

CR² Sinapsi

Comfort and Sustainability at the Heart of
Children's Healthcare Facility
Cremona | Italy

2024



3D Rendering of the CR² Sinapsi Centre

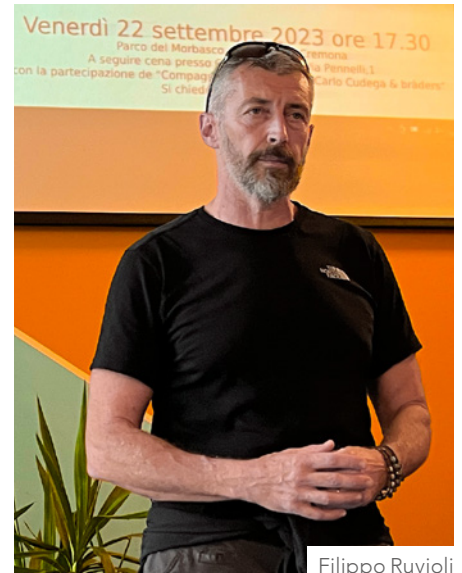
The CR² Sinapsi healthcare facility is nestled within Morbasco Park in the historic city of Cremona. **Designed with a focus on wellbeing and sustainability**, the centre was developed by the charity Occhi Azzurri Onlus **to support children with neurological conditions**. It offers expansive spaces for **rehabilitation, recreational activities, and entertainment**, while also providing resources for caregivers, families, and healthcare professionals.

Inaugurated in late September 2024, the state-of-the-art centre is now open to patients. Among several project partners, **ROCKWOOL played a key role, contributing its expertise in sustainable and innovative building solutions** to bring the CR² Sinapsi vision to life.





"Sinapsi" is an acronym of "Sustainable Innovation Neural Architecture of Poly Synesthetic Interaction"



