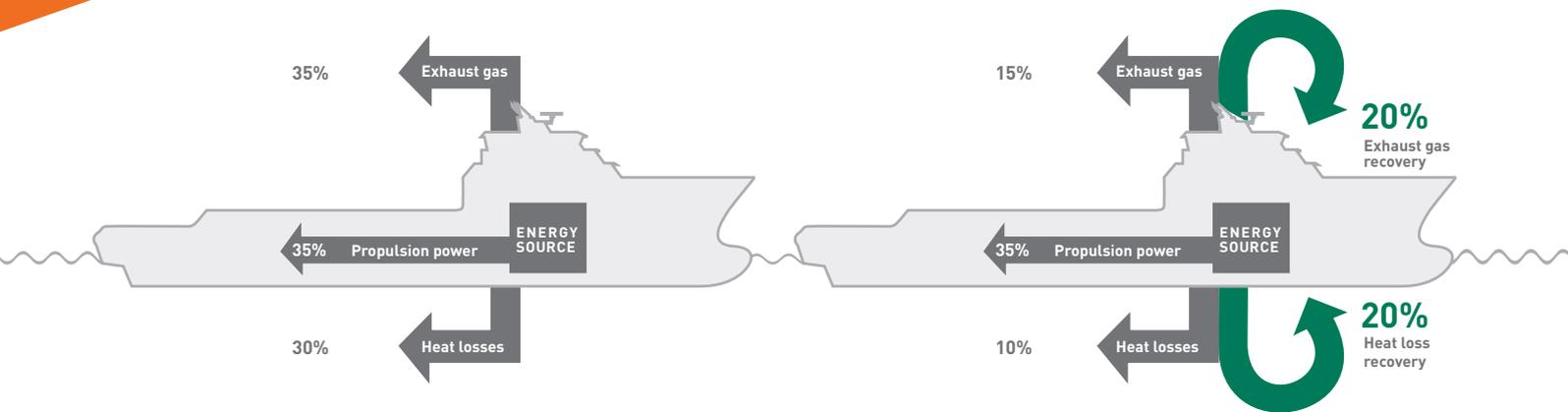




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WASTE ENERGY RECOVERY SYSTEM



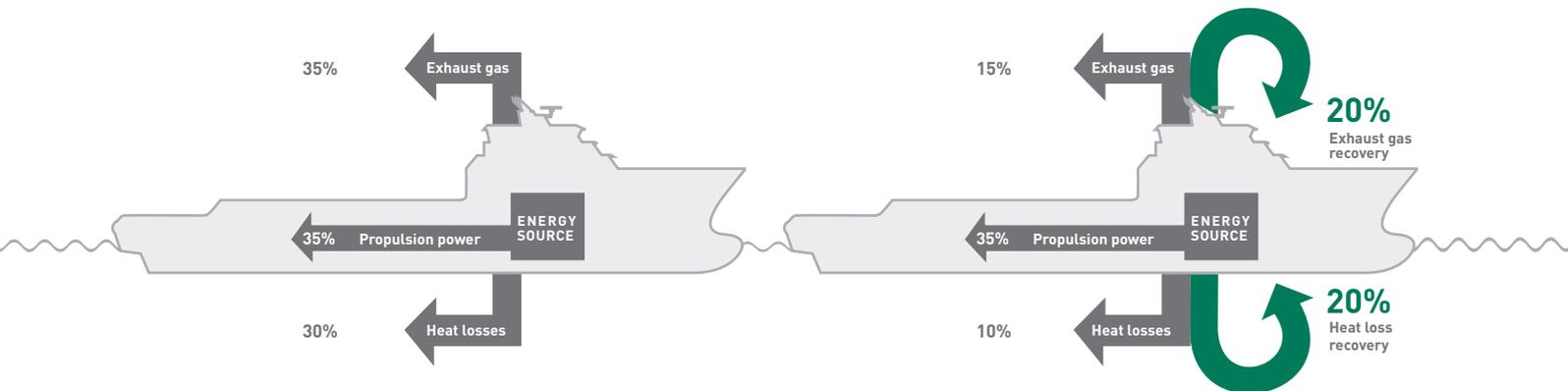
REDUCED FUEL CONSUMPTION AND EMISSIONS THROUGH ACTIVE RECOVERY OF EXISTING ENERGY LOSSES



IDENTIFY – CAPTURE – RECOVER

Most diesel engines operates within an efficiency range between 30-50%, producing more losses than useable rotating power.

