**Windmill of Copenhagen**

Standing on the shore of Refshaleøen, facing the wind strong, calm and steady, there is a memory of the past; a worker. A ghost of the old shipyard one could say, helping us on our way. With cracked palms and broad shoulders let us work on the banks of Refshaleøen, once more.

There was a time of great originality and local richness in every country. One could say from the look of the buildings and materials used what was the spirit of that particular location. “Have you seen the windmill already?” was a question frequently asked among travellers.

Over the past few years great achievements and innovations have been made in the field renewable energy and we are getting closer to a more environmentally sustainable lifestyle. However in this rapid development and globalization we are facing a new kind of challenge: We are starting to lose our originality and the spirit of the location. Every day traditional designs and local innovations are vanishing and being replaced by universal designs. We are losing our roots and the knowledge to build and invent locally. It is not enough to have sustainable energy sources: We need to be sustainable in every level of the creating process. Let us combine the new technology with new and innovative local designs. Let us bring back the originality. Let us build something the local people can identify with.

Windmill of Copenhagen is manifest for renewable energy of the future: Innovations with strong local identity. Windmill of Copenhagen is strong enough to start the conversation not only locally but also internationally. The Windmill is a 45 meters high statue of an industrial worker. Copenhagen has a great history in industrial sector and the shipyard of Burmeister & Wain has a great role in that story. Windmill of Copenhagen identifies the strong and never give up attitude of a fierce worker combined with innovations of better future. The broad shoulders represent the past and the strength and the three blades of the windmill represent the three main elements of the future development of Copenhagen: Sustainability, liveability and originality. The Windmill of Copenhagen is a continuum for the 2014 European Green Capital and it inspires the local people to take part in the demanding future challenge of Copenhagen: CO2 neutral by 2025.

**Act of 80%**

Windmill of Copenhagen occupies only a small part of the land offered leaving the rest of the area, 80%, untouched. Refshaleøen has great potential to be developed and the reason for the act of 80% is not to say it should not be built. The act of 80% challenges people to think how much we should build after all. The families go smaller while the houses continue getting bigger.

Buildings are responsible for more than 40% of global energy use and one third of global greenhouse gas emissions. Over 80% of the greenhouse gas emissions take place during the operational phase of building (heating, cooling, ventilation, lighting, appliances). We could say the most efficient activity is not to build, but we cannot go there either.

Quality instead of quantity. Instead of low quality big buildings let us build smaller with excellent quality. Success is a lot of small details made well.

Small is the new big: Quality is more.

**The Design**

Windmill of Copenhagen will be standing in Refshaleøen with quality materials and strong identity. The statue is designed for generations to come and it lasts time.

A visionary builder Gustave Eiffel abandoned the old building traditions and decided to build a truss tower instead. This brave new design made the statue of liberty one of the earliest examples of curtain wall construction. We too need to be brave and come up with new innovations and solutions.

Instead of the more traditional steel frame the structure of the statue is being optimized with algorithms emulating the structure and the growth of the biological forms. This optimizing enables the maximum efficiency in material use and load bearing.

The structure and the surface material of the statue are easy to prefabricate and build. The surface material used is a thin layer of white concrete providing the best durability in all weather conditions In Copenhagen. Inside the statue is a strong steel frame. All the parts are built of non-corrosive materials.

The rotor needs to be able to orientate towards the wind in the changing weather circumstances. The statue is equipped with active yaw- system enabling the rotation of the nacelle of the wind turbine against the stationary tower based on automatic signals from the wind direction sensors. The stationary tower goes through the shoulder into the palm of the statue enabling the rotation keeping the statue stationary. From the ground this small rotational shift is hard to notice and it remains as a technical fact.

From inside the statue the visitor is able to enjoy the beautiful view over Copenhagen while enjoying the fascinating movement of the blades rotating outside the statue.

The statue (850 kWh Turbine) produces approximately 7400 MW a year. With maximum capacity it produces electricity to 1128 Dane a year.