Filippo Ruvoli

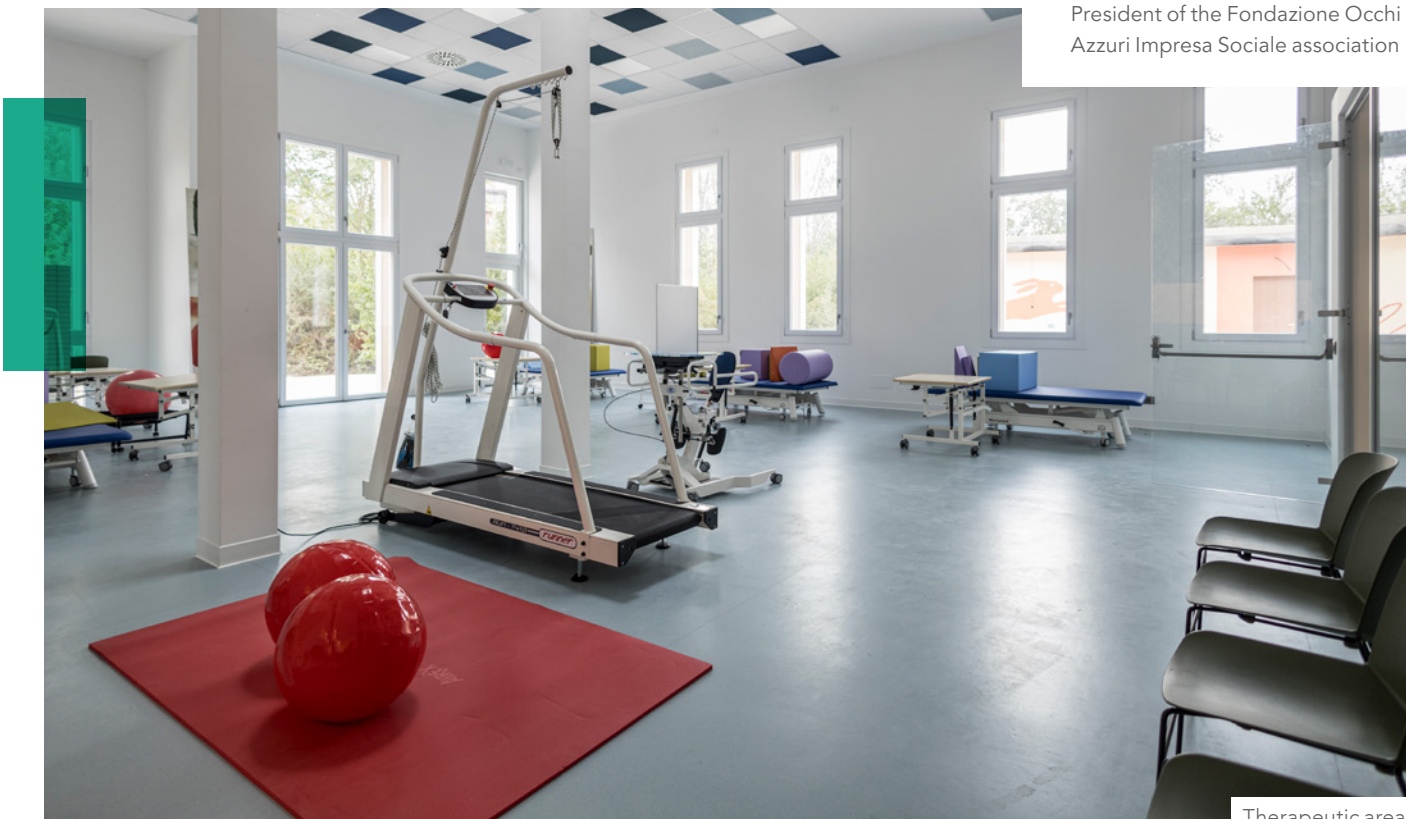
Comfort, well-being and sustainability

The aim of the CR² Sinapsi Centre is to provide care and therapy for children with neurodevelopmental disorders and rare genetic conditions. It will also support carers, families and healthcare professionals.

The **1,564 m²** building contains a **polyclinical medical centre** including a dentist room, play and multimedia rooms, a **270m²** pool with four different sections for different care purposes, an auditorium, a canteen, training spaces and workshops, as well as therapeutic horticulture in its grounds.

"We created our association to welcome disabled children into spaces that welcome them back in return – offering them an ideal place to be free from physical and mental discomfort as they undergo therapy, treatment, and recovery."

Filippo Ruvoli
President of the Fondazione Occhi Azzuri
Impresa Sociale association



Therapeutic area



CR² auditorium

A family-centered vision for healing

Filippo Ruvoli, President of the Fondazione Occhi Azzuri Impresa Sociale association, said:

“My wife Silvia and I envisioned the CR² Sinapsi project as a response to a lack of structures that met the needs of our son Orlando, who is affected by a rare genetic disease. We also focus on integrating, if possible, the entire family into the centre to maximise the child’s well-being as they are surrounded by siblings and loved ones. Currently, we can accommodate up to 40 children at the same time.”

“By designing the building for comfort and wellbeing, the architect has created a space that will achieve good therapeutic outcomes while conserving energy. In practice, this means that natural light, temperature and ventilation, and acoustic comfort are important.”

