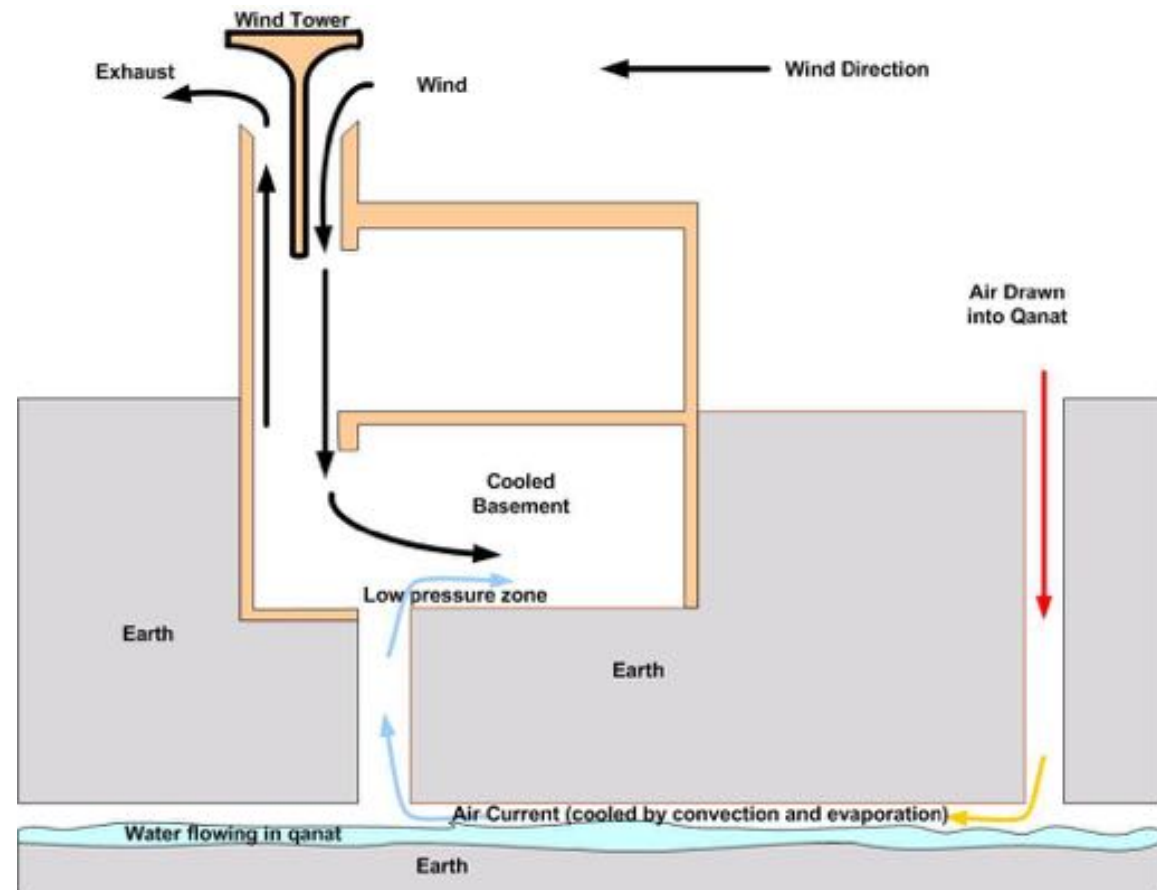
INTEGRATING DATA FROM THE PAST TO BUILD THE FUTURE: HERITAGE AS A SOURCE AND SHOWCASE FOR INNOVATION

Passive cooling



Wind tour in Iran

@dominiquefirbal.wordpress.com



INTEGRATING DATA FROM THE PAST TO BUILD THE FUTURE: HERITAGE AS A SOURCE AND SHOWCASE FOR INNOVATION



gsd_2021_projection_Shah_Devashree_Harward-



D. Casanova de Jean Renaudie à Ivry-sur-Seine- Photographies, Agence Pierre-Antoine Gatié, 2019/2021 1972

TECHNIQUES AND ALSO MATERIALS



www.build-green.fr/2fconstruction-3d-en-terre-crue-technologie-low-tech-du-futur



https://www.usinenouvelle.com/mediatheque/2/0/2/001008202_896x598_c.jpg



Alluvium project (UGE) – biopolymers durability for earthen materials



Case obus des Mousgoums - Cameroun
@Sebastien Moriset

BREAK THE BARRIERS BETWEEN THE BUILDING AND THE CONSERVATION OF ITS INTERIOR TO INVENT A NEW WAY OF CONSERVATION, LESS ENERGY CONSUMING AND MORE SOBER



Collection center of the Swiss national museums



Louvre Conservation center in Liévin

TRANSPOSE CLIMATE MODELS TO SMALL SCALE TO CONFRONT THEM WITH THE PROBLEMS OF CONSERVATION IN AN UNCONTROLLED ENVIRONMENT



Versailles in 1950-65 and ... today (IGN data, « remonter le temps »)

ADAPTED DIAGNOSE, VALORIZE THE EXISTING, THINK OF NEW MATERIALS AND PROCESSES



New European Bauhaus
beautiful | sustainable | together

#Europeuquotidien

Le Nouveau Bauhaus européen : le beau et l'utile du Pacte Vert ?



Thanks for your attention!

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