



EU ECO
Technologies Ltd

PROMETHEUS

INNOVATION IN ACTION



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THE PROBLEM

WORLD ENERGY CRISIS

There is a continued reliance on fossil fuels and finite energy sources. Many have a direct impact on CO² emissions and the generation of heat which is expelled into the atmosphere – known as heat waste.

1/3

A third of the energy consumed by the world's manufacturing and transport industry is discharged as thermal loss to the atmosphere or cooling systems

Inefficiencies in the manufacturing process that create this heat waste is estimated to be the equivalent of 7.8 billion barrels of oil a year

78
bn
oil barrels

130
days

This is the equivalent of 130 days' worth of the world's crude oil supply

Globally, the cost to the consumer of purchasing energy is increasing, often, but not always in line with the increased cost of energy production. UK Industrial electrical prices have almost doubled between 2005 and 2013.





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THE SOLUTION

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Our Technology the Prometheus system is a non-intrusive installation that converts losses from an existing heat source (or waste energy) to produce electricity.

Thermoelectrical power generation is achieved by combining four unit operations:

- A TE module
- A hot side heat exchanger
- A cold side heat exchanger, and
- A power electronic module to provide the desired volt and ampere output

The interdependent design of each of these operations is critical in determining and realising the anticipated Prometheus performance

Is Prometheus right for you?

If you have a heat differential anywhere from 50C to 330C, then Prometheus could be the system you are looking for, as we can design a system that will meet your energy requirements.

To improve both energy and financial efficiency, the Prometheus subsystem can boost the temperature differential using a closed circuit heated oil system to 200 to 330°C to maintain effectiveness. The high efficiency of this system requires only small amounts of energy to maintain a higher operating temperature, this in turn leads to more consistent energy delivery.

Service and Monitoring

EU Eco well understands that optimal operation and professional upkeep are prerequisites for fulfilling your power requirements matching our predicted yields. Your Prometheus unit becomes a profitable financial investment. We believe that maintaining a plant is more than just “fixing” it. We expend maximum effort into preventing faults and keeping your plant performing at its best. With our operations and technology experience, EU Eco maintenance services ensure a smooth and functional investment that is continuously monitored through your Inverter to maximise outputs by early rectification of issues.

Contact us for a detailed proposal





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THE TECHNOLOGY

WHATS UNDER THE HOOD?

Thermoelectrical Generation “The Facts”

A thermoelectric device converts thermal energy to electrical energy by using an array of thermocouples/semiconductors

Can be used to convert heat energy to electricity by using a principle called the Seebeck effect.

When heat is applied to one surface of the thermoelectric generator electrons move away from the heat source.

This movement of electrons gives rise to an electrical current

A thermoelectric device/generator (TEG) is a solid-state, semiconductor electronic component which converts a temperature difference (ΔT)

to DC electrical Power

Prometheus offers several benefits:

Flexible –size of Prometheus unit can be adapted kW to MW

Compact– A 1MW unit is the size of a filing cabinet

Expandable and modular

Portable – Easy to move and install, operate in remote locations

Requires very little **maintenance/autonomous**

Long lifetime (> 25 years) - Low Cost

Enhanced efficiency (15-20%)

Prometheus is a low cost, innovative Thermoelectric Generator (TEG) developed by EU ECO Technologies Ltd (UK)

Exploits advances made in materials technology (thermocouples)

Design is simple, no moving parts

Novel design with a closed loop fluid system for hot temperature control allows for increased efficiency

Developed in the UK

Renewable energy	Installed service capacity kW	Area needed for installation m ²	Available hours of operation	Daily energy surplus for sale kWh	Source of Energy	Notes	Cost per kWh (£)
Photovoltaic 	1,000.0	1,200.00	6	6,000.00	Sun	Operational only during daylight	0.09-0.24p
Wind Turbine 	1,000.0	1,000.00	6	6,000.00	Wind	Requires correct wind conditions	0.03-0.09p
Combined Heat & Power 	1,000.0	100.00	24	24,000.00	Natural Gas	Subject to gas prices	0.05-0.28p
Prometheus 	1,000.0	24.00	24	24,000.00	Temperature Differential	Runs 24 hours per day, 365 days per year	0.02-0.03p



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