



Wind energy
Waste-to-energy
Thermal power
District energy
Power transmission
Asset management
Renewable energy
Energy strategy

URBAN ENERGY PLANNING & DESIGN

CAPABILITY STATEMENT

WWW.RAMBOLL.COM/ENERGY

RAMBOLL

CONSULTANCY SERVICES WITHIN URBAN ENERGY PLANNING & DESIGN

The design of an urban environment largely determines the possibilities for energy and resource efficiency. Ramboll offers a strong approach to inform the urban planning process about cost-effective and sustainable energy opportunities.

Energy related costs such as building insulation, heating and cooling systems and energy supply account for a considerable share of the costs of building and running a city. A careful urban energy design may reduce costs, improve the visual impression and general liveability and boost estate value.

Ramboll has developed a strong approach, supported by effective tools, to integrating the energy systems design into the urban design from the very outset of the design process onwards to the detailed design of buildings and infrastructure. Our approach supports integrated planning of mobility, landscape and microclimate as well as resource management.

Height, density & orientation

We do an early assessment of how the urban design impacts on the energy consumption for heating and/or cooling as well as the daylight factor. Once the orientation and dimensions of buildings have been determined, we do detailed energy simulations of energy requirements to inform the building design.

Energy supply strategies

We assess the geographical distribution of the heating, cooling and electricity loads of an urban area. From there we analyse the costs and benefits of district energy (heating /cooling) against

individual systems. We do detailed studies of alternative energy supply options such as wind energy, solar, combined heat and power, heat pumps, thermal energy storage, geothermal and many more, to be able to provide recommendations to the most feasible energy supply strategies.

Socio-economic energy strategy analysis

We analyse the wider economic impacts of any energy strategy: How does it impact on the attractiveness to specific target groups; how do the visual impacts, land allocation needs etc. impact on the estate value.

Our approach

Our planning approach is based on a unique software package that enables us to perform integrated analysis of energy demand and supply strategies.

We use **A+E 3D** and **EIS** for assessment of building energy demand.

We use **ArcGIS** as a platform for analysis of geographical distribution of energy loads and energy production.

We use **EnergyPRO** to perform an hour by hour economic optimisation of the heating, cooling and electricity production.

We use **SR2** to perform an economic optimisation of district heating and district cooling networks based on hydraulic network analysis.

We use **E-Economy** for Energy Planning to evaluate overall costs and benefits of the proposed energy scenarios based on economic stakeholder analyses.



Urban energy planning & design in Ramboll

Number of specialists: **150**

Annual turnover: **€20 mill.**

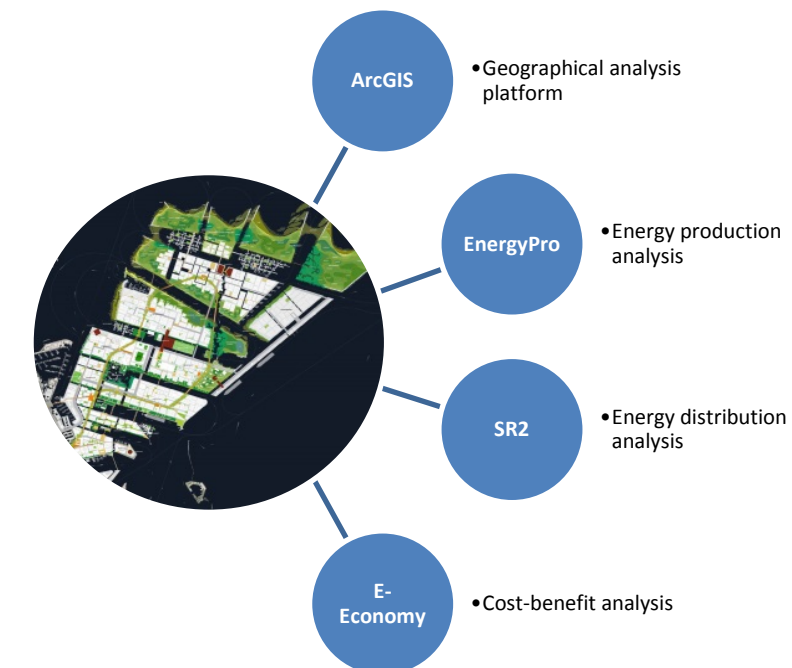
Years of experience: **20**

CONTACT

John Flørning
Project Manager
JNF@ramboll.com
Phone +45 51618653

Ramboll's services

We work as sole consultants or in multi-disciplinary teams of experts contributing to the design decisions from the early strategic decisions through the masterplanning phase, the drafting of planning codes onwards to the design of buildings and infrastructure. Our clients include project developers, utilities and contractors. Our analysis approach is illustrated below:



Selected project references

- **Chicago Lakeside Development, McCaffery Interests, Chicago, USA:** Energy efficiency, district heating and cooling, combined heat and power, waste management, storm water management etc.
- **Skolkovo Innovation Centre, Skolkovo Foundation, Moscow, Russia:** Development of a "Green Code" design regulation for energy consumption and supply, waste management, water and waste water treatment as well as storm water management.
- **Milan Strategic Plan for Energy Transmission, A2A Calore & Servizi Srl, Italy:** Strategic plan for district heating transmission.
- **Risø Sustainable Science Park, Roskilde Municipality, Roskilde, Denmark:** Development of a master plan concept for a sustainable science part of 500,000 m². Sustainable energy and mobility.
- **Nordhavnen CO₂ Neutral City District, City and Port Authority, Copenhagen, Denmark:** Development of a concept for a CO₂ negative district of 40,000 inhabitants and 40,000 work places.

Why choose Ramboll for your urban energy development project?

- We offer full-range services within energy planning from feasibility studies to detailed design and operation
- We offer a unique planning approach to inform decision making throughout all project stages
- We have decades of experience of design of energy efficient buildings and complex energy systems
- We have experience of creating synergy between energy systems, buildings, transportation, waste and storm water systems in urban master plans



Ramboll's geographical urban energy planning & design experience