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PRECAST WALL TH GREEN

reduced carbon footprint resource conservation technical performance

Precast wall TH Green :
the first structural exterior wall that can take on the challenges of the future

Significantly reduced carbon footprint

Decarbonised concrete

Incorporated formwork walls are generally made with concrete using CEM I, which is known to be made up entirely of clinker (to achieve high strength at a young age for formwork removal). As clinker content is directly proportional with the carbon footprint of the concrete, it has therefore been strongly reduced in the concrete formulation for Precast wall TH Green by using low-carbon CEM III cement and optimised additives to guarantee the usual characteristics.

The calculated carbon impact of this formulation is **160 kg CO2/m³** of concrete, compared to 278 kg CO2/m3 for the standard formulation using CEM I, i.e. a **42% reduction of CO2 emissions** for the concrete used to make Precast wall TH Green

The approach may be supplemented by filling Precast wall TH Green with low-carbon concrete.

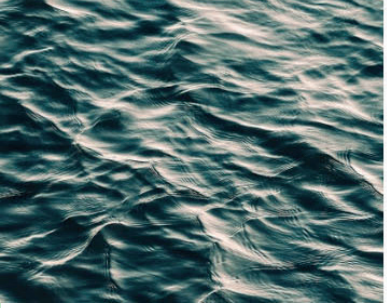
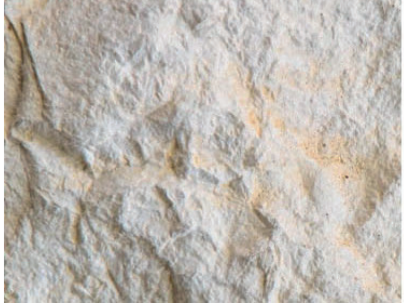
The concrete for the skins is formulated in C40/50 to optimise the thickness of the concrete shells and thus helps reduce the overall volume of concrete on the site.

By itself, that development already makes Precast wall TH Green a **very low carbon solution** in the market for concrete products.

42% reduction of CO2

Energy efficient manufacturing process

The process for manufacturing Precast wall TH Green **does not call for stoving** the concrete, unlike most prefabricated elements. Compared to Precast wallThermal, the CO2 savings are estimated to be 158 g CO2/m² of wall.

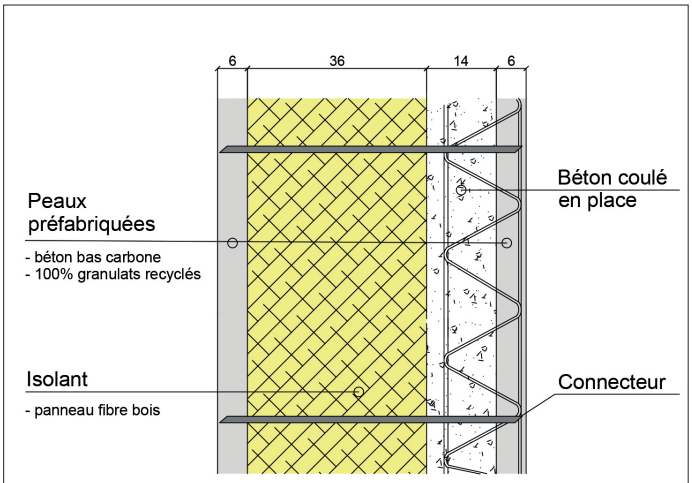
R_{wall} = up to 9.5 m2.K/W

Contribution of insulation:

During the building process
The insulation selected for incorporation into Precast wall TH Green is wood fibre as an alternative to the EPS or PU foam that is generally used, thus **reducing to a fifth** the impact of the choice of insulation.

When the building is in use
Precast wall TH Green is designed to allow the use of insulation that is up to 36 cm thick, thus addressing the **most extreme requirements in terms of insulation** for minimum energy loss.

The insulation, with thermal conductivity of λ 0.039 W/m.K, contributes to the overall performance of the wall
U = up to 0.105 W/m2.K



R mur = 9,5 m².K/W

representative cross-section

Factory incorporated openings for a structure that is ready for finishing work

The performance of structural and finishing work in the factory increases the quality and speed of completion. As that is done before site work, it makes scheduling and coordination on the site much smoother. Incorporation also keeps construction workers safe. Its use is compliant with DTU36.5 and guarantees **optimum finishing.**

The openings are **closed** and **protected** up to delivery.

Air exclusion happens simultaneously with the installation of our Precast wªlland the structure is then **ready for finishing**.

Environmentally responsible logistics

Our Precast wall TH Green solution is delivered using **self-unloading** trailers that allow the advance delivery of containers on the site. Deliveries can be planned away from daily rush hours and motorway congestion on Friday evenings, thus reducing traffic on roads.

Further, transport by **gas-powered** lorries reduces CO2 emissions by 20%. A rail-road transport solution may also be considered, depending on the size and delivery times of the project.

delivery by gas-powered lorries
20% reduction of CO2 emissions

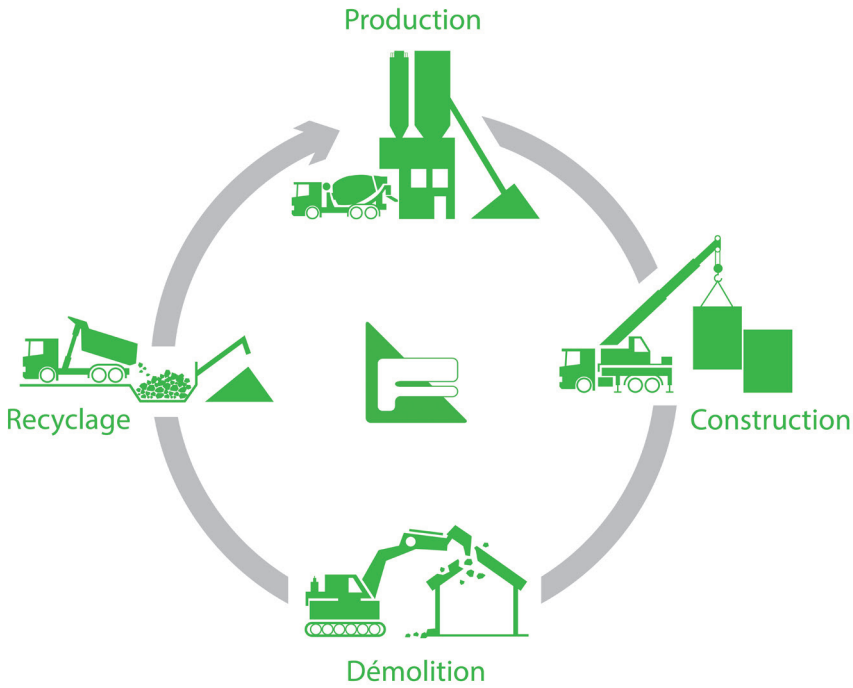
Conservation of natural resources

Biosourced insulation

As insulation, we have selected **wood fibre boards**, which use renewable raw material and are free from potentially harmful additives. The wood used by our supplier comes from sustainable forests with FSC® (Forest Stewardship Council®) and PEFC (Programme for the Endorsement of Forest Certification Schemes) approval, located close to the plants in order to reduce the environmental impact of transport. Among others, it is derived from thinning products, fine logs or trees at the end of their lives that cannot be used by sawmills. Each felled tree is replaced by planting a sapling, which stores CO2 as it grows and removes it from the atmosphere.

Repurposing for a new life

The concrete formulation may include **local aggregate salvaged during the concrete work of the Fehr group** as part of its efforts to promote the circular economy. In that way, we repurpose sorted aggregate in order to minimise waste, while guaranteeing optimum quality. As the standard NF206/CN for concrete restricts the use of recycled aggregate to up to 30% depending on the required exposure class, concrete with 100% recycled aggregate may be proposed on some conditions.



Limitation of waste

Precast wall TH Green is supplied **with no packaging or protection** on metal racks that do not produce waste. Its application does not involve the use of harmful products or special consumables.

What is more, our FDriver app (paperless delivery note) also contributes to our environmental approach by doing away with 100,000 printed delivery notes per year, and reduces our carbon footprint by eliminating vehicles for bringing back delivery notes for administrative processing.

Sustainable walls

Precast wall TH Green panels are designed for **a life span of 100 years**, like all other incorporated formwork walls.
As an exterior wall product, it is thus exceptionally lasting when compared to other cladding and insulation products, thus further reducing the generation of waste.

As with other incorporated formwork and insulation walls, the **absence of any need for particular maintenance** (other than inspection, and joint repair if needed every 10 years), is guaranteed by the technique and materials, which have proven their worth over many years. That is corroborated by an analysis of the life cycle of our incorporated formwork and insulation walls, showing an almost zero CO2 impact during use.

Life 100 years
100 % recyclable

	Total A1 – A3 Etape de production	Etape de construction		Total A4-A5 Etape de construction	Etape de vie en œuvre							Total B1-B7 Etape de vie en œuvre	Etape de fin de vie				Total C1 – C4 Etape de fin de vie	Total cycle de vie (hors module D)	D - Réutilisation, récupération, recyclage*
		A4 - Transport	A5 - Construction / Installation		B1 – Usage	B2 - Maintenance	B3 - Réparation	B4 - Remplacement	B5 - Réhabilitation	B6 – Utilisation de l' énergie	B7 – Utilisation de l' eau		C1 - Démolition / Déconstruction	C2 - Transport	C3 - Traitement des déchets	C4 - Elimination			
Réchauffement climatique* kg éq. CO_2	7,08E+01	2,78E+00	3,41E+01	3,69E+01	-3,28E+00	0	0	0	0	0	0	-3,28E+00	2,16E+00	2,35E+00	4,25E-01	-3,63E+00	1,31E+00	**1,06E+02**	-4,09E-01

Excerpt from the standardised product life cycle analysis of incorporated formwork and insulation walls

Regarding both concrete and wood fibre, recycling and repurposing systems exist already and are also well spread out over the country. The various initiatives that are currently being taken by the industry will only increase future possibilities.

ISO 14001

ISO 14001 certification - Alsace excellence mark

Resource conservation is one of our key concerns, and our production facilities have ISO 14001 certification to address environmental management requirements .

ISO 14001 certification is supplemented by the Alsace Excellence mark, also demonstrating our ethics and societal responsibility as a local company.

Precast wall TH Green is an excellent compromise between technical, thermal and environmental performance

	Qty of recycled materials [% by mass]	Climate change [kg eq CO2]
Precast Wall TH Green 28 cm wood fibre insulation	39 %	41,79
Concrete shell + exterior insulation 25 cm EPS insulation	0 %	61,23
Wood frame wall + composite wood cladding 28 cm wood fibre insulation	0 %	64,40

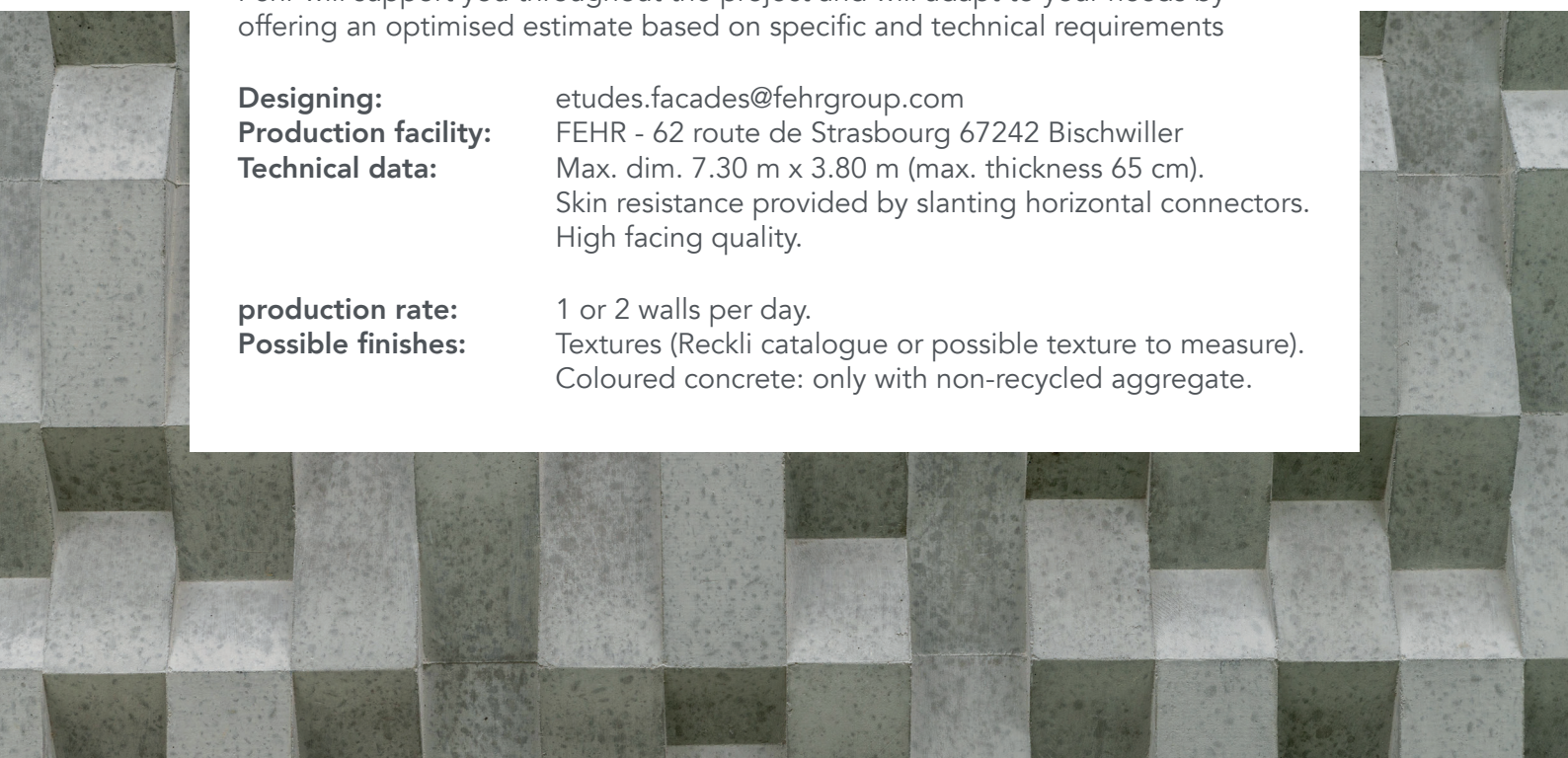
Study: Comparison between building solutions
Karibati, Motreuil - Sept 2020
Study of the walls described on p.2

Technical information

Fehr will support you throughout the project and will adapt to your needs by offering an optimised estimate based on specific and technical requirements

Designing: etudes.facades@fehrgroup.com
Production facility: FEHR - 62 route de Strasbourg 67242 Bischwiller
Technical data: Max. dim. 7.30 m x 3.80 m (max. thickness 65 cm).
Skin resistance provided by slanting horizontal connectors.
High facing quality.

production rate: 1 or 2 walls per day.
Possible finishes: Textures (Reckli catalogue or possible texture to measure).
Coloured concrete: only with non-recycled aggregate.



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This is Concrete.

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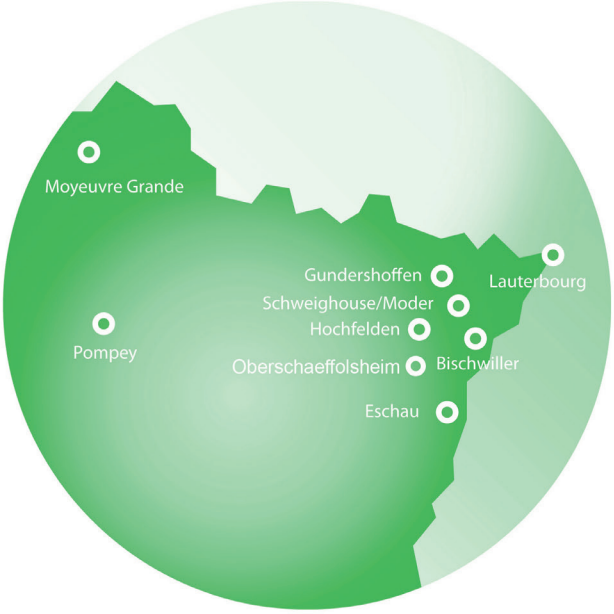
PRODUCTS

- Precast twin walls
- Thermal precast twin walls
- Precast slabs
- FClad® UHPC cladding
- Bespoke elements

SERVICES

- Lifting equipment & transport hire
- Installation
- Construction site tools & accessories



Prefabrication plants

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67270 Hochfelden

Lauterbourg
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67630 Lauterbourg

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67203 Oberschaeffolsheim

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