

Systematic architectural design for optimal wind energy generation

Abdel Rahman Elbakheit

King Saud University, Saudi Arabia

Abstract

Wind energy development counts thousands of years, that is, from the starting point of the very first vertical-axis wind machines operating on the basis of drag forces, up until the current time, during which wind turbines under development have reached the scale of tens of MW.

Constant evolution of the wind power concept throughout this period may be reflected in the most straightforward way by the fact that we are now arguably entering the time of fourth-generation wind power machines. From the early times of wind power exploitation, when the first vertical-axis windmills were used for grinding, to the times that electricity power generation lies on the rotation of huge epoxy-based blades reinforced with carbon fiber and the exploitation of offshore potential, humankind has encountered numerous types of wind machines and designs, which have always found an important place in the puzzle of technological development

Biography

Dr. Abdel Rahman Elbakheit is an associate professor at the Dept. of Architecture and building Science, King Saud University. Majoring Sustainable Architectural design and research, Tall Building design studio, Architectural Sciences, Lighting and Acoustics. Integrated building systems and Architectural Sustainability research. Dr. Elbakheit is a consultant Architect in sustainable Architectural design. Obtained his doctorate degree from

University Of Nottingham, UK 2007. It's topic 'Enhanced Architectural integration of Photovoltaic and wind turbines into building Design'; utilizing architectural forms creating favourable conditions for integration of photovoltaic and wind turbines, maximizing performance as well as the architectural environment. In 2002, graduated with a distinction first class, MSc. In Renewable energy and Architecture from same university.