WOODCO

Heat and Power

Commercial Combined Heat & Power (CHP)

Available via Fully Serviced Free to Fit, Cash, Leasing or Finance

Best environmental sustainability initiative
World Dairy Innovation Awards 2015
WINNER

WINNER GREEN AWARDS 2012
The Green Entrepreneur Award

WINNER GREEN AWARDS 2014
The Green Product Award

Ibec Environment Awards 2013/2014
Winner

Let the savings begin!

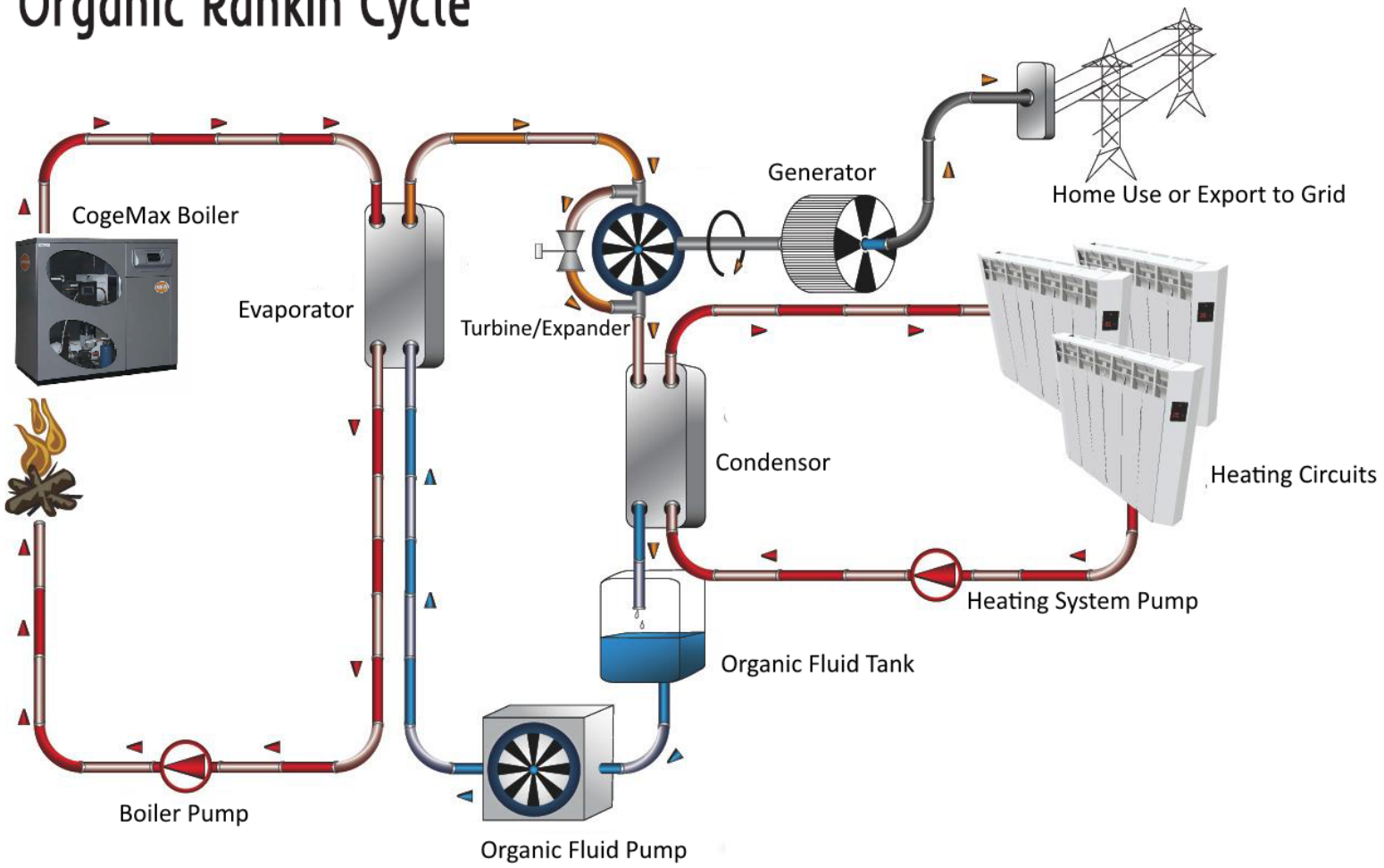
Deliver Heat & Electric to your Business from Combined Heat & Power (CHP) system

What ever your commercial heat requirements are, then between 10% (standard boilers) and up to 16% (Steam Boilers or waste steam) of that value will be generated as electric via our **CHP Cogetherm** range.

