Energy Gathering by Micro Turbines for Low Voltage Appliances

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***Abstract*—In a city environment, the wind is often less predictable and can be re-directed in many different ways by all kind of obstacles. Therefore large size wind turbines would not work effectively, not to mention the requirement for planning permission related to their installation. In an attempt to overcome these problems, this paper looks at the designing of 3 vertical micro turbines with a maximum diameter of 30cm, which generate electric power for low voltage DC loads. The paper looks at the design, simulation and building of a combination of Savonius-type, H-type and Darrieus type blade turbines. The results indicate that the most efficient turbine combines the principles of different blade designs, resulting in a power coefficient of 42%, an average total efficiency of about 32% leading to a high electric power output, a good self-starting characteristic, and low starting and cut-in wind speeds of 2.25m/s and 2.75m/s respectively. On top of that, the turbine has a simple mechanical structure and a can be produced cheaply.**