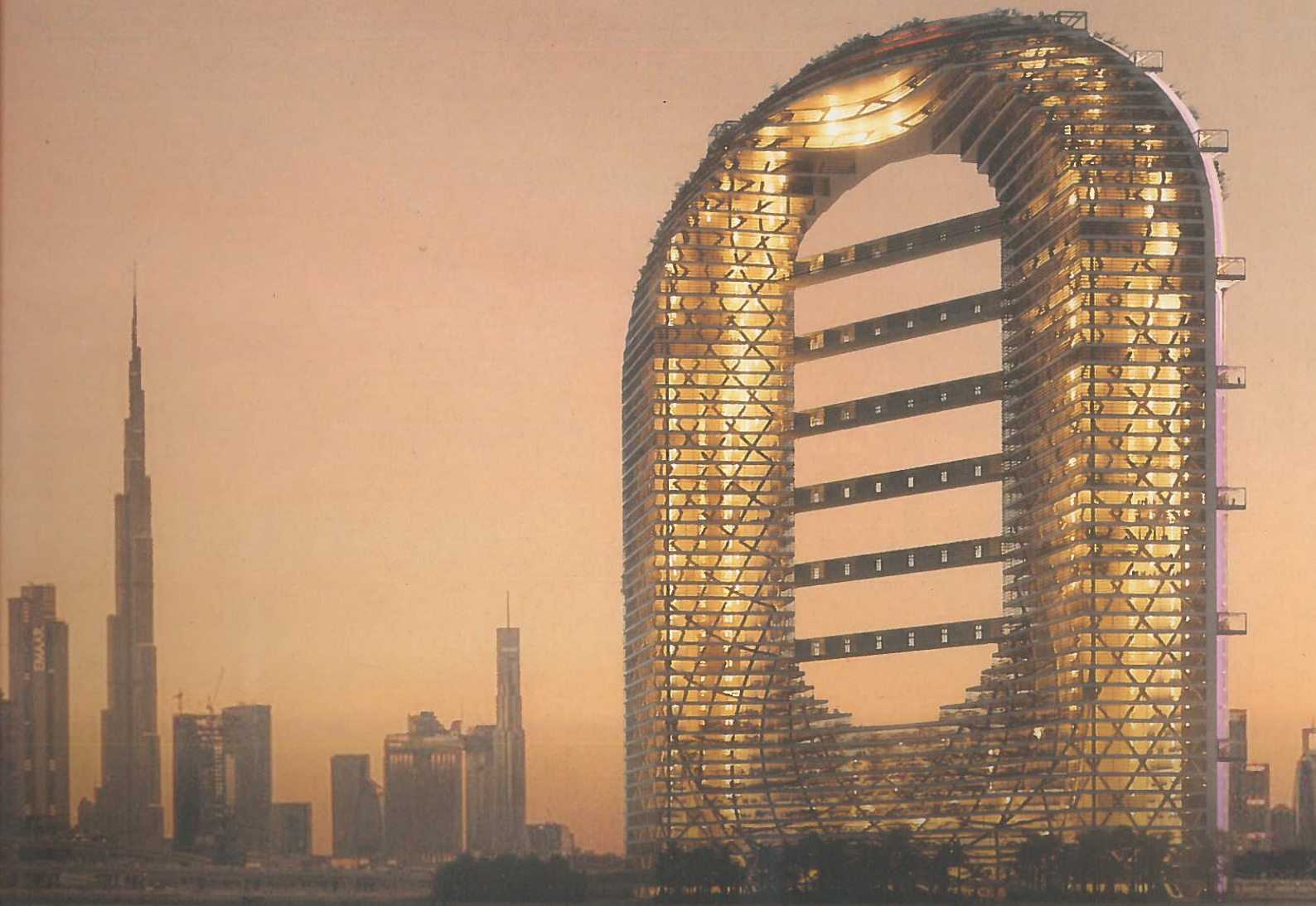
FEV

#77 SPECTRUM



1.
Concept study of "Dutch WindWheel" in Dubai.

#1
FEV plans energy and building technology for the ***low-emission building*** "The Dutch WindWheel"

Residential and commercial buildings contribute a significant 40 percent to climate-damaging greenhouse gas emissions and thus - along with the transport sector - bear the greatest potential for savings on the way to a zero-emission future. "The Dutch WindWheel" is the prototype of a new generation of sustainable buildings. FEV is the coordinating project partner for this showcase project, in which only minimal emissions are emitted and the necessary energy is generated as much as possible by the plant itself from sustainable sources.

The engineering service provider who has transferred the expertise built up over decades in sustainable mobility solutions to the energy sector is fully responsible for the planning, development and realization of the entire technical building equipment of the property.

This includes the components for power generation from wind and solar energy, as well as energy and battery management, and air conditioning. In addition, FEV is developing a concept for the use of waste water and waste heat to generate energy and for the production of synthetic methanol. In the long term, this will also ensure a sustainable supply of drinking water by means of recycling.

»FEV, as the coordinator of the building project, is taking advantage of its many years of expertise in sustainable energy solutions.«

Tourist magnet with sustainable aspirations

The building's eye-catching silhouette combines modern design and various sustainable features. The original intention of the responsible architect Duzan Doepel was to create an extraordinary tourist attraction in the port of Rotterdam (Netherlands). The idea was to show that buildings are capable of making a positive contribution to the climate in the future. The third aspect was to motivate people to reflect on their own energy consumption and to think about potential savings in the building sector. The "Dutch WindWheel" should be able to fulfill a variety of purposes and, depending on wishes and needs, be operated as a commercial or residential building, as a restaurant and hotel, or as a technology hub, as well as in any mixed form. An additional attraction, e.g. for tourists, are the autonomously moving pods on the outside of the building, which allow visitors to enjoy the view over the surrounding countryside.

