

An introduction to quiet**revolution** and the qr5 wind turbine

Philippa Rogers  
Marketing & Client Communications Manager

Robert Minney  
CEO



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# quietrevolution

We aim to be a leading global provider of small and local wind energy solutions

Based in London and South Wales

We develop and manufacture our turbines, sell direct as well as through channels

60 turbines installed 2008 – will double in 2009



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quietrevolution qr5 technology is optimised for the built environment

Dimensions: 5m high x 3.1m diameter

Construction: Carbon and glass composite blades and spokes

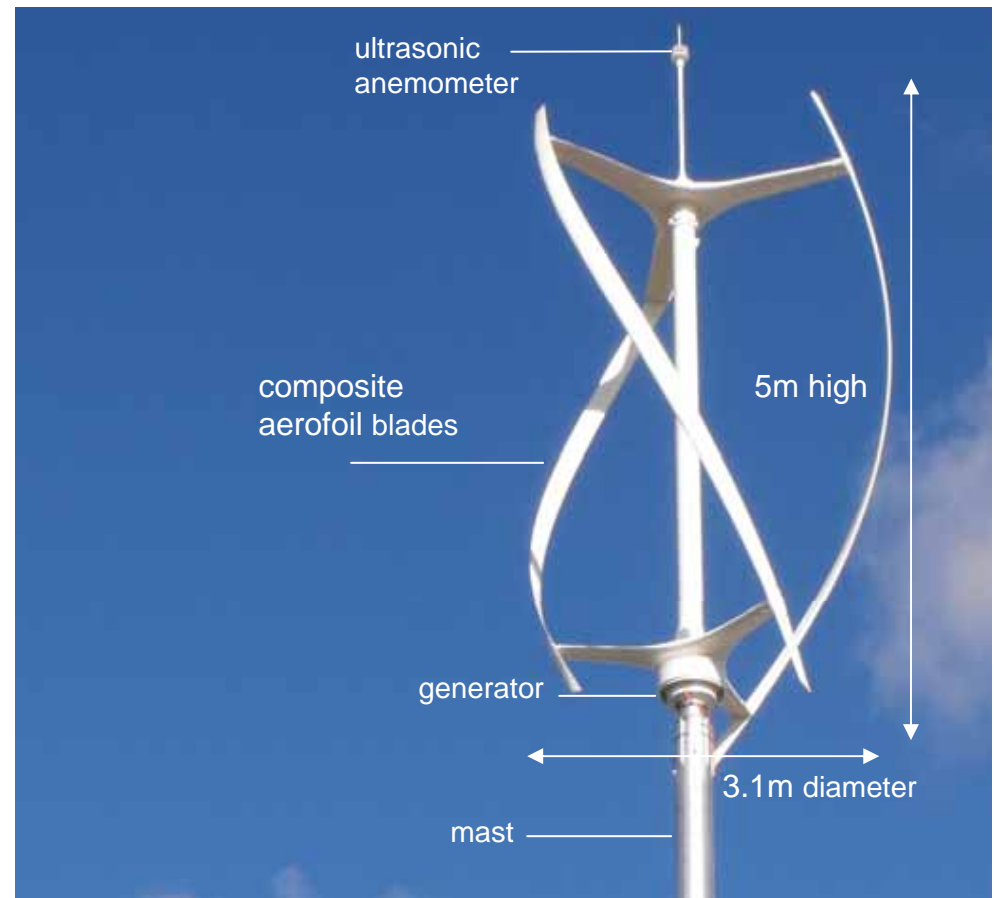
Generator: Direct drive, permanent magnet, 6kW peak

Control: Peak power tracking and remote monitoring

Operation: 4.5m/s to 16m/s

Masts: 3m, 6m, 9m, 15m

Energy: 4,000-11,000kWh/yr (wind speed dependent)



