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This project runs from
February 2012 - June 2012

D-Challenge

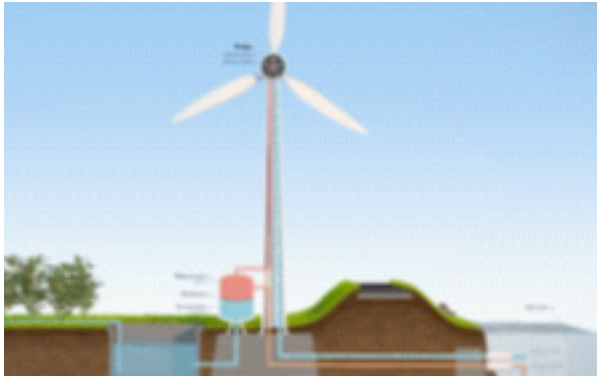
Serious Business

Delft Centre for Entrepreneurship

www.designchallenge.tudelft.nl

Open for Master students from all faculties

Hybrid Wind Turbine for The Dutch Agricultural Sector



turbine sizing/power characteristics, spatial fitting and demand matching



Introduction

The Dutch Agricultural sector is world leading in technologically advanced greenhouse cultivation. Associated with this, the sector witnesses and ever-increasing demand for fresh water and energy. As groundwater salinisation and long periods of drought are augmenting, and so is the cost of energy, the demand for reliable and sustainable resources is growing.

With Wind4Water Solutions we have made an inventory of the goals and needs of the Dutch agricultural sector. Based on this we have developed a concept that is to make an important contribution in the sector's main demands of resource reliability and autonomy in a sustainable, economically viable and highly energy-efficient way

The Wind4Water Hybrid is equipped with both a pump and a generator, taking care of a partially hydraulic and partially electric energy conversion. The design is such that the wind turbine can deliver fresh water in low wind periods and electric power in high wind periods. This way the demand for fresh irrigation water can be met in spring and summer and the demand for electricity for heating and lighting purposes can be fulfilled in autumn and winter.

The team of TU Delft students is asked to propose an optimized design of the hybrid system in the wind turbine, creating synergy between technical design,

Expertise Preferably Needed

- Industrial Design Engineering
- Mechanical Engineering
- Electrical engineering
- Technology, Policy and Management

Main Tasks

- *Analyze resources demand in agricultural sector using a broad network of actors*
- *Optimize wind turbine spatial fit in agricultural setting*
- *Model speed controlled switching mechanism between water/electricity production*
- *Create 3D wind turbine nacelle layout*
- *Presentation of the design at Delta Water Award conference*

The students will get access to a large variety of actors in relation to the subject, ranging from agricultural entrepreneurs to policy makers. They get a chance to contribute to the highly innovative sector of Dutch greenhouse cultivation

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