Renewable Heating Just Got Smart!

cogetherm®

Organic Rankin Cycle



CHP - How it works

The Boiler heats the water to 116°C (Standard Boiler) or up to 180°C (Steam Boiler) in a closed circuit;

The hot fluid is drawn to and from the ORC module in closed circuit. In the ORC it evaporates the organic working fluid of the ORC in a suitable heat exchanger system (pre-heater and evaporator);

Organic vapour expands in the Volumetric Screw Expander (turbine), producing mechanical energy, further transformed into electric energy through a generator;

The vapour is then cooled by a fluid in a closed circuit and condensed. The water is then used for different applications requiring heat;

The condensed organic fluid is pumped back into the regenerator to close the circuit and restart the cycle.

Wood Pellet Biomass Boiler

The Biomass Boiler is sized for your heating requirements, this then delivers your hot water after passing through the **CHP Cogetherm** which is generating electricity simultaneously.

Our range of boilers below fit most requirements, you can also utilise waste steam or high temperature hot water.

15 to 40KW E-Compact

55 to 215 KW E-Compact

348KW to 3.56MW Low Pressure Steam Boilers

CHP Cogetherm

We match your electricity needs with the range of turbines below

1.5 to 10 KWe

10KWe to 1MWe

The above can be supplied fitted into a container along with your biomass boiler or in its own container in larger configurations

NEW- for small business requirements.

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CogeMax

15 -18 – 28 KWth

APPROVED PRODUCT MCS HETAS

1.5 to 2.8 KWe

The ALL IN ONE Small Scale CHP Biomass System

- **Boiler Generates electricity when you need it**
- **Renewable Biomass fuel as a heat and electricity source simultaneously**
- **Ground breaking technology combination**
- **Drastically Reducing Energy Costs – Heat & Power for the cost of biomass pellets.**
- **Boiler MCS accredited**

SMART POWER

Your Existing Scenario

HEAT ONLY

GAS 4p per kWh
Oil 5p per kWh
LPG 6p per kWh
Electric 12p per kWh

+

ELECTRIC ONLY

Electric 12p /kWh

CHP Cogetherm

HEAT & ELECTRIC

Fuel Cost, Biomass Pellets @ 3.81 pence per kWh

But you receive
CHP Tariff @ 4.22p per KWh back for heat output
+
ROC for Electricity production @ 5.89p per KWh
+
Free Electricity for your consumption or Export Tariff

Cogetherm Benefits

Efficient
Electricity is produced at the same time as generating heat, probably the greenest renewable heating technology available today.

Cost Effective
A 250kW Containerised solution will pay for its self in around 5 Years and generate around £800,000 over 20 years (depending on site usage) whilst protecting your business from fluctuating energy prices.

Scalability
Electricity generation from 7kWe to 1MWe, to obtain all tariffs you will need to be able to use all the heat generated.

Reliability
Each CPS System comes with a remote support system allowing us to monitor all installations world wide, thus allowing us to, fix on the fly or instruct engineers for service and repair onsite visits

Why ORC is best. Breaking down the myths

CPS ORC CHP

- Less Capital Cost
- Less maintenance (annual)
- Normal heating load (10% avg or greater)

- Pellet is a more consistent fuel
- Normal simple combustion process
- Thermal: Electrical efficiency (8:1)

(thermal: electrical load better matched to property requirements e.g hotels, agri-business, care homes etc)

Biomass CHP should always be specified in terms of thermal output (not electrical). This is why ORC is best.

Wood Gasification CHP

- More expensive (2 – 2.5 times)
- More maintenance (weekly)
- Must have heat load >85% (very few sites have this heat load and it must be met to achieve a reasonable payback)
- Requires very consistent fuel quality (wood chip variable quality)
- Very complex combustion process (requires production of very clean gas for engine)
- Thermal: Electrical Efficiency (3:1)

(however most properties require more heat than electricity)

CHP Earns and Saves You Money

Generation Earnings
For Every kWh of Heat generated you receive a CHP Tariff via the Government RHI scheme after the installation has qualified as a “Good Quality” Installation and passed the CHPQA assessment (Combined Heat and Power Quality Assurance), currently 4.22pence per KWh.
For Every kWh of Electricity generated minus the actual running kWh usage for the system to operate you then receive 1.4 ROCS which equates to approx. 5.89 pence per kWh (on a fixed contract, higher value is achievable by going to auction)

Saving or Export Earnings
Heating, you will save money on the Fuel Cost difference from your current cost pence per kWh minus the kWh cost of Biomass Pellets and in addition improved efficiency.

Electric, you will save the kWh cost from the electricity produced against your current costs. If you do not use the electricity then this will be exported back to the grid on a PPA basis of around 4.8 pence per kWh.

We recommend you use a CHP specialist to sell your Export Energy and ROCS at auction to enhance your earnings, although this can be done yourself.

CHP Earns and Saves You Money

Enhanced Capital Allowances (ECA)
Businesses are allowed to write off 100% of the cost of eligible schemes in the relevant tax year.

Business Rates
Preferential treatment for some of the assets within a CHP scheme

Mid installation of a 20KWe Cogetherm powered by a 215KWth E-Compact, with a secondary 215KWth Boiler for redundancy and hot water top up. The system is powering a district heating system and swimming pool.