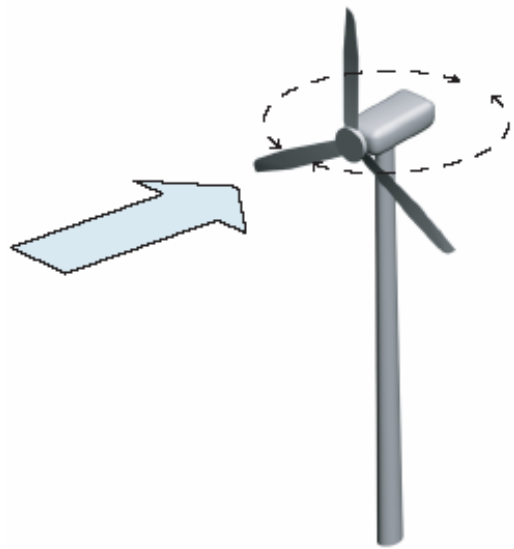
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The quiet**revolution** is a wind turbine designed for use on or near buildings, where low noise and performance in turbulent, gusty winds is of paramount importance

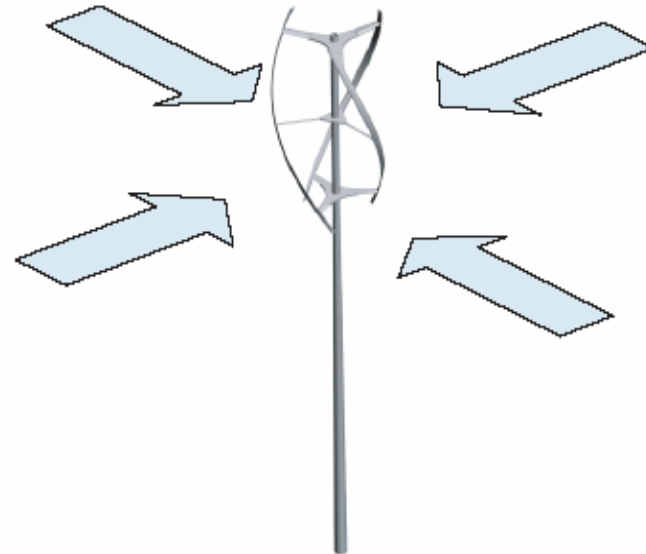


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Unlike traditional propeller type turbines, the qr5 collects wind from all directions, harnessing the energy in gusts that would slow or stall a HAWT



traditional HAWT  
has to rotate to track wind



Quiet Revolution - VAWT  
collects wind from all direction without tracking



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## quietrevolution qr5

unlocks the opportunity for small scale wind energy at point of use

Right technology

- harvests turbulent wind
- very quiet
- complements architecture
- safe

Energy used on site

- maximises energy values



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In future high-volume applications will include infrastructure such as street lighting



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## CUSTOMER BASE INCLUDES RETAIL, CONSTRUCTION, INFRASTRUCTURE & SCHOOLS

Existing customers:



Some 2009 Installations:

