

MESA

Maritime Europe Strategy Action

TTG 1 – Energy Efficiency Workshop,
Sub Area 5 – Other on-board Consumers
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MESA – Energy and water savings

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Why to save energy and water?

- On board energy loss and water waste are directly coupled to energy consumption
- A lot of energy is lost by exhaust gas, heat wastewater, lightings...
- Saving energy and water allows to earn money, to reduce the on board installed power and to optimize spaces
- No reject means no detection : less energy less traceability
- Saving energy is recommended by MARPOL

Ship service – saving energy

- Three goals:
 - Create electricity
 - Reuse the heat
 - