PROJECT - 06

POWERHOUSE BRATTØRKAIA

Infrastructure

Technological Innovation

Architects:
Snøhetta

Location:
Trondheim, Norway

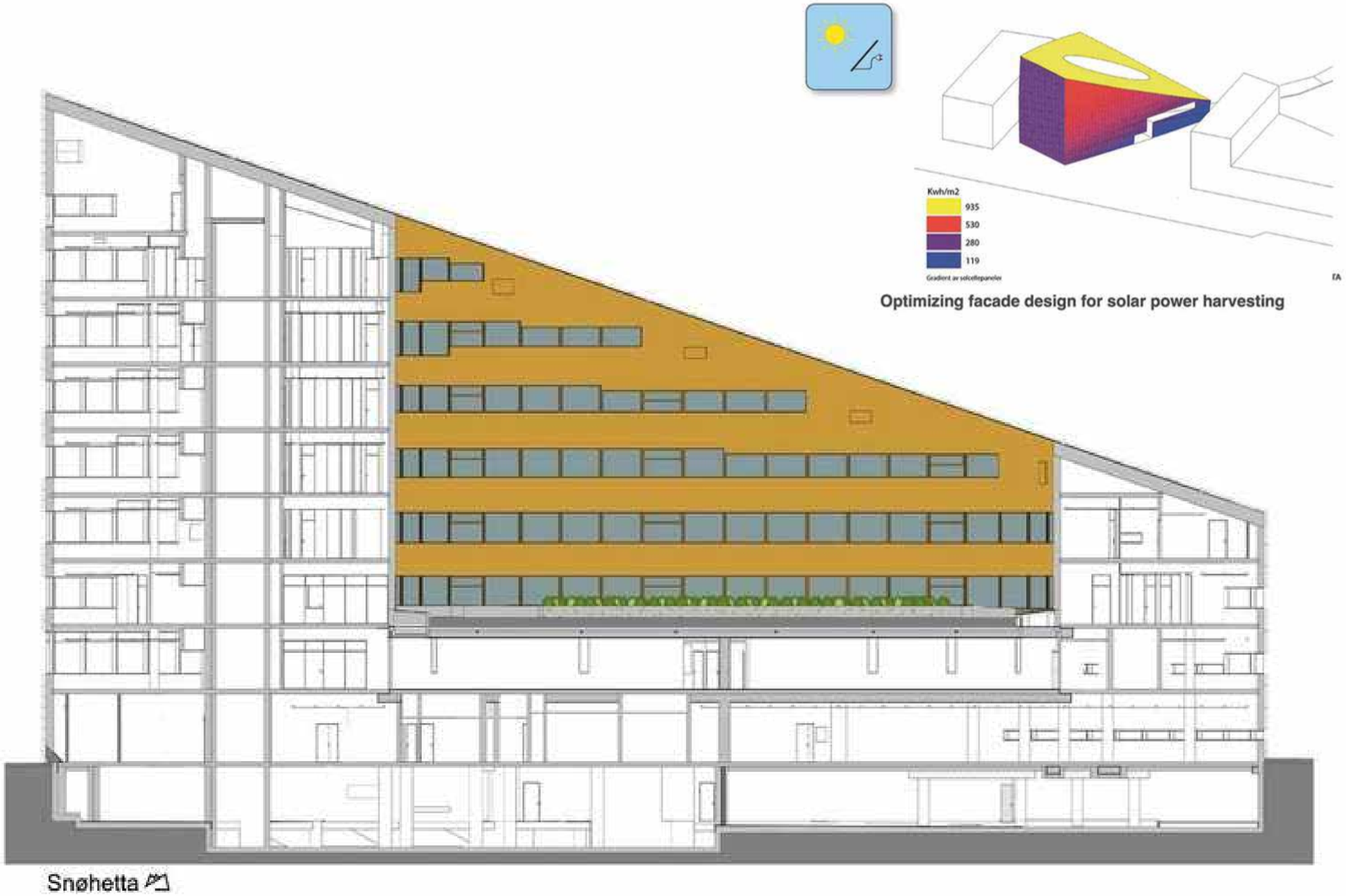
Area:
~18,000 m²

Year of Completion
2019

06

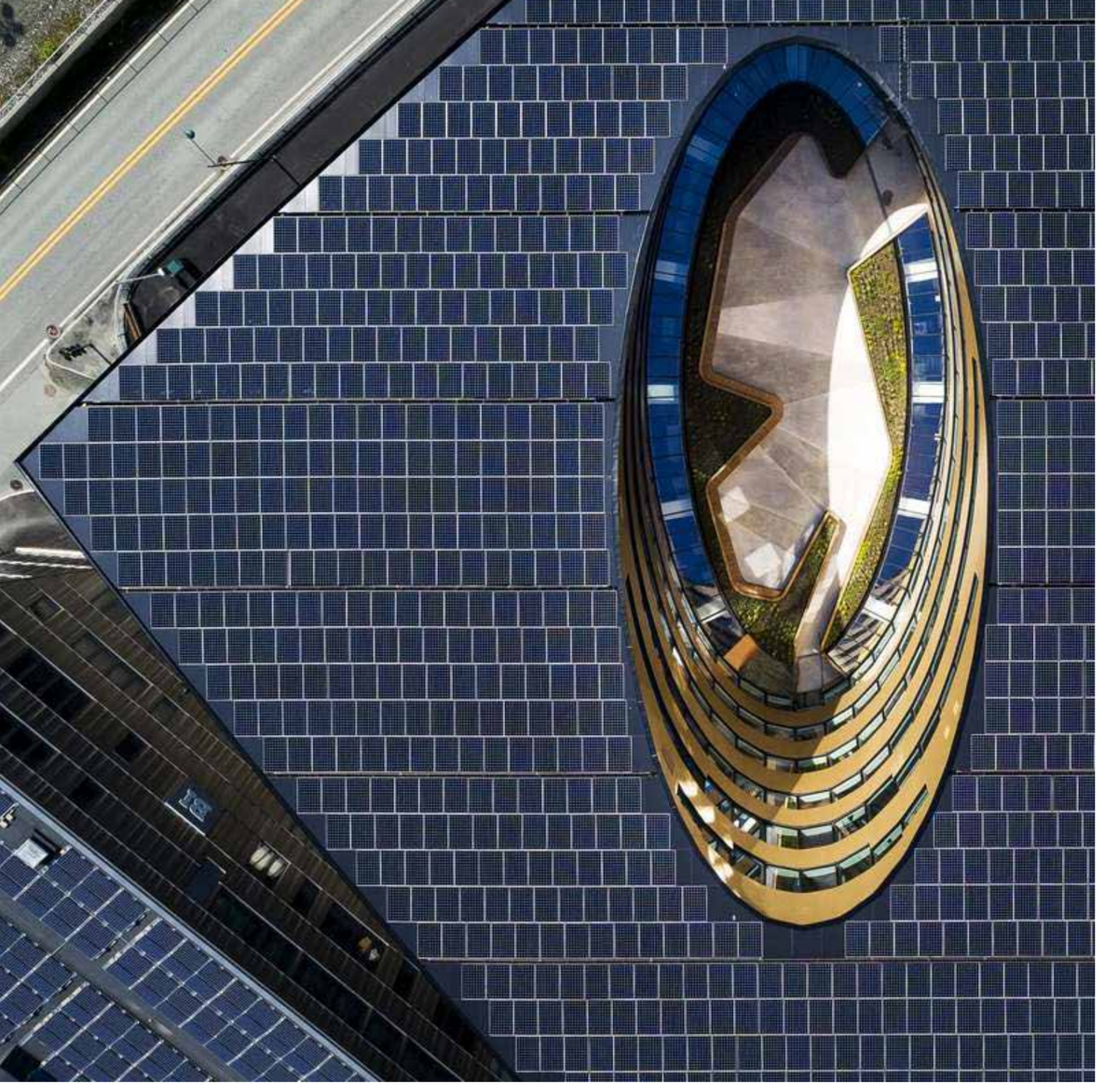
Powerhouse Brattørkaia by Snøhetta is one of the world's northernmost energy-positive buildings and a globally recognized benchmark for regenerative architecture. Located on the waterfront in Trondheim, the project demonstrates how commercial buildings can generate more renewable energy over their lifetime than they consume for construction, operation, and maintenance.

Developed as part of the Powerhouse initiative — a collaboration focused on carbon-neutral and energy-positive architecture — the building redefines sustainability by moving beyond energy efficiency toward net-positive environmental performance. The project produces surplus renewable energy through an extensive rooftop solar array strategically optimized for Trondheim's northern climate and low-angle sunlight conditions.



The building's distinctive sloping roof is both an architectural identity and an environmental strategy. The angled geometry maximizes solar exposure while reducing operational energy demand through passive climatic responses. The compact building form minimizes heat loss, which is critical in Norway's cold climate, while high-performance insulation and airtight construction further enhance energy efficiency.

Natural daylight and occupant well-being are central to the design. Large glazed façades maximize daylight penetration and provide strong visual connections to the surrounding fjord and urban landscape. Interior workspaces are organized to support flexibility, collaboration, and user comfort while reducing dependence on artificial lighting.