Network Rail Car Parks, West Coast Main Line

Further Sainsbury's stores

Schools in Telford, Milton Keynes, Peterborough, Anglesey Falmouth & Leicester

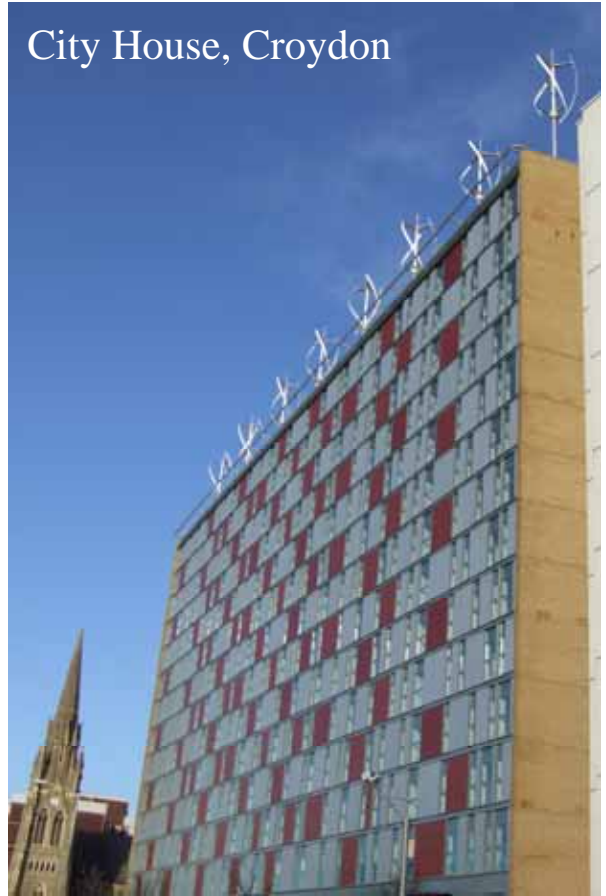
BAE Systems, Lancashire

Manchester, Lincoln - office developments

Wolverton Park housing development



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City House, Croydon



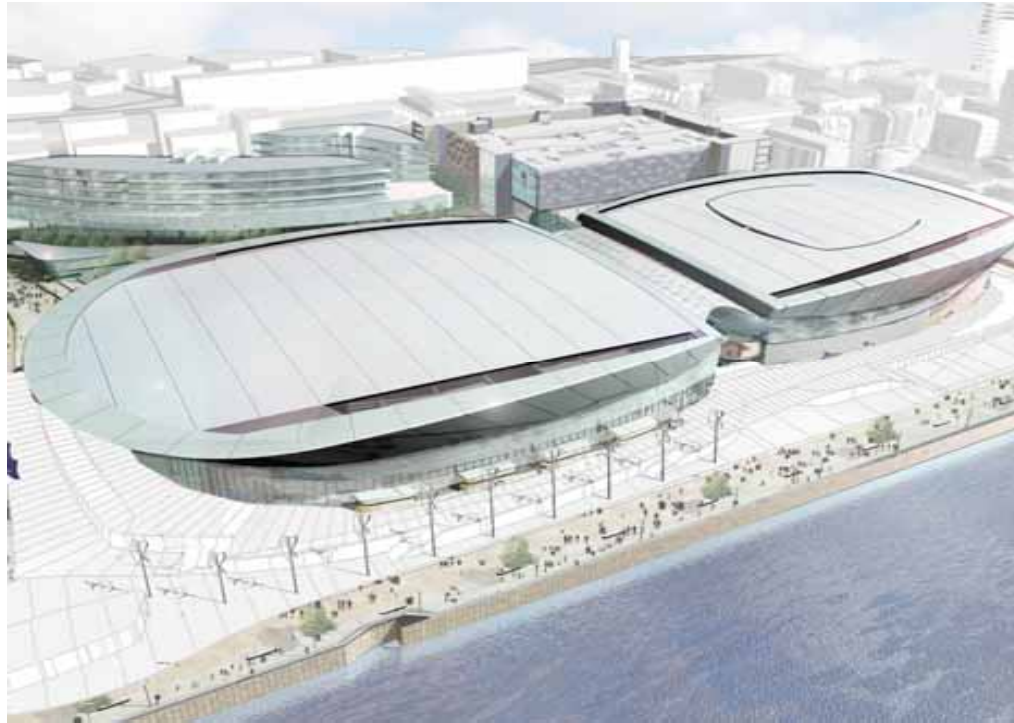
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King's College Wimbledon - first turbine installed on a school  
in October 2007