The interior of the building is defined by generously landscaped green areas that contribute to the improvement of the air and quality of life. As far as possible, local suppliers will be given preference when it comes to the choice of construction material, and sustainable or recycled resources will be used that are in harmony with local conditions. Duzan Doepel emphasizes: "Nature offers us a wide range of possibilities for creating a healthy and sustainable feel-good climate even without high-tech. Our goal is to use these effects first before working with modern systems technology."

Silent power generation

Although wind energy is the name-giver for the building, one looks in vain for conventional wind turbines at the "WindWheel." Instead, the electrical power is generated by electrospraying. This innovative technology uses the Venturi effect created on the building: The shape of the facade creates an air flow that transports positively charged water droplets through a magnetic field of the seven horizontal intermediate levels in the facade, the so-called power beams. This generates electrical voltage. Unlike conventional systems, this technology does not require any moving parts, which significantly reduces noise, vibrations, and shadows.

The second source of energy for the building is the sun. Around 70 percent of the building's facade is equipped with solar panels for this purpose. They also serve as shading elements. Further photovoltaic capacities, including the roofing of the parking areas, are included in the planning of the energy supply. FEV used existing models to carry out and include different load and application cases for this purpose. An intelligent grid and charging management system developed by FEV's engineers uses the vehicle batteries of the parked electric vehicles as additional energy storage and, conversely, uses them as an additional energy source when needed.

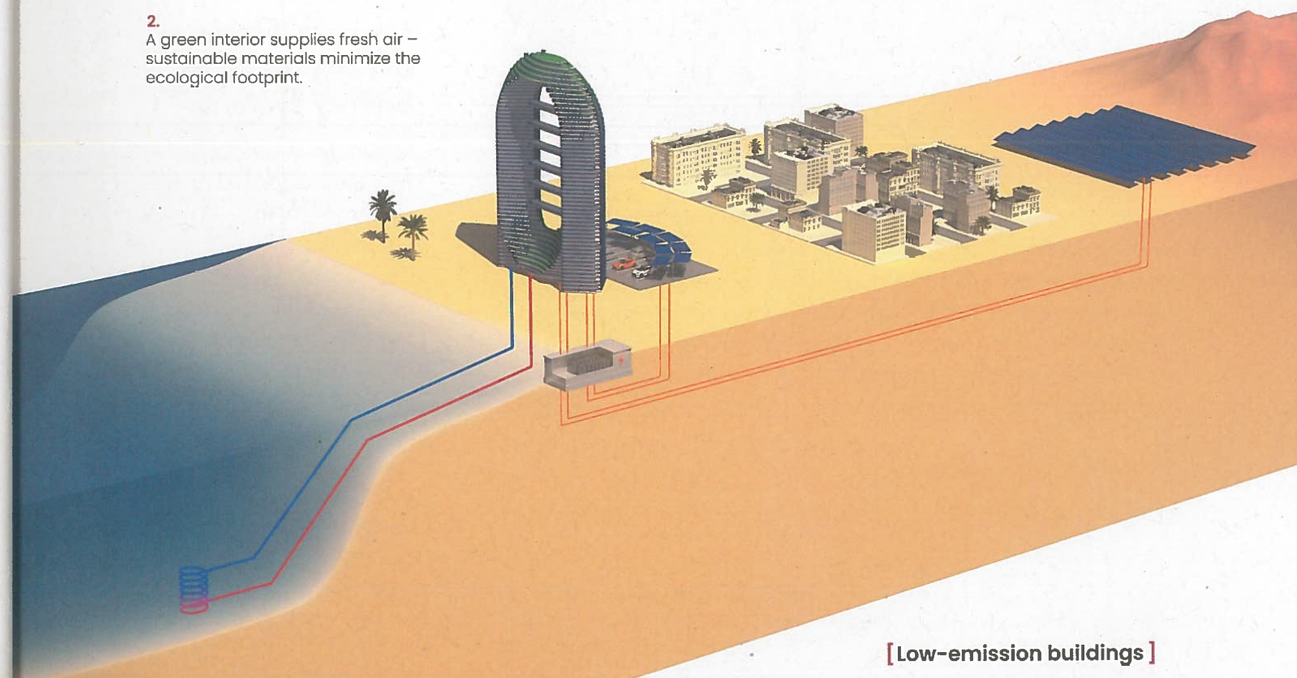
Even with air condition, the planners are focusing on sustainability: The warm exhaust air is fed via generously dimensioned piping into heat exchangers deep below sea level. The cold air is then returned to the building to cool it down.

Patented concept for energy supply

The concept of autarkic and transient operation also includes the treatment of the building's wastewater. FEV brings in a patented concept where wastewater, sludge and organic waste can be treated and used to produce organic methanol. FEV has already proven the feasibility of this technology in several projects and is now bringing this concept to the "Dutch WindWheel" ecosystem. The amounts of potable water generated by this process will be returned to the building's circulation system, supplementing the quantities generated by the processing of rainwater. The use of these advanced technologies is intended to create, in perspective, an environment that can operate with a minimal ecological footprint and, if necessary, recycle the waste and wastewater generated by the apartments and buildings in the neighborhood.

With "The Dutch WindWheel", the architects from Rotterdam are laying the foundation for a new generation of low-emission buildings. FEV is proud to underline its role as a leading global development service provider in this project and to bring its purpose "We drive innovation to help the world evolve" to life in practice.

2.
A green interior supplies fresh air – sustainable materials minimize the ecological footprint.



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