

## Waste Heat to Power System 100 kW WHOP Module

### ENERGY COST SAVINGS

Industrial sites can save up to 50% of their electricity bill with installation of the WHOP system.

### ENERGY RELIABILITY

Reduces dependence on the electric grid by providing on-site generation.

### REDUCED GHG's

100 kW WHOP module will avoid over 500 metric tons CO<sub>2</sub> per year (assuming 0.74 ton CO<sub>2</sub>/MWh for conventional power)<sup>1</sup>.



Waste Heat to Osmotic Power Module

- Discarded low-temperature waste heat is upgraded to emission-free electricity at a competitive cost
- Highly efficient, modular and compatible with existing industrial systems
- Easy to install and ultra-low maintenance
- Water independent

### Emission-free Power:

WHOP technology is a non-combustion, osmotic power technology protected by US and international patents. It replaces lower-efficiency heat engines/turbines with ultra-high efficiency water turbines (85-95%) driven by osmotic pressure. High osmotic potential polymers coupled with high-flux membranes produce polymer-water solutions with high hydraulic head and flow. This high energy polymer-water solution drives the water turbine, proven for its high efficiency and reliability.

### Regeneration using Waste Heat:

The discarded waste heat from the host site is used to separate the polymer and water, regenerating them for reuse in the power generation cycle. The excellent heat transfer properties of the polymer lead to smaller, lower-cost heat exchangers. The patented two-step regeneration process requires heating of only the polymer, not the water, resulting in higher electrical efficiency (up to 30%) at a lower cost.

<sup>1</sup>EPA, 2018, Greenhouse Gas Equivalencies Calculator

## Revenue from Low-temperature Waste Heat

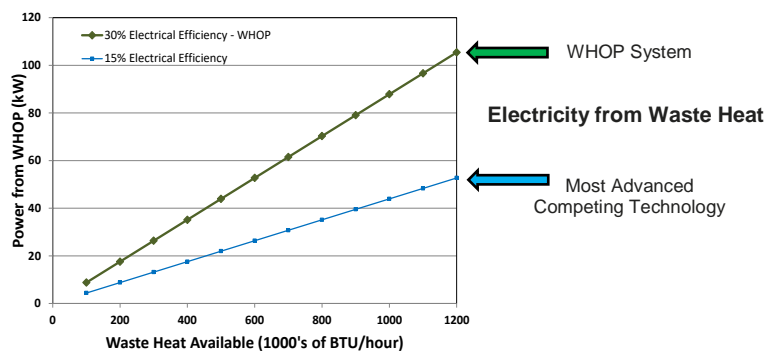


Rejection of waste heat costs money. When upgraded to electricity using T2M's advanced energy technologies, low-temperature waste heat streams become a revenue generator. WHOP can significantly reduce industrial and commercial plants' dependency on the power grid.

The largest amount of unutilized waste heat from industrial operations is in the low-temperature group (150-300°F). There is currently no commercially available cost-effective technology to benefit from this wasted heat because it is economically difficult to recover and reuse. Upgrading this low-temperature waste heat to higher value electricity at competitive costs will deliver greater sustainability to industrial operations.

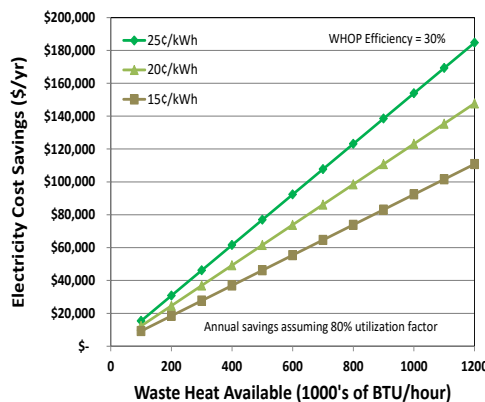
**The WHOP System will help achieve enhanced sustainability, carbon-neutrality and energy independence goals.**

### Estimated Savings



SERVICES AVAILABLE

- Application Development
- System Evaluation
- System Installation
- Maintenance Services



Annual Savings on Electricity Bill



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#### EMISSION CREDITS

No criteria pollutant emissions (NO<sub>x</sub>, SO<sub>x</sub>, CO, PM, etc.) from WHOP. Customers qualify for emission reduction credits.

#### WATER INDEPENDENT

Water recycling means additional water is not required - a critical benefit in drought prone areas.

#### TURNKEY SOLUTION

Modular WHOP system is compatible with any industrial site, allowing easy transportation and capacity expansion.

For more information please visit us at: [www.t2mglobal.com](http://www.t2mglobal.com)

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