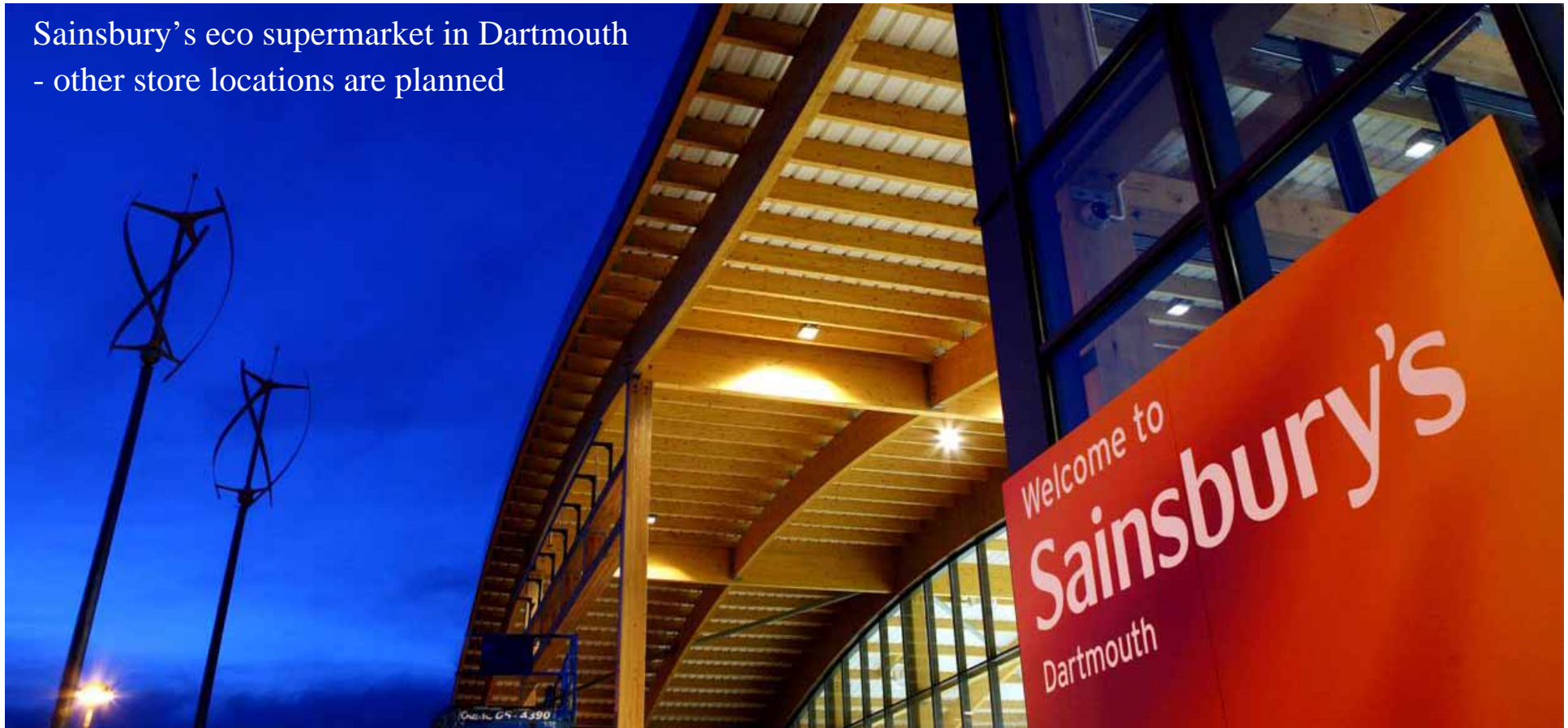
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Five ground mounted turbines at the new King's Dock arena in Liverpool



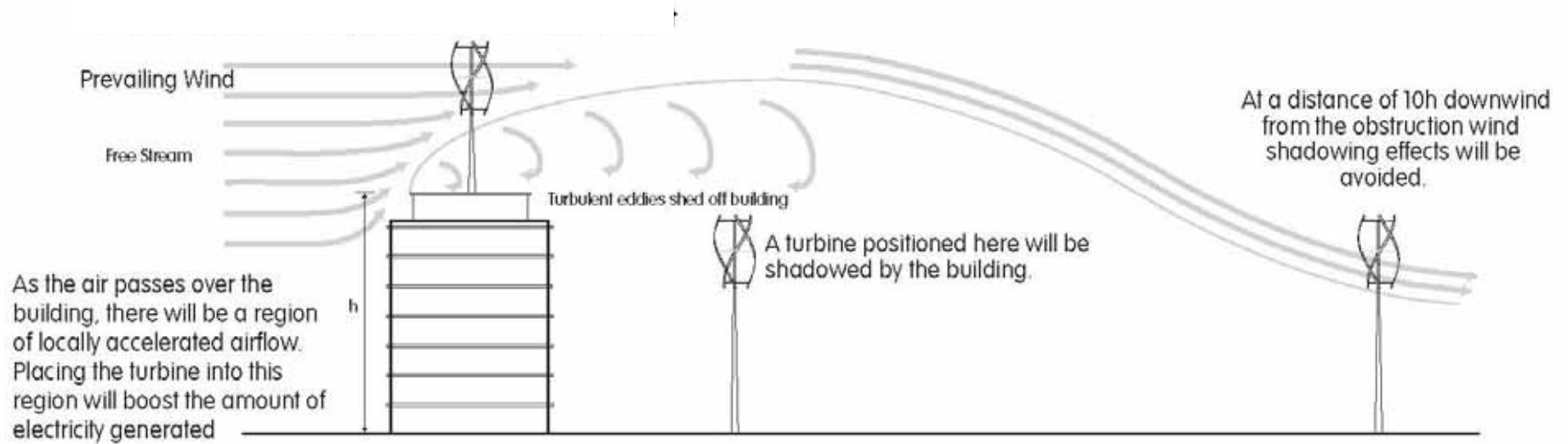
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Sainsbury's eco supermarket in Dartmouth  
- other store locations are planned

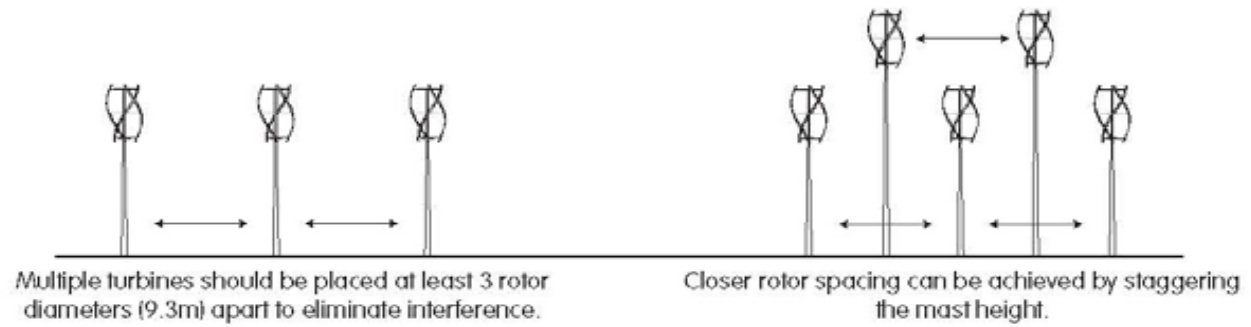


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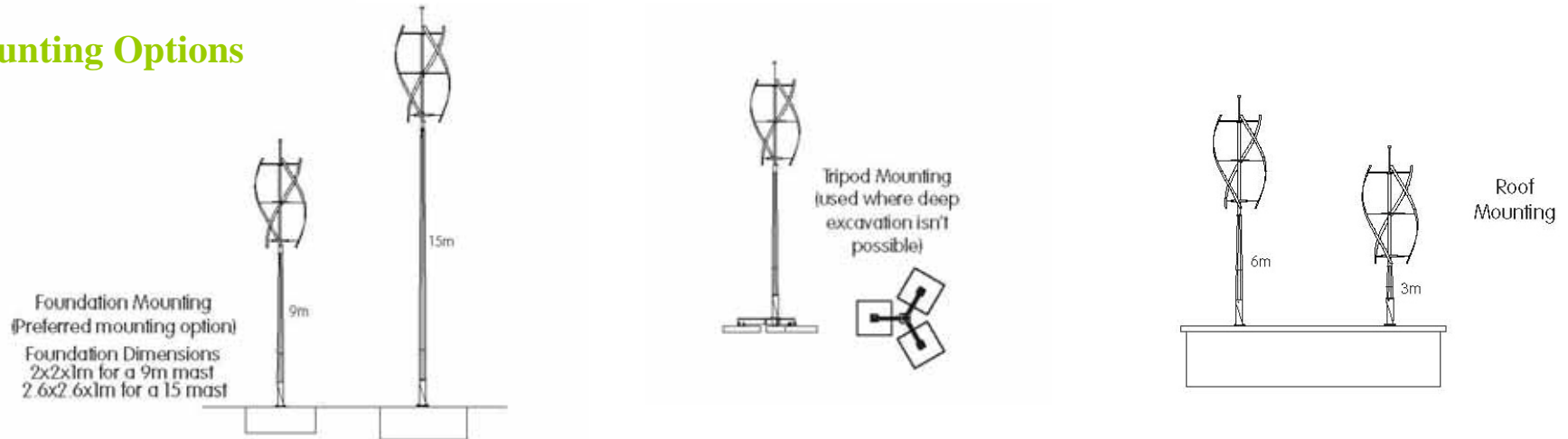
## OPTIMISING WIND ENERGY IN THE URBAN ENVIRONMENT



## Turbine spacing



## Mounting Options



## TESTING

The aerodynamic power curve of the qr5 turbine has been demonstrated and verified by experts at the National Research Council of Canada (NRC) during a wind tunnel test

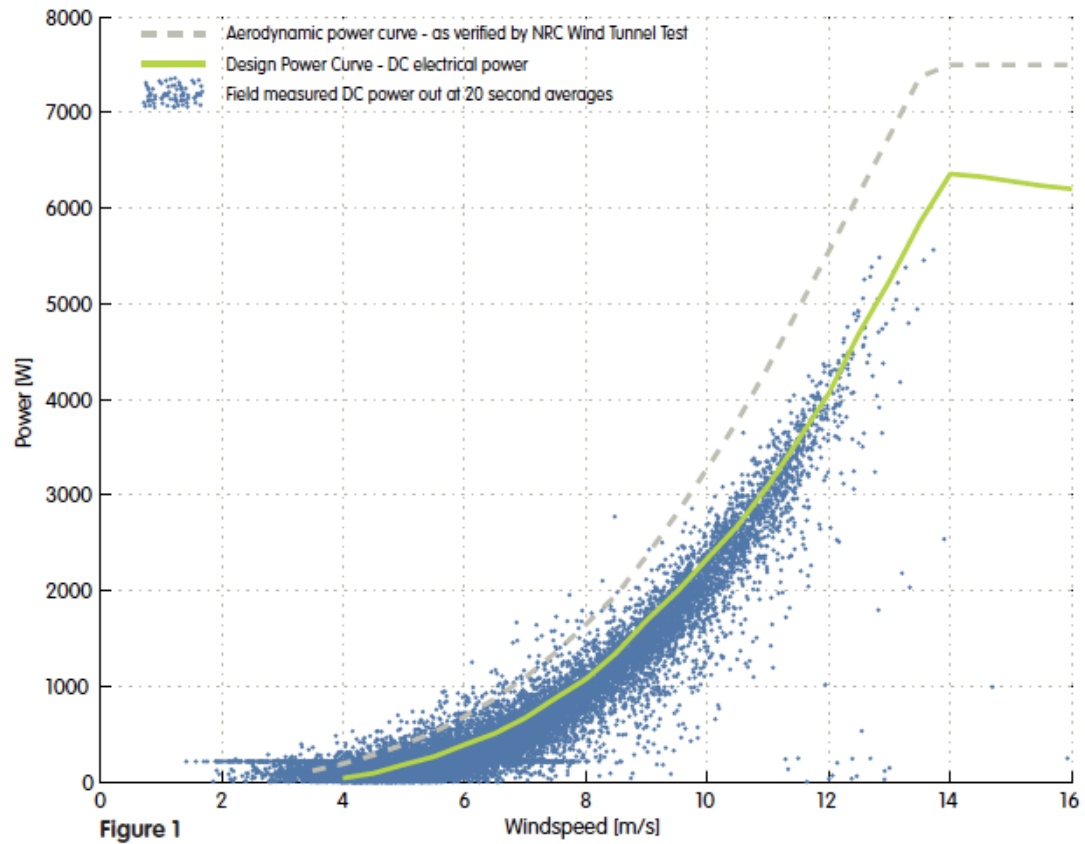
Turbine Rated at 4.2kw at 11m/s  
Peak Output 6.2kW DC

Energy yield will naturally be lower due to mechanical, generator and motor-side inverter losses, but will range between 6,000 and 11,000kWhrs on a good wind site



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## qr5 POWER CURVE



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## NOISE

The turbine is designed and engineered to be virtually silent and vibration free:

- The blade tip speed is much lower than on a similarly rated HAWT so less noise is produced
- The helical blade design results in a very smooth operation that minimises vibration and further reduces acoustic noise
- The three 'S' shaped blades are tapered to shed noise

The qr5 has been measured in accordance with BS EN 61400-11: 2003  
by independent consultants ISVR

Our own internal standard is not to exceed 50dB (A) for outside spaces and 35dB (A) for inside spaces

