UTILIZING WASTE ENERGY
- sustaining a financial and environmental gain

15% Energy loss
Exhaust gas

35% Energy loss
Propulsion power

20% Energy recovery and utilization
Exhaust gas

10% Energy loss
Cooling water

20% Energy recovery and utilization
Exhaust gas

SUBSTANTIAL FUEL SAVINGS AND COST REDUCTIONS

SIGNIFICANT EMISSION REDUCTIONS

SHORT PAYBACK TIME
IDENTIFY, CAPTURE, RECOVER

75% of the engine’s energy can easily be utilized

For every 1 000 kW of energy supplied to a generator set, only 350 kW will normally be used for propulsion. At least 600 kW of the energy produced is lost through exhaust gas and cooling water. In other words, only 35% of the energy is used efficiently.

Ulmatec Pyro Waste Energy Recovery System exploit this lost energy for other applications. That means up to 75% of the energy produced can be utilized, giving a financial and environmental gain.

A substantial part of the fuel energy in prime movers like marine diesel and gas engines is usually discarded as waste heat in the exhaust gas and the cooling water. Most diesel engines operate within an efficiency range between 30-50%, producing more losses than usable rotating power. The majority of the losses can be recovered and contained within a Waste Energy Recovery System.

SURPLUS ENERGY IS FREE AND REPRESENTS ZERO EMISSIONS

By recovering waste energy, you can avoid burning fuel to generate heat. The annual savings can be substantial.

Ulmatec Pyro’s Waste Energy Recovery System utilises surplus heat from the exhaust and cooling water.

SUBSTANTIAL FUEL SAVINGS AND COST REDUCTIONS

100 kW electrical heating = 200 000 l fuel
100 kW fuel-fired heating* = 100 000 l fuel
100 kW heating by heat recovery = 0 l fuel

SIGNIFICANT EMISSION REDUCTIONS

200 000 l fuel = 12 tonnes NOx

SHORT PAYBACK TIME

Payback time likely to be less than a year

* Fuel-fired heating is roughly 20% more efficient than electrical heating of the same thermal output.
UTILIZE

Make use of the engines waste heat

The recovered heat can have many applications, including warming accommodation areas, anti-icing on decks and stairways, and tank heating.

Seamless utilization of surplus energy from the exhaust and the cooling water has the potential of saving huge amounts of fuel and carbon emissions. Ulmatec Pyro’s Waste Energy Recovery System utilizes the surplus heat generated by engines to replace electric heating with waterborne heat on through the central heating system.

THERMAL ENERGY AND POWER GENERATION

Surplus energy can be stored in thermo-insulated tanks, and this can be used as an energy source to heat the ship when it is docked or operating in battery mode, or it can be used in adsorption chillers to generate cooling. The recovered heat can also be used for power generation, and as an energy source for air conditioning systems.

PERFECT FIT FOR EXPLORATION CRUISE

Moreover, if the ship is operating in the cold areas of the world like the Arctic and Antarctica, the surplus energy can be used for anti-icing on decks, railings, stairs, helidecks etc.

OTHER BENEFITS

- Heat recovered at different temperature levels
- The water volume works as an energy accumulator
- Minimal use of primary energy for top-up
- Automatically pre-heat standby engines to reduce wear and tear
- Easy to design
- Low installations cost
- Easy to operate, and low maintenance requirements
- Automatic, unmanned operations
- Better utilization of existing systems

* In a Waste Energy Recovery System, the fuel fired heater will only function as backup or for topping up, and will very rarely be in operation.

POTENTIAL CONSUMERS

The system automatically detects available energy, and balances the recovery vs. consumer demand like:

- Accommodation heating and cooling (HVAC)
- Sanitary hot water
- Pre-heating for steam generator
- Heating of pool water
- Freshwater generators
- Tank heating
- Anti-icing
- Preheating of water treatment systems
- Preheating of engines in standby
- LNG regasification
- Energy storage
- Power generation
CENTRAL HEATING, HEAT RECOVERY AND MACHINERY COOLING SYSTEMS

The solutions from Ulmatec Pyro utilise waste heat and use fuel only when such “green” energy is not sufficient or available. In cooperation with the customer, Ulmatec Pyro designs and supplies heating and machinery cooling systems for optimum functionality and cost.

Ulmatec Pyro - a key player in the total energy calculation on board.

ULMATEC PYRO WASTE ENERGY MANAGEMENT SYSTEMS
- Waste Energy Recovery System
- Waste Energy Cooling System
- Waste Energy Power Generation
- Exhaust Gas Econoamerizer
- Calorifier
- Fuel Fired Heater
- Electrical Heater
- Flow Control Unit
- Tank Heating

Ulmatec Pyro is a leading supplier and manufacturer of central heating and machinery cooling systems for the marine industry, backed by solid experience and customer feedback built up since 1951. More than 20 000 ships worldwide have been equipped with Pyro™ hot water heating system to date. Ulmatec Pyro is a part of the Ulmatec group and located at Gamlem near Ålesund on the west coast of Norway.