

Abstract Submitted  
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**Pulsed Coandă Effect for Wind Energy Generation.** ANAN GARZOZI, The Technion - Israel Institute of Technology Faculty of Mechanical Engineering, CHRISTIAN HOFFMANN, TU - Berlin, DAVID GREENBLATT, The Technion - Israel Institute of Technology Faculty of Mechanical Engineering — The pulsed Coandă effect was used alternately on the sides of a spring-stabilized circular cylinder to extract energy from the wind in the form of reciprocating motion. This radically new wind-energy generation concept is ideally suited to high-pressure positive displacement pumping used for reverse-osmosis desalination, because it eliminates electrical generator and motor inefficiencies. Flow visualization experiments were performed to identify the time-scales associated with dynamic flow attachment and separation. Subsequently, a proof-of-concept scale-model technology demonstrator was constructed, which consisted of a vertically-mounted, spring-stabilized Coandă circular cylinder that was equipped with two span-wise blowing slots. It was connected, via a sting, to a one-degree-of-freedom pivot at its lower end and loaded with a positive displacement pump. Measurements included the static loads generated by the Coandă effect and system power performance evaluations. The former were used, together with a dynamical system model, for performance predictions. Direct system performance measurements demonstrated a positive net power output, while model predictions indicated efficiencies of approximately 20%. System efficiency can be greatly improved by using two blowing slots on either side of the cylinder or by allowing two-degree-of-freedom oscillations.

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