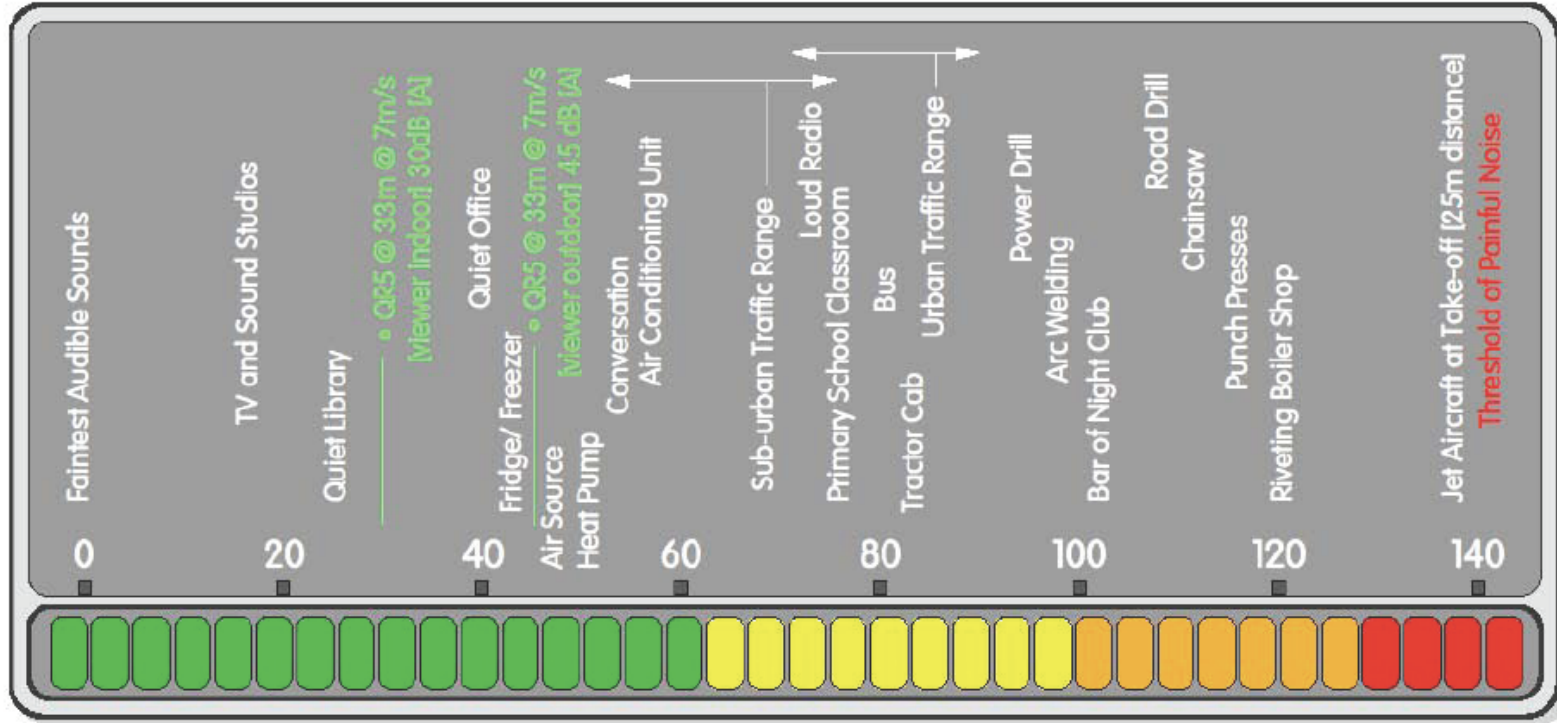
A full report is available at [www.quietrevolution.co.uk](http://www.quietrevolution.co.uk)



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# COMPARATIVE NOISE LEVELS



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The development of the qr5 turbine has been supported by the partners of clean tech specialist Hazel Capital LLP, a group of private investors and most recently RWE Innogy, the renewables division of the European energy utility.



**VORWEG GEHEN**

[www.hazelcapital.com](http://www.hazelcapital.com)

[www.rwe.com](http://www.rwe.com)

[www.rweinnogy.com](http://www.rweinnogy.com)



