

Contents of QUBE system:

- Automated feed system with mono flow pump (no maceration)
- Two bioQUBE digester
- 14 kW powerQUBE CHP plant
- Heat exchangers
- Control panel
- Biogas storage bladder
- Connection points for export of heat and power - island and grid tie
- Digestate store
- PLC linked to GSM



Feedstock Specification:

Biodegradable wastes – soft sludges from Juncus pressing liquor and pot ale

System type:

bioQUBE – 4 stage cascade system
powerQUBE – 14 kW electrical, island and grid tie

Digester Dimensions:

H; 2,500mm x W; 2,100mm x L; 6,100mm
(Standard 20ft Shipping container)

Digester space nominal capacity:

Modules of 18m³

Units:

2 no.

Weight:

6,000 Kg as shipped approx.
24,000 Kg when filled approx.

Overall footprint:

10m x 10m to include gas store and associated tanks

Engine (CHP):

Petter with Bowman heat exchanger

CHP Generator size:

Peak power: 14kWe
Peak heat: 20kWth

Electrical Energy Output:

84,000 kWh per year at (Electricity 29%) approx 6000 hours per year

Heat Output:

120,000 kWh per year (Heat 80% (as hot water at 60 – 80°C)) approx 6000 hours per year

Efficiency:

Electrical 29%
Combined 80%

Parasitic energy use:

Approx 8%

Grid Export requirement:

Grid Tie G59/2 connection

Grid Connection:

3 Phase

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CASE STUDY – Technical Specification

AMW-IBERS Wetland Biomass
to Bioenergy Project

Installed: 03 March 2014

Commissioned: 01 May 2014

Nominal Voltage:	415VAC
Safety features:	G59/2 grid connection with earth tying/bonding H ₂ S and CH ₄ sensor for leakage detection and automated shut down Fault notification setting – GSM
Gas output:	Biogas (approx 54% CH ₄ and 40% CO ₂)
Design flow rate:	8m ³ /hr
Gas Store Capacity:	18m ³ bladder standard
Bladder materials:	HPDE
CHP Fuel Consumption:	0.8-1m ³ per hour per kWh
Permit requirements (UK):	T25 exemption and an exemption for digestate spreading from the Environment Agency (UK only)
Routine Service:	Monthly (H ₂ S and Moisture filter cartridge change) Engine oil check
Service Interval:	Engine oil change every 500 hours, spark plug, tappets. Full service every 3000 hours, timing, gaskets, head removal
CHP Operating Temp, min to max:	45 to 75 degrees C
Sound Level:	56 dBLeq at 10m.
Installation and delivery:	100% self-contained; placed directly from off-loading lorry (8 wheeler with HIAB crane for easy access) Digesters and other tanks installed on level, compacted hard core.



Net Carbon Balance:	Production and embedded carbon 88 tonnes Carbon payback from electricity and heat production 14 months
Warranty:	12 months on CHP, 5 years on digester
Service:	Annual contract available but excluded from the quotation
Technical Support:	Provided for the first 12 months of operation
Design Criteria:	Designed to meet ATEX and DSEAR safety regulations and compliant with current UK biogas regulations.

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