

The Energy Plug

a modular design solution for repurposing and adapting obsolete industrial structures to carbon-neutral performance

JAKOB+MACFARLANE

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together with : SETEC building: environmental consultants | PROJEX Ingénierie: engineering | ECKERSLEY O'CALLAGHAN: structural engineering | FERMES DE GALLY: landscape, vertical farming | TECHNIWOOD: wood construction | SNAIK: lighting | CASSO: fire safety | TEKHNE, costs | GROUPE EDF and SAINT-GOBAIN: industrial partners | PARTAGER LA VILLE: global design | BACKACIA: circular economy | WETROTT', K'RYOLE and ZENPARK: soft mobility | ETIC: space management, social and solidarity economy | IMPULSE PARTNER and LIVING LAB OF MONTREAL: animation ecosystem & start-ups | LES PETITS DÉBROUILLARDS and MANIFESTO: scientific and cultural mediation | PLEYEL EN HERBE, DESSINE-MOI PLEYEL, LE PARTI POÉTIQUE, PROXITÉ, EXTRAMUROS: citizen workshops and associations activities | BALUCHON: catering and social reintegration

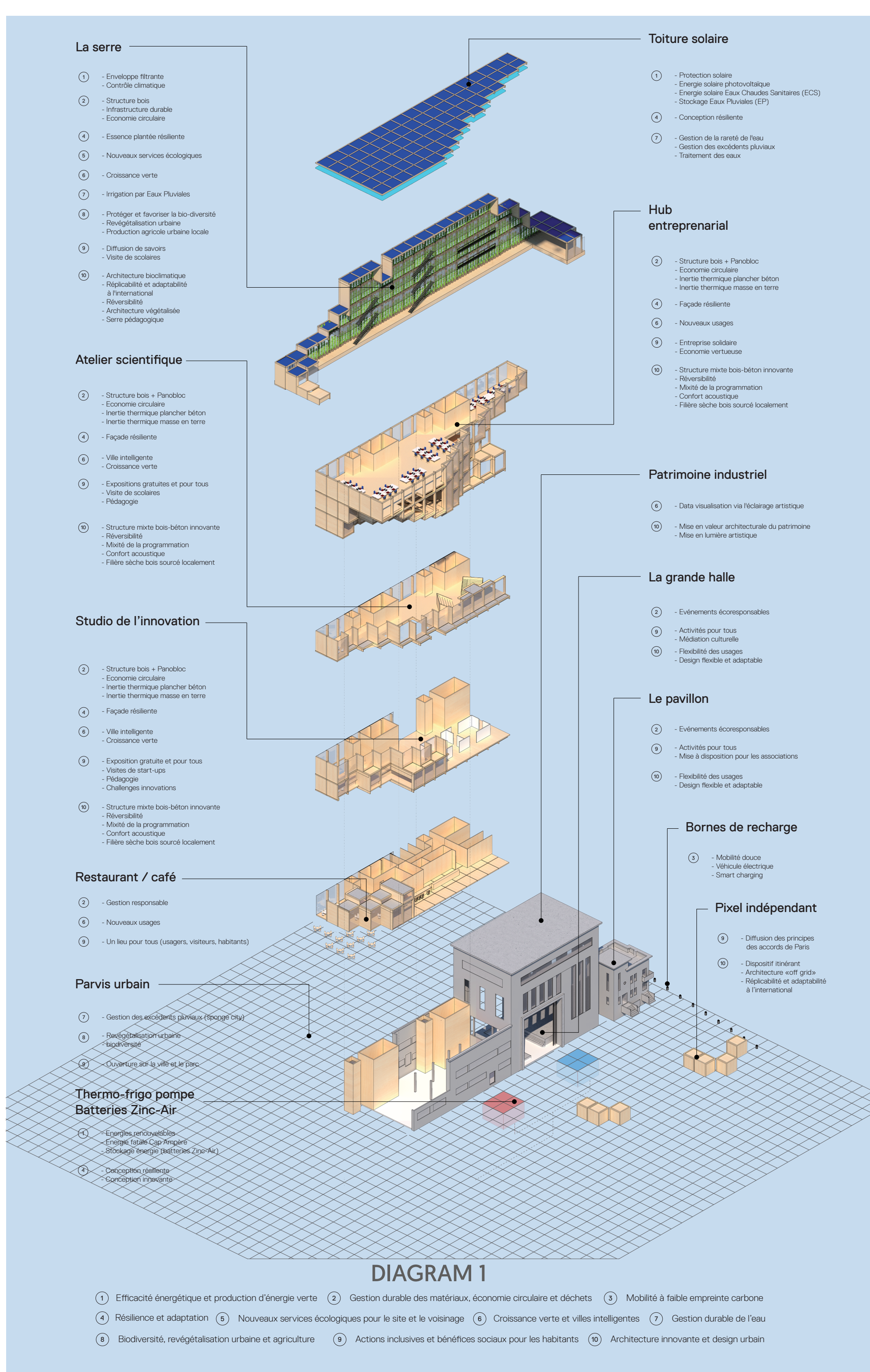


OBJECTIVE

The ENERGY PLUG was developed as the core part of the Odyssee Pleyel project, aiming to give a new purpose to a disused industrial facility and adapt it to carbon-neutral performance.

CONTEXT

In the Parisian suburb of Saint-Denis, France's major energy provider EDF used to have a vast storage and repair area for a nearby, highly polluting, coal-fired power station. Known as the Halle de décuage Pleyel, this 24m tall "industrial cathedral" from the the 1930s was decommissioned in the 1960s and remained derelict until 2019, when it was made available for the Reinventing Cities competition, "an initiative led by C40 to stimulate sustainable development and to celebrate innovative solutions to environmental and urban challenges".



THE ENERGY PLUG : HOW IT WORKS

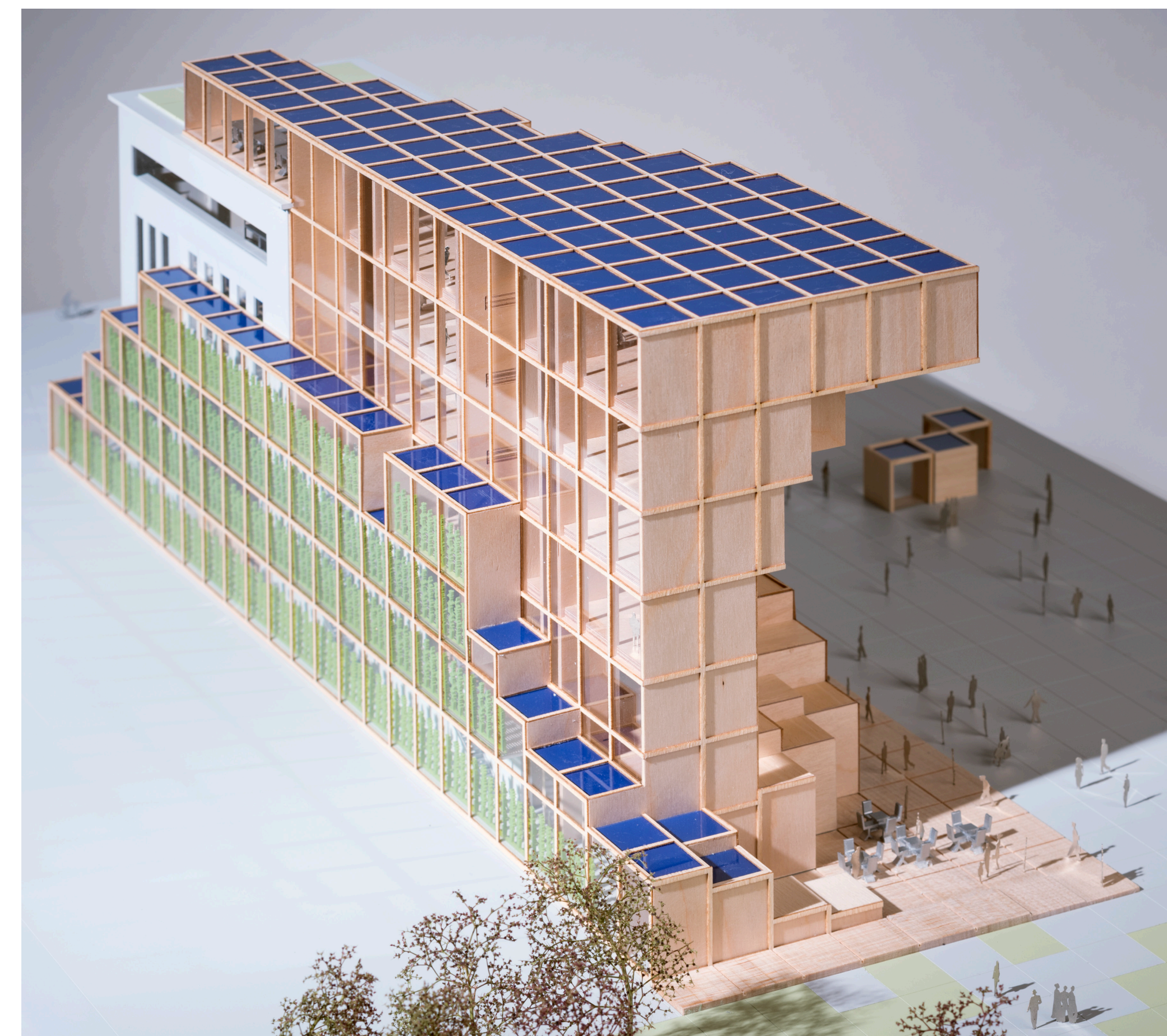
To protect and repurpose this monumental example of the area's industrial heritage while upgrading the "environmentally challenged" structure to carbon-neutral performance, our team has developed the ENERGY PLUG system.

The ENERGY PLUG is an adaptable prototype that can be "clipped" onto any ex-industrial building [see diagram 1]. Based on a prefabricated, insulated modular timber structure, it enables interior comfort by allowing natural lighting and ventilation; limiting heat loss, and controlling solar gain. [Diagram 2 shows the breakdown of a single module].

The building is protected from solar gain by the "solar canopy" that has a four-fold utility: electricity production, heating, rainwater recovery, and thermal protection.

A vertical greenhouse incorporated in the south facade [see image on the right] not only produces fresh food, but also supports a pleasant indoor climate almost all year round, with no additional air conditioning required. During heat wave periods, in addition to the protective canopy, the building will be naturally cooled by a Canadian well.

Winner of the C40 Reinventing Cities competition, this project is intended as a showcase of clean energy solutions; a hub for clean energy start-ups and scientific workshops; for educational and career orientation programs primarily aimed at local schools, as well as for cultural events and healthy entertainment. A restaurant backed by a social reintegration initiative will provide a welcoming meeting place.



OUTCOME

The outcome of this project is a modular "plug-in" solution for reusing obsolete industrial buildings and upgrading them to zero-carbon performance. Originally designed for a specific site, the ENERGY PLUG system can adapt to various local contexts.

CONTACT INFORMATION

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