Powerhouse Brattørkaia also integrates seawater-based heating and cooling systems, energy-efficient ventilation, and smart building technologies that continuously optimize performance. Together, these systems significantly reduce operational carbon emissions while creating a healthier indoor environment.

The project emphasizes sustainability not only through technology, but also through material and lifecycle considerations. Low-carbon construction methods, durable materials, and long-term adaptability contribute to reduced environmental impact across the building's lifespan. Bicycle infrastructure, walkability, and proximity to public transportation further encourage low-carbon mobility and sustainable urban living.

Architecturally, the building balances technical performance with civic openness. The ground floor activates the waterfront through public-facing functions, transparent edges, and accessible urban spaces that strengthen the relationship between the building and the city. Rather than functioning as an isolated office block, the project contributes actively to Trondheim's public realm and environmental agenda.

Powerhouse Brattørkaia demonstrates how architecture can simultaneously support climate resilience, human well-being, and responsible resource use. The project proves that buildings can shift from being major energy consumers to becoming active producers of renewable energy and environmental value.

Globally, the project has become an influential model for regenerative and climate-positive design, inspiring new approaches to sustainable commercial architecture. It highlights the importance of integrating energy generation, passive design, user comfort, and urban connectivity within a single cohesive framework.

Ultimately, Powerhouse Brattørkaia presents a compelling vision for the future of the built environment — one where buildings contribute positively to both people and the planet while shaping more resilient and sustainable cities.