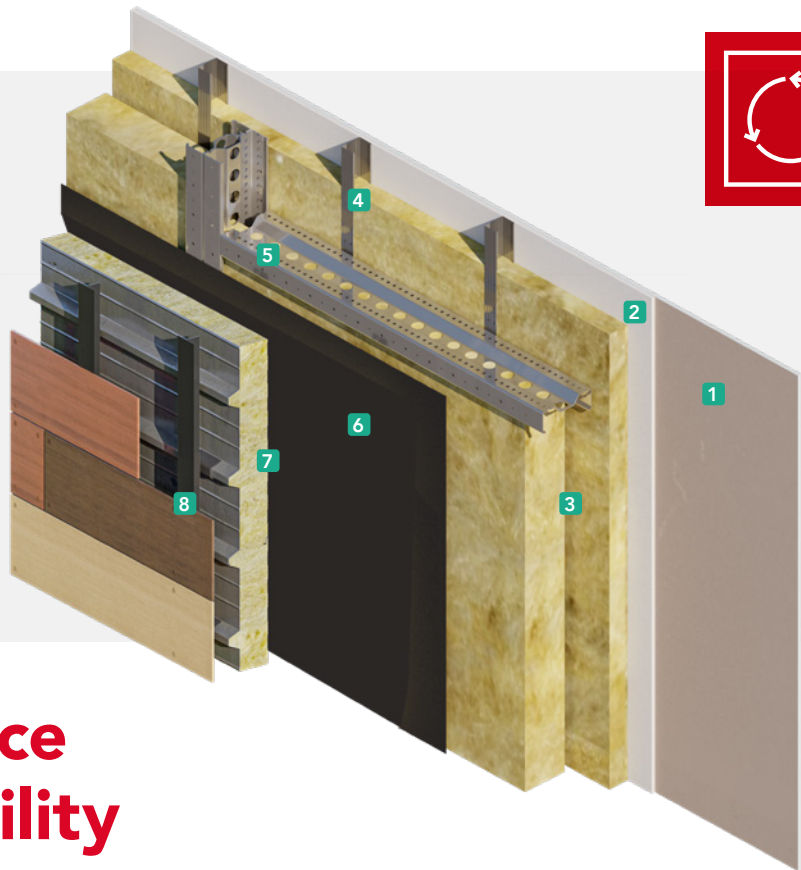


CR² pool area



Cross-section of CR² Sinapsi façades

- 1 Inner finishing layer
- 2 Coated gypsum sheet coating layer
- 3 Thermal and acoustic insulation layer in stone wool
- 4 Counterwall structure in light steel profiles
- 5 Supporting structure in light steel frame
- 6 Polyethylene waterproofing membrane
- 7 Stone wool insulated sandwich panels
- 8 Ventilated façade system with exterior stone wool cladding fastened by rivets



High-performance meets sustainability

Sustainability was a top priority for the project. During the design phase, careful consideration was given to creating a space capable of achieving good therapeutic results while **saving energy**, favouring dry construction techniques to minimize the building's environmental footprint. The auditorium and workshops benefit from **excellent acoustic performance**. Play and care areas are visually soothing and blend with the natural environment, while the pool and canteens maintain a comfortable indoor temperature.

The order comprised 3,500 m² of ROCKWOOL insulation for partition and internal walls. It included **600 m² of Rockfon acoustic ceiling panels**. Additionally, there were **1,000 m² of Rockpanel panels with wooden façade finishings**.

A total of 2,500 m² of stone wool cores for sandwich panels from ROCKWOOL Core Solutions were utilized for the roof and façades, the finishing counter-walls, and the internal partitions, offering excellent thermal and acoustic insulation, humidity control, fire resilience, and mechanical durability.

The building is based on a light steel frame. This supports a façade system that uses **sandwich panels with stone wool insulation at their core**. These form a protective shell, inside which a polyethylene membrane provides waterproofing. **Corrugations on the outer side of the sandwich panels support brackets** that hold decorative exterior cladding in place. These cladding boards are made from **high-density stone wool Rockpanel boards in a wood effect finish**.





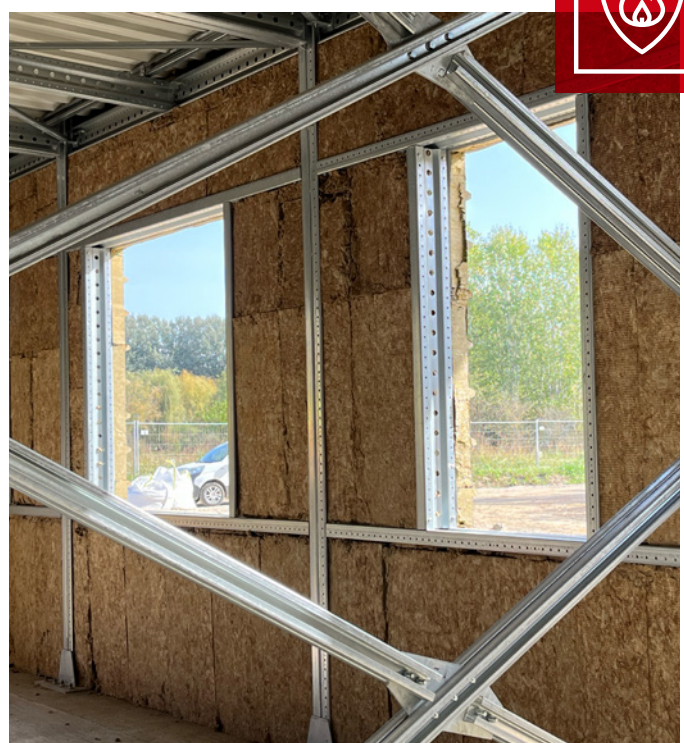
Efficient construction with modular steel and stone wool

Inside the waterproof layer, the steel frame is completed with a counterwall structure made from modular steel profiles. Gaps between the profiles are filled with medium-density uncoated stone wool, specifically **Acoustic 225 Plus N** and **Panel 211 N**.

This provides a combination of **thermal and acoustic insulation performance**, as well as **fire safety**. Being **water vapor-permeable**, it also **avoids build-up of humidity inside the centre**. This inner stone wool layer is covered with drywall, which is **also permeable to support good air quality**.

Noise is effectively absorbed thanks to Rockfon Color-all and Pacific, and a decorative inner finishing layer completes the envelope.