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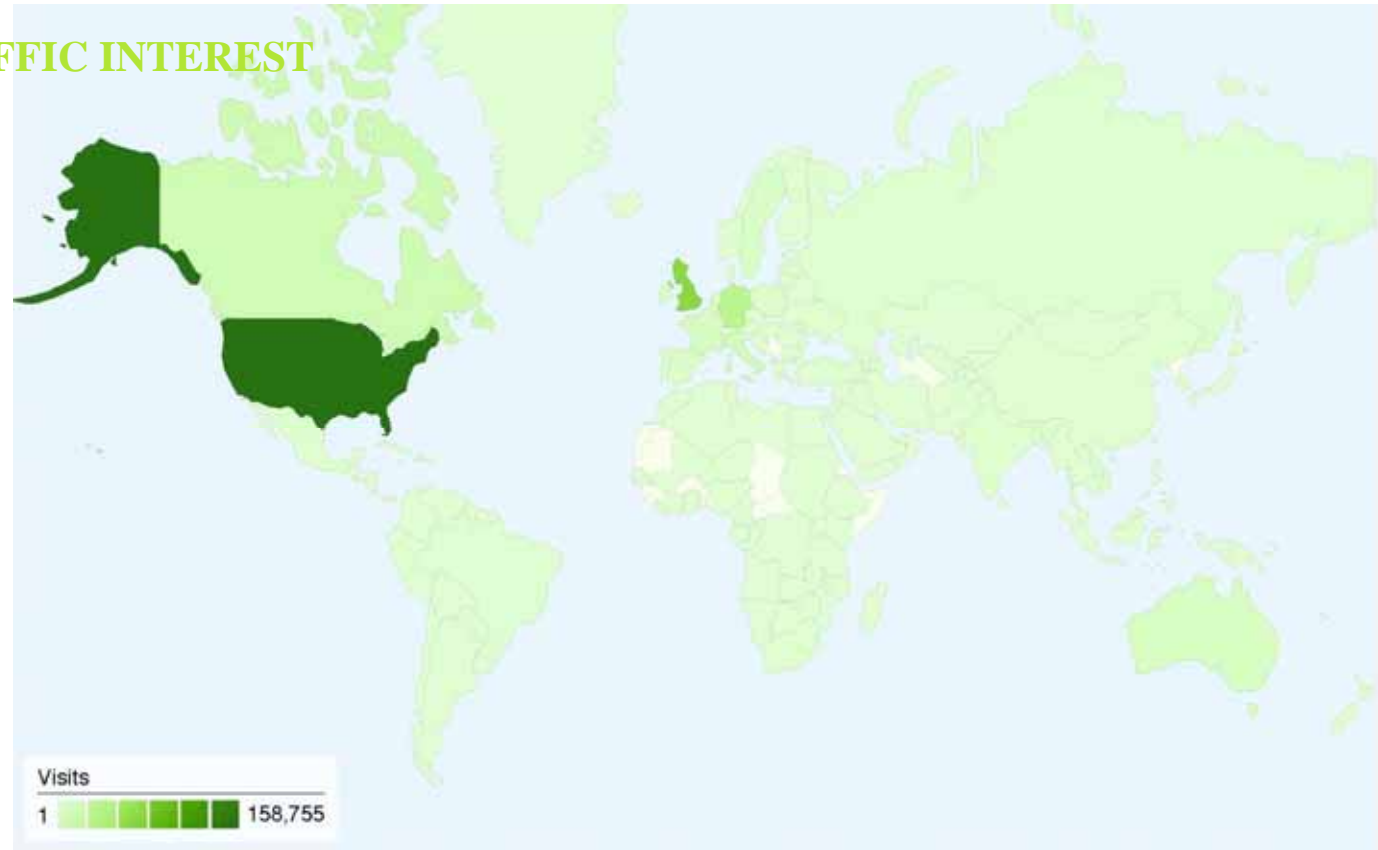


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## QR MAP OF WEB TRAFFIC INTEREST

### VISITORS

1. USA
2. UK
3. Canada
4. Germany
5. Italy
6. Australia
7. France
8. Netherlands
9. Spain
10. Denmark



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## INTERNATIONAL EXPANSION PROGRAMME



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- Highly engineered product
- Balancing
- Quality control
- Safety processes



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# QR5 INSTALLATION



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## ANZ DOCKLANDS

- MR's launch project
- Six turbines
- Carbon zero building



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## PRICING

- A single qr5 turbine costs \$50,000 which includes the generator
- Control electronics and inverters for grid connection are \$9,200
- Masts range from \$5,900 for a galvanised finish 3.5m for roof mounts to \$10,300 for a marine coated 15m for ground mounts
- Foundations and steelworks are hard to generalise as they are site specific but a budget of \$6,000 to \$12,000 would be sensible
- Installation and control costs are generally @30% lower on a multiple turbine installation



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## MAXIM RENEWABLE OPEN DAY

Shed 4, North Wharf Road  
Victoria Harbour  
Melbourne

[www.maximrenewable.com.au](http://www.maximrenewable.com.au)



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