Majority of the losses can be recovered, and contained within a Waste Energy Recovery System. The system will distribute the recovered heat to all relevant consumers onboard. Eliminating additional use of energy for heat production.

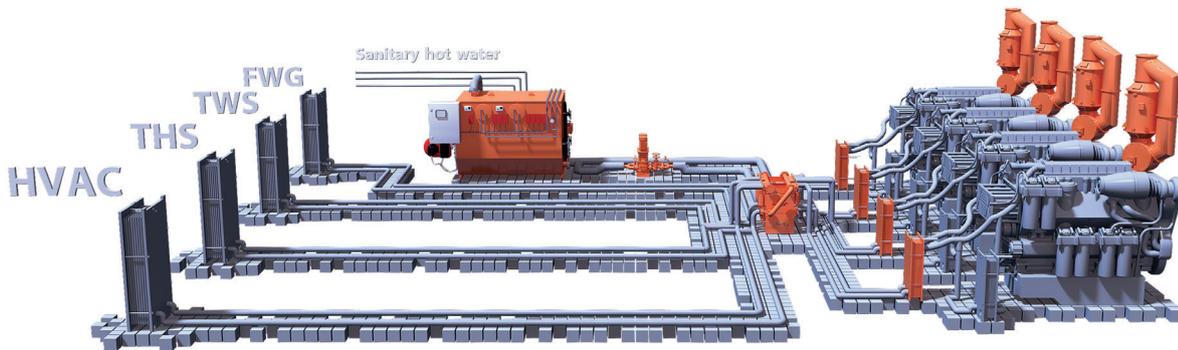


RECOVERED ENERGY IS FREE, AND REPRESENTS **ZERO EMISSIONS**



The strive for energy efficiency have introduced new technologies in the marine industry. Some of them are based on use of thermal energy. Hence, the recovered heat can also be used for producing electricity and as energy source for air conditioning systems.

SYSTEM INTRODUCTION



Heat recovery is mainly from engine exhaust and HT cooling system, but LT and auxiliary systems are also candidates for recovery. In particular for hybrid vessels that occasionally operates with no combustion engines active.

The system detects automatically energy available, and balances the recovery against consumer demand.

A fuel fired heater is typically placed in the loop for redundancy and back up. Providing heat when vessel is idle, at dock or not operational for other reasons.

TYPICAL CONSUMERS

- Accommodation heating
- Sanitary hot water
- Freshwater production
- Tank heating
- De-icing
- Preheating of engines in standby
- LNG regasification
- Electricity & Airconditioning

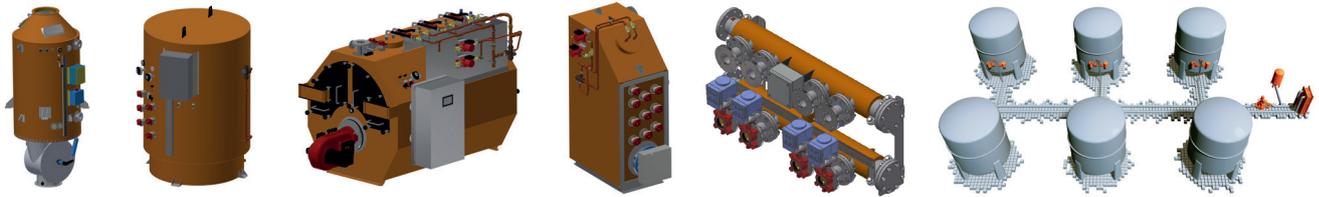
BENEFITS

- Low maintenance requirements
- Automatic, unmanned operations
- Low installation cost
- Short payback time
- Better use of existing systems



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ULMATEC PYRO WIDE RANGE OF PRODUCTS



- **EXHAUST GAS ECONOMIZER**
- **CALORIFIER**
- **FUEL FIRED HEATER**
- **ELECTRICAL HEATER**
- **FLOW CONTROL UNIT**
- **TANK HEATING**

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