



Urban Windmill

www.donqi.nl

Laat de wind voor je werken



Urban Windmill

Renewable Energy and Energy Efficiency
8 October 2008



U r b a n W i n d m i l l

DonQi Quandary Innovations

DonQi's vision is that energy will increasingly be generated de-centralized through a combination of sustainable energy techniques

DonQi mission is helping to provide decentralized sustainable energy solutions in a profitable way
The primary objective is to develop wind-energy as a commercial-attractive energy-source

New energy technologies

Technology	Elektricity	Heat	Installed capacity
Nucluar power	X		372.000 MW
Windturbines (large)	X		79.300 MW
Windturbines (UWT)	X		< 100 MW
Heat pump		X	12.600 MW
Solar boiler / PV	X	X	6.600 MW
Fuell cells	X	X	Not available
Micro heat generation	X	X	Not available
Biomass	X	X	20.000 MW

Trends and facts around sustainable energy

- Large generation via big and integrated power generation
and
- Decentralized generation by users through a combination of sustainable technologies

Raedthuys 2004: NCW - € 8 mio

Investment: € 41 mio

Annual operational cost: 0,9%

39M kWu x € 0,117 (incl MEP)



40%
transport
loss



20%
conversion
loss



DonQi windturbine: NCW + € 380

Investement: € 4.000

Lifetime operational cost: € 500

1400 kWu x € 0,25 (feed in

Urban Environment

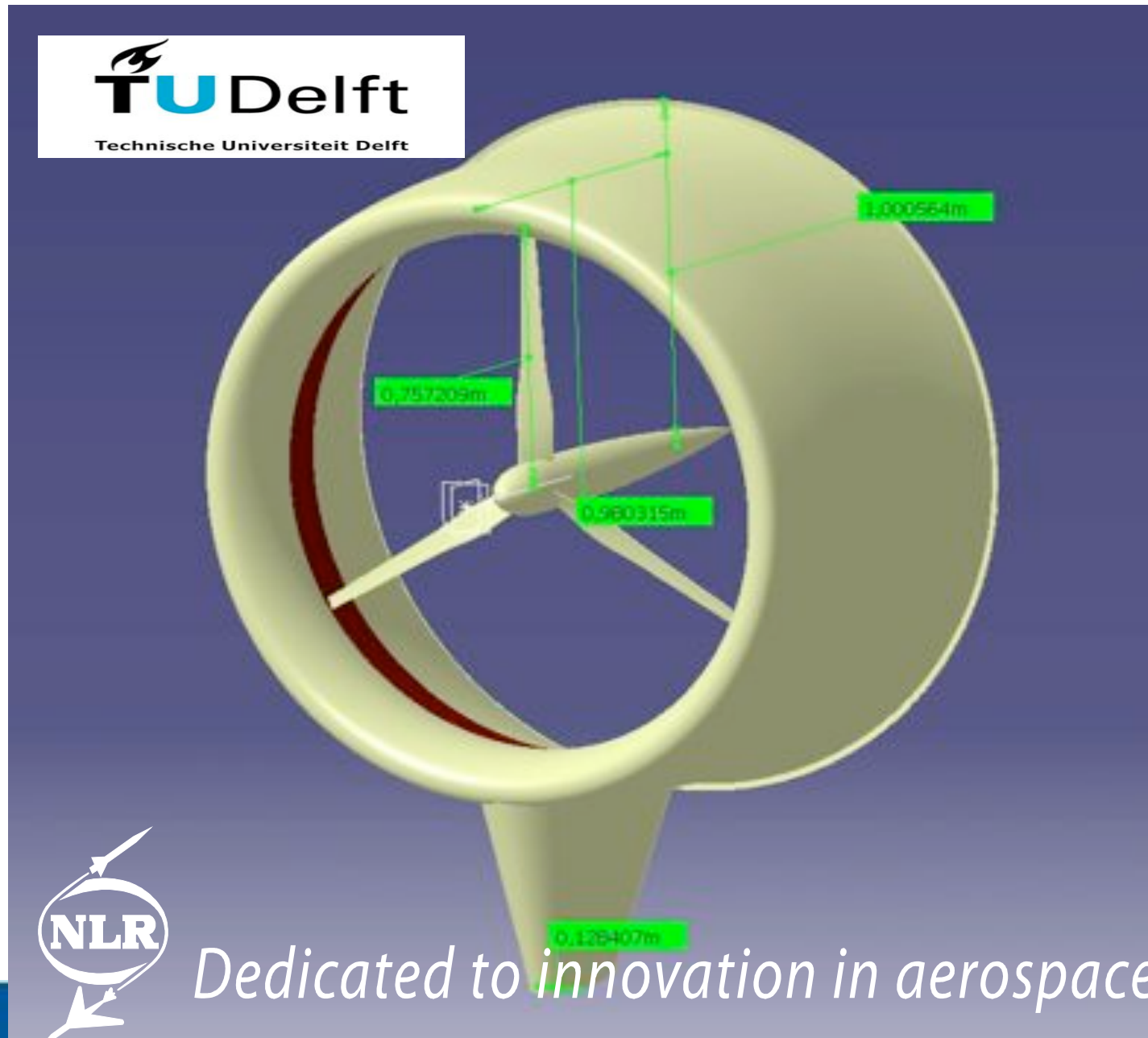
Opportunities

- Energy Performance Norms
- Energy loss via centralized generation
- Resistance to more large turbines
- Interest for environment and “green image”

Barrières

- Safety in the urban environment
- Noise
- Resonance
- Grid coupling
- NIMBY
- Permits