This kind of modular and dry construction technology has the advantage of straightforward construction and assembly. This cuts project risk and reduces waste by minimising offcuts and an excess usage of materials.





Rockpanel's wooden panels for a natural aesthetic

A building with a natural aesthetic

An important goal for the centre was a need to fit into the natural environment of the Po and Morbasco Park with an attractive decorative finish that is also durable and long-lasting. This is achieved with a ventilated façade with wood-effect exterior cladding.

The cladding used is based on a **compressed basaltic rock fibre**. Visually and architecturally effective, **quick to install, and durable**, it combines the workability of wood with the **robustness and fire-resistant properties of rock**.

In terms of aesthetics, **it achieves a natural look and feel** through the use of wood finishings with variety of natural **wood colours and wood grain texture**.

1,000 square meters of Rockpanel Woods panels made of compressed basalt rock, which are applied with different cuts, sizes, and tones to create a natural feeling, ensure visual continuity with the surrounding forest. Completing this natural look and integration with the environment is the centre's absence of visual and physical barriers to the surrounding greenery, and perhaps its most harmonious feature: the green roof.





The outer roof layers start with sandwich panels with stone wool core

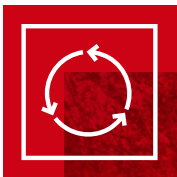
Green roof system

The green roof helps the centre fit into the park visually **while providing protection against heat gain and preventing urban heat island effect**. Like the façades, the green roof is based on a multi-layered dry construction system. Inside the light steel frame of the building is a galvanised steel frame for a false ceiling. As with the façades, the gaps in the frame are **filled with sandwich panels with ROCKWOOL stone wool core**. An inner finishing layer completes the interior ceiling, **formed of acoustically absorbent panels from Rockpanel**.

The outer layers start with sandwich panels supported on top of the steel frame.

Stone wool insulation inside these panels provides thermal insulation and fire performance. An outer PVC mantle lends protection and durability to the panels. A distilled bitumen layer on top of the sandwich panels acts as a waterproofing and anti-root layer. On top of this, green roofing elements in sintered expanded polystyrene are installed to provide drainage and water storage. A polypropylene fibre layer provides filtering and protection for these.

The culture and plant layer are then placed on the very top. Several species of sedum have been planted to provide year-round, low-maintenance planting.



CR² Sinapsi's green roof continues to grow



CR² Sinapsi needed to blend into its woodland surroundings

Strategic Partnership and Philosophy

The Sinapsi CR² centre aligns with Active House principles, emphasizing **sustainability, energy efficiency, and comfort**. It has attracted key partners, including the Municipality of Cremona, the Politecnico di Milano's VeluxLAB, and ROCKWOOL. The name "Sinapsi" stands for "Sustainable Innovation Neural Architecture of Poli Synesthetic Interaction," a philosophy that guided every aspect of the centre's design and construction.

Together, the project partners aimed to create a building that combines innovative construction technologies with safe, sustainable materials, reflecting the centre's commitment to care and meaningful community impact.

The project also received a significant boost with a non-repayable grant of 1 million euros from Fondazione Cariplo.

ROCKWOOL Core Solutions

coresolutionsmarketing@rockwool.com

Tel: +33 (0)1 40 77 82 82

coresolutions.rockwool.com

Get in touch with us now



Client: Occhi Azzurri Onlus,
funded by the Cariplo Foundation

Architect: G. Avanzini with STEEL & Co. srl

Steelframe building structure: Scaffsystem

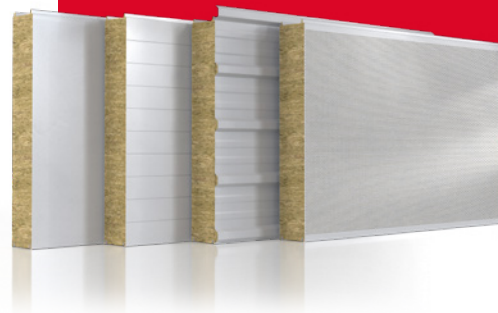
Sandwich panel supplier: Isopan

Cost of construction: Over €4 million

Construction period/timescale: 2022 - 2024

Products and services:

- Rockpanel Woods panels in a variety of dimensions and shades
- ROCKWOOL Acoustic 225 Plus N
- Rockfon acoustic ceilings
- ROCKWOOL Core Solutions stone wool core Spanrock™ for Isopan ADDWind Isofire Wall sandwich panels
- Isopan GreenROOF PVSteel
- Daku green roof system



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