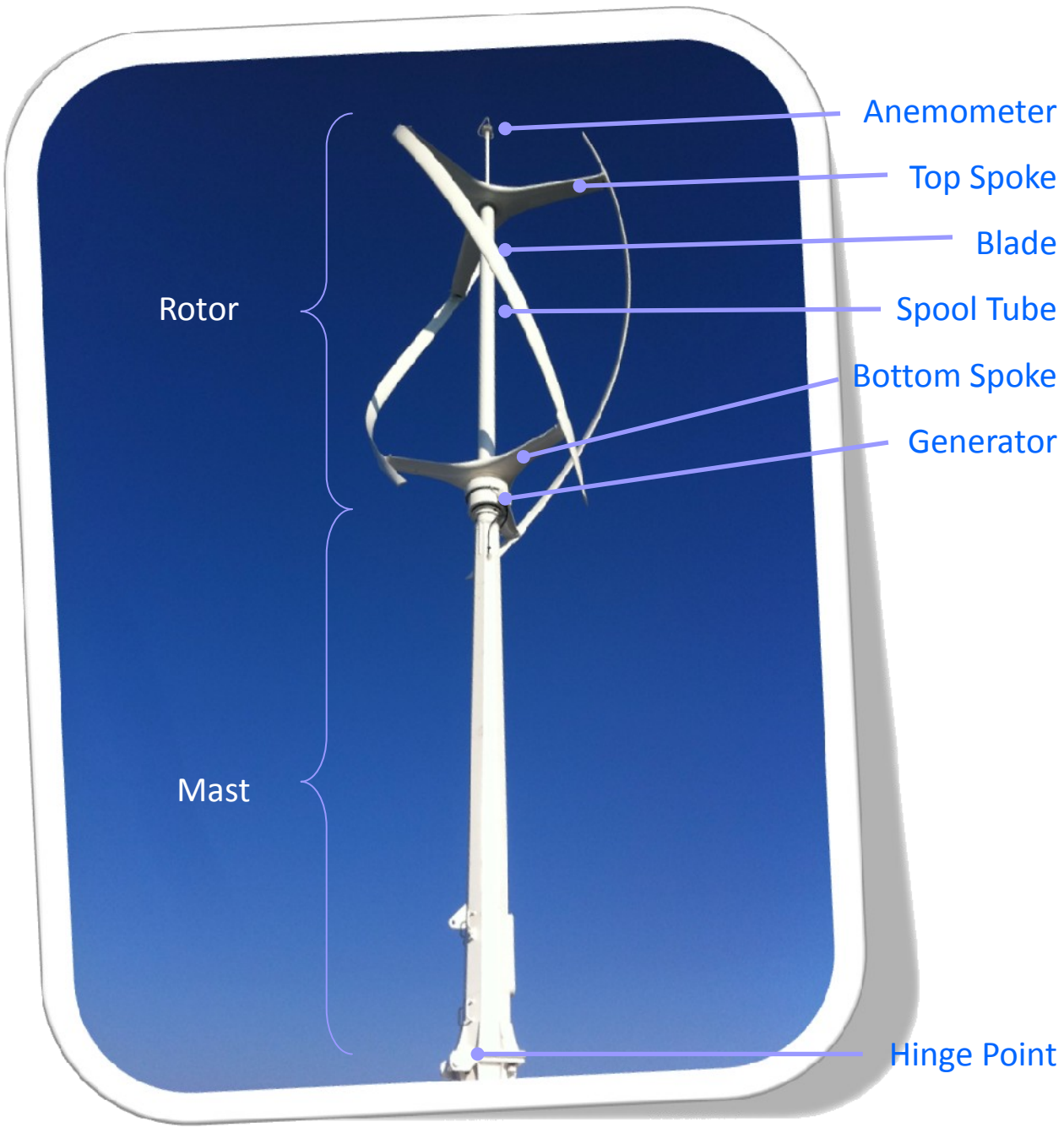
The Brundtland Building - Wind Turbine

A wind turbine is a device that converts kinetic energy from the wind into mechanical energy. The mechanical energy is then used to produce electricity through a generator.

At full capacity the wind turbine on the roof provides enough electricity to run all the lights on the 3rd floor!

The qr5 is a vertical axis wind turbine, designed specifically for environments close to people and their environment. The benefits over horizontal axis turbines include:

- A more appropriate design for capturing wind resources near and around buildings, characterised by gusty wind speeds and constantly shifting wind direction.
- Reduced noise from lower blade tip speed.
- Easy integration upon buildings and towers.
- Use of gust tracking to maximise power harnessed from wind.



Wind Turbine on Brundtland Building

Technology	Horizontal Wind Turbine
General Specifications/Information	• Dimensions: 11.5m tall (6m mast + 5.5m rotor). Rotor diameter 3.1m • Rotor Construction: Carbon fibre • Operating wind speeds: Cut in at 5m/s. Cut out sustained at 26m/s • Power: Projected peak power at 16m/s (8.5kW), aerodynamic (7.0kW DC), 6.5kW grid • Generator: Direct drive, mechanically integrated, weather sealed permanent magnet generator • Power control: Peak power tracking constantly optimises turbine output for all site and wind speeds • Power regulation and shutdown - Power regulation above 13.5m/s wind speed, auto shut down in high wind speeds (Over 26m/s)
Cost of Technology	£25,860
Estimated Annual Savings **tCO_2**	£256 + £1,330 (FiTs) - Calculated on 2011 prices. 1.9
Estimated Payback Period	16.3 years
Typical Performance	Enough electricity for all the lights on the 3rd floor

Bedford College SEE

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