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Competitive advantage

Short Return On Investment

- Increased wind speed
- Improved alignment
- More conversion

Safer through light blades

No disturbance

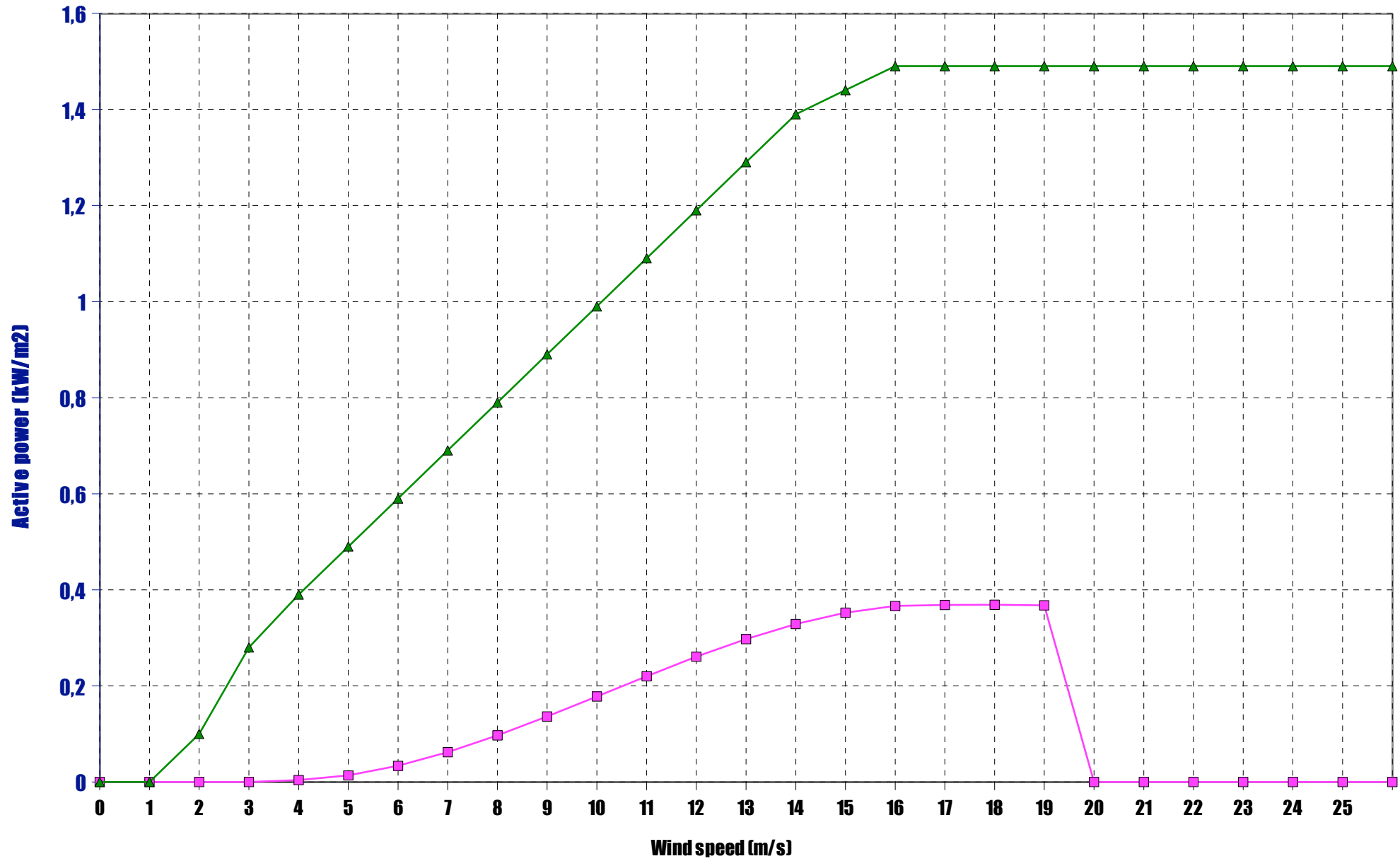
- Sound
- Cast shadow
- Resonance

“Plug & Play” installation

- Light weight
- No environmental permit
- Coupling











Typical wind turbine power curve



Potential markets



	m/s	W/m ²	m/s	W/m ²	m/s	W/m ²	m/s	W/m ²	m/s	W/m ²
	>6.0	>250	>7.5	>500	>8.5	>700	>9.0	>800	>11.5	>1800
	5.0-6.0	150-250	6.5-7.5	300-500	7.0-8.5	400-700	8.0-9.0	600-800	10.0-11.5	1200-1800
	4.5-5.0	100-150	5.5-6.5	200-300	6.0-7.0	250-400	7.0-8.0	400-600	8.5-10.0	700-1200
	3.5-4.5	50-100	4.5-5.5	100-200	5.0-6.0	150-250	5.5-7.0	200-400	7.0-8.5	400-700
	<3.5	<50	<4.5	<100	<5.0	<150	<5.5	<200	<7.0	<400
				>7.5						
				5.5-7.5						
				<5.5						

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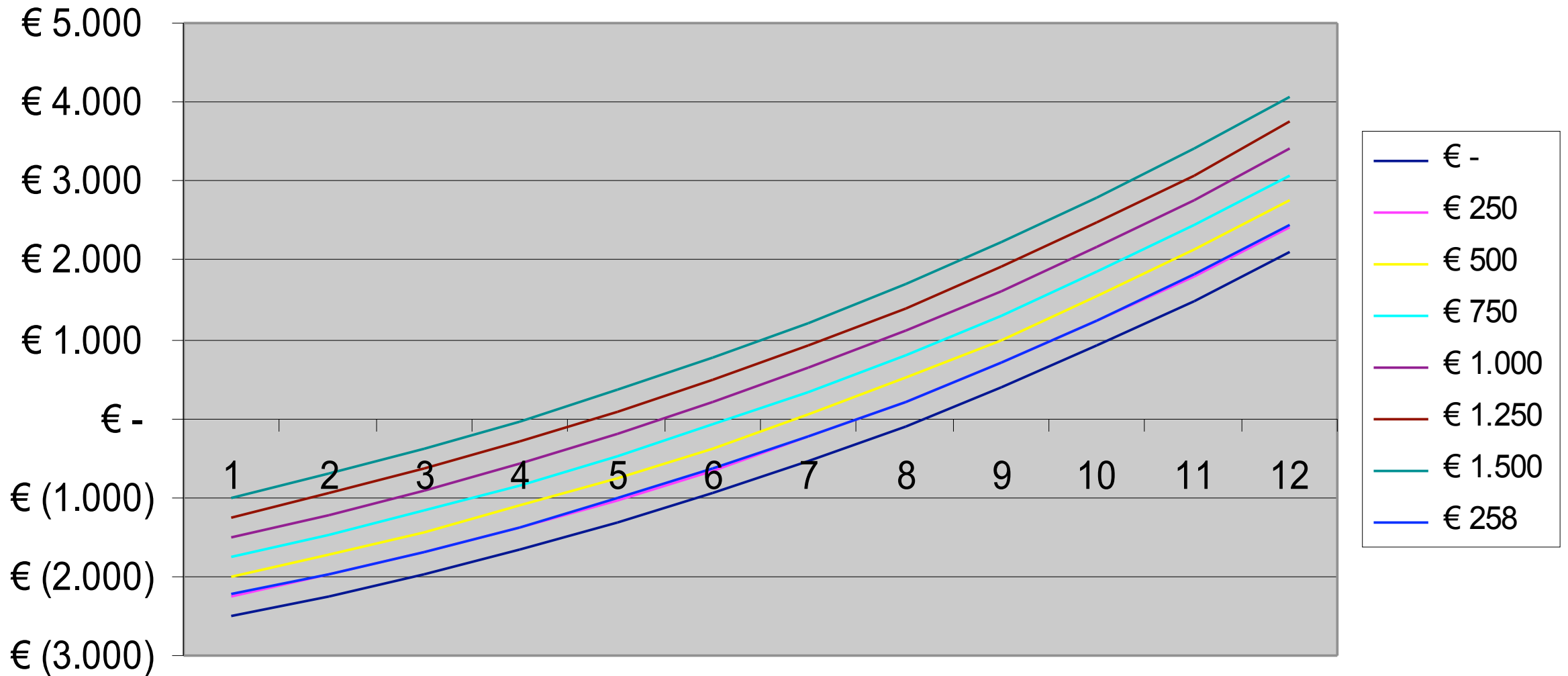


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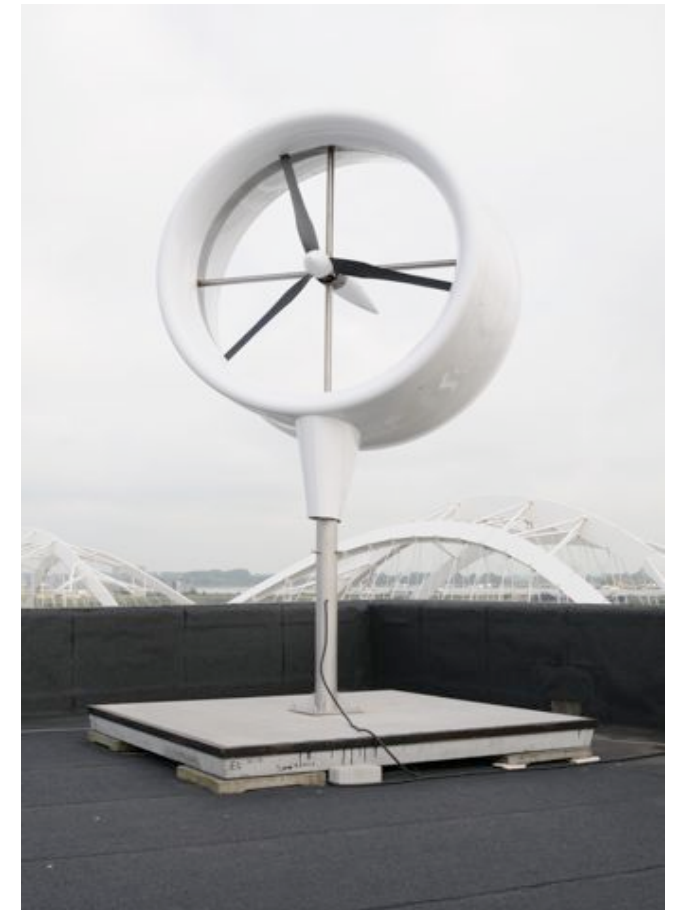
Return on Investment

Sales price	4,400 - 5,200 Euro
Installation costs	< 750 Euros
Legal fees	Not available
Average wind	4,5 m/sec.
Maintenance	15 years free
Efficiency	(0,4x0,9x0,9) 32%
Energy production	1,400 kWh
Recompense/kWh	0,25 Euros (incl. VAT)
Yearly power generation	325 Euros
Energy price increase	6,8% per year (since 2002)

DCF bij subsidie / 2,5% NCW en 6,8% energiestijging



Installatie mogelijkheden



Specification

- Maximum windspeed: 55 m/s
- Durability: 15 years +
- Diameter exit: 2 meters
- Length: 1 meter
- Weight: ± 75 kg.
- Construction: rubber absorber
- Positioning: 1,5 – 3,5 meters above roof

Applications

- Housing
- Office buildings
- Infrastructure
- Outdoor publicity
- Marinas and holiday camps
- Schools





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Questions?

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