

ROOTS Hamburg – Germany's tallest wooden high-rise



PROJECT:
ROOTS



COMPANY:
GARBE



LOCATION:
Germany

Challenge

In 2017, GARBE faced the unprecedented challenge of developing Hamburg's first timber hybrid high-rise building – ROOTS, a 19-storey tower in HafenCity. At the time, timber construction was restricted to seven storeys, and few stakeholders had experience with large-scale wooden buildings. With no existing blueprint, the team encountered technical and regulatory hurdles, including structural design, sound insulation, and fire safety. Public awareness of timber's sustainability potential was also limited. All of this took place on a complex urban site bordered by railway, motorway, and port infrastructure.

ROOTS avoided approx. 1,640 tons CO₂ compared to conventional reinforced concrete construction.

Solution / Approach

To bring ROOTS to life, GARBE and its partners pursued a collaborative and pioneering approach. With no blueprint for timber towers of this height, the team engaged early with fire brigades, planners, and city officials to co-develop bespoke building code solutions. A full-scale, two-storey mock-up was used to test structure, acoustics, and fire protection – all critical to securing approvals and ensuring safety.

ROOTS incorporates a reinforced concrete core and 5,500 m³ of prefabricated timber elements, sourced from Austria and assembled on-site with millimetre precision. Unique fire-safety measures, including external sprinkler systems, were implemented for exposed wood façades.

Driven by sustainability and innovation, timber was chosen for its renewability, structural strength, and low carbon footprint. GARBE's investment in non-standard procedures,



interdisciplinary coordination, and high-precision construction reflects its belief in timber as a key enabler of climate-resilient urban development.

ROOTS is a pioneering example of sustainable densification – technically ambitious, environmentally progressive, and culturally transformative.

Results

ROOTS sets a new benchmark for sustainable high-rise development in Germany:

- Carbon footprint of just **4.2 kg CO₂ e/ m² GFA/year (Product stage “cradle to gate” A1–A3) – 50% below DGNB reference**
- Approx. **1,640 tons of CO₂** avoided compared to conventional reinforced concrete construction
- Built using **5,500 m³ of timber**, storing carbon and reducing embodied emissions
- **Prefabricated timber modules** minimised construction waste and increased precision
- Advanced **acoustic insulation** achieved despite exposed site conditions

- Delivered in a dense urban context with **128 condominiums, 53 subsidised apartments, 1,700 m² office, 2,000 m² exhibition, 430 m² gastronomy, and 180 parking spaces**
- Completed in **Q1 2024** – marking a milestone in climate-forward construction

Outcome

ROOTS is Germany’s tallest timber hybrid building and a landmark in sustainable urban development. Completed in Q1 2024, the 19-storey tower in HafenCity demonstrates GARBE’s commitment to climate-resilient city living and regenerative construction methods.

Timber was chosen for its renewability, ability to store carbon, and positive impact on well-being. Its use reduced embodied emissions to just 4.2 kg CO₂ e/m² GFA – 50% below DGNB standards – saving 1,640 tons of CO₂ compared to conventional concrete construction.

With no regulatory precedent for timber towers of this height, GARBE collaborated closely with Hamburg authorities to develop customised code modifications, fire safety strategies, and technical approvals. A full-scale mock-up allowed real-time testing of structural load, fire resistance, and acoustic performance. Innovations like façade sprinklers made it possible to retain exposed timber in the final design.



Situated on a triangular 3,200 m² site surrounded by busy infrastructure, ROOTS presented logistical and design complexities. Prefabricated timber modules were manufactured off-site and assembled with precision on location – completing one floor every three weeks. The finished structure features a mixed-use programme including housing, offices, exhibitions, and gastronomy.

ROOTS redefines what's possible in timber construction and shifts perceptions: where wood was once concealed, residents now embrace its natural aesthetics and environmental value. The project reflects a new architectural mindset – one rooted in courage, innovation, and ecological responsibility.

It's philosophy – “Close to heaven, down to earth” - captures the spirit of ROOTS: a high-rise that brings sustainable living to new heights, while staying grounded in natural, future-proof principles.

Company

Founded in Hamburg in 1965, GARBE is one of Europe's leading real estate firms. With 600 employees across 20 locations in 13 countries, GARBE manages over €15 billion in assets. Its “sheds, beds & infrastructure” strategy covers the entire real estate value chain as developer, operator, and investor across asset classes.

ROOTS achieves a product stage carbon footprint of just 4.2 kg CO₂ e/m² GFA (A1-A3) – 50% below the DGNB benchmark.