CPS CHP Financial Performance example

	Running Hours	2,500							Year 1				Year 20 @ 2.5% Rate of Inflation			
	Biomass Boiler (HEAT)		CHP Tariff	Cogetherm (ELECTRIC)		ROC Tarrif	Electric Saving									
Output Temp 65/70	KW	KWth per Year	4.22	KW	KWE per Year	5.89	11		Tariff Income ROC + CHP	Total Income & Electric Savings	Running Costs 3.814	Nett Benefits	Tariff Income ROC + CHP	Total Income & Electric Savings	Running Costs	Nett Benefits
Standard	28	70,000.00	£2,954.00	2.8	7,000.00	£412.30	£770.00		£3,366.30	**£4,136.30**	2,669.80	£1,466.50	£85,990.98	**£105,660.37**	£68,199.13	**£37,461.24**
	40	100,000.00	£4,220.00	4	10,000.00	£589.00	£1,100.00		£4,809.00	**£5,909.00**	3,814.00	£2,095.00	£122,844.26	**£150,943.38**	£97,427.32	**£53,516.06**
	55	137,500.00	£5,802.50	5.5	13,750.00	£809.88	£1,512.50		£6,612.38	**£8,124.88**	5,244.25	£2,880.63	£168,910.86	**£207,547.15**	£133,962.57	**£73,584.58**
	100	250,000.00	£10,550.00	10	25,000.00	£1,472.50	£2,750.00		£12,022.50	**£14,772.50**	9,535.00	£5,237.50	£307,110.65	**£377,358.45**	£243,568.31	**£133,790.14**
	150	375,000.00	£15,825.00	15	37,500.00	£2,208.75	£4,125.00		£18,033.75	**£22,158.75**	14,302.50	£7,856.25	£460,665.97	**£566,037.68**	£365,352.47	**£200,685.22**
	199	497,500.00	£20,994.50	19.9	49,750.00	£2,930.28	£5,472.50		£23,924.78	**£29,397.28**	18,974.65	£10,422.63	£611,150.19	**£750,943.32**	£484,700.94	**£266,242.39**
	215	537,500.00	£22,682.50	21.5	53,750.00	£3,165.88	£5,912.50		£25,848.38	**£31,760.88**	20,500.25	£11,260.63	£660,287.89	**£811,320.68**	£523,671.87	**£287,648.81**
Output Temp 60/105																
Steam	348	870,000.00	£36,714.00	41.76	104,400.00	£6,149.16	£11,484.00		£42,863.16	**£54,347.16**	33,181.80	£21,165.36	£1,094,924.75	**£1,388,279.59**	£847,617.72	**£540,661.87**
	697	1,742,500.00	£73,533.50	83.64	209,100.00	£12,315.99	£23,001.00		£85,849.49	**£108,850.49**	66,458.95	£42,391.54	£2,192,995.83	**£2,780,548.50**	£1,697,671.12	**£1,082,877.37**
	1395	3,487,500.00	£147,172.50	167.4	418,500.00	£24,649.65	£46,035.00		£171,822.15	**£217,857.15**	133,013.25	£84,843.90	£4,389,137.99	**£5,565,086.30**	£3,397,777.93	**£2,167,308.38**
	2093	5,232,500.00	£220,811.50	251.16	627,900.00	£36,983.31	£69,069.00		£257,794.81	**£326,863.81**	199,567.55	£127,296.26	£6,585,280.16	**£8,349,624.11**	£5,097,884.74	**£3,251,739.38**
	2761	6,902,500.00	£291,285.50	331.32	828,300.00	£48,786.87	£91,113.00		£340,072.37	**£431,185.37**	263,261.35	£167,924.02	£8,687,032.25	**£11,014,482.64**	£6,724,921.05	**£4,289,561.60**
	3546	8,865,000.00	£374,103.00	425.52	1,063,800.00	£62,657.82	£117,018.00		£436,760.82	**£553,778.82**	338,111.10	£215,667.72	£11,156,905.61	**£14,146,090.35**	£8,636,932.28	**£5,509,158.07**

The above example shows our range of boilers running at **2,500 hours per annum** with a pellet cost of £185 per ton.
Performance figures will vary depending on the required output hot water temperature into your heating system, and the return temperature from your heating system back to the boiler.
The higher the difference (Δ) the better the performance!

The above figures do not take into consideration fuel saving over your existing fuel or the cost of the system, installation and maintenance.

Explore your earnings and savings, ask for your detailed proposal today!

Purchasing Options

- Option 1 — Cash/Self Finance
- Option 2 — 5 year Hire Purchase (10% Deposit)
- Option 3 — 7 to 8 year Operating Lease (Zero Deposit)
- Option 4 — Free to Fit. The boiler/CHP system will be financed and installed completely free of charge by our funding partner. Depending on the hours you can use the system, you will either be charged for the fuel or receive all fuel FREE of CHARGE! Whilst being fully serviced and maintained for 20 years.

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Thank you

Let the savings begin!