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Henri Becquerel High School extension - Nangis
NANGIS, France

Located in the Ile-de-France region, the Lycée de Nangis is set for an ambitious extension project that marries modern design with sustainable principles. This project is spearheaded by the region itself, known for its openness to innovative construction solutions.

More space and more flexibility

The existing secondary school, built in an oval shape during the 1990s, has proven to be non-adaptable and impractical for current needs. The extension aims to introduce a new building for school catering and additional premises such as offices and computer classrooms, enhancing both functionality and accessibility.

The design, managed by COSA architectural firm, focuses on bioclimatic principles. The overall sustainable design includes a wooden façade structure filled with compressed earth bricks and a mixed wood-concrete floor, ensuring the building remains environmentally friendly and aesthetically pleasing.

Wood structure, natural ventilation and bio-based material

The new structures will feature a timber frame, with specific areas showcasing exposed timber and post-beam structures complemented by green roofing. Interior and exterior spaces will predominantly use raw earth bricks, with innovative uses of oak joinery and glued laminated timber for structural and decorative purposes.

A standout feature is the large atrium/wind tower with spiral interior woodwork, crafted from solid or laminated beech wood, which facilitates natural ventilation across the building. The building also includes a rainwater collection tank and an extensive green roof.

Flexible design and material efficiency

For the future classroom area, flexibility was a key consideration to allow room configurations to adapt to evolving educational needs. The design incorporates a regular grid of the wooden building structure, with central posts acting as a 'spine' to support long spans without obstructing space.

This was made possible by the innovative use of laminated veneer lumber (LVL). Proposed by CRUARD as a superior alternative to originally chosen materials, LVL provides the necessary strength for longer spans is validated by its ability to bear significant loads without additional support, making it a cost-effective and technically sound solution.

The prefabricated elements were particularly relevant to ease the construction process: The project is segmented into three phases to minimize disruption, as it takes place on an occupied site. And off site pre-cut elements participate to the fast installation.

Sustainability in all dimensions

Sustainability is at the core of this project, with the use of PEFC and/or FSC-certified wood, a wood-fired boiler for renewable energy production, and a commitment to low-impact construction practices including the recovery of over 70% of construction waste.

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The project utilizes bio-based materials and bioclimatic design elements to significantly reduce its carbon footprint. The innovative combination of materials and design choices ensures the building is not only sustainable but also beneficial in terms of energy efficiency and environmental impact.

The combined expertise of COSA for the design and CRUARD for the timber structure ensures the project aligns with both architectural ambitions and sustainability standards.

General

Delivery year

Under Construction

Building type

Education

Area (m²)

4,883

Storeys

1

Units

1

Products

Products and Services

LVL

Product quality

NVI

Product volume (m³)

20

StoraEnso

Team

Developer

Région Ile de France

Architect

COSA

Structural Engineer

RBS

MEP Designer

NICOLAS INGENIERIE

Specialist Timber Subcontractor

CRUARD CHARPENTE

Timber Engineer

RBS + CRUARD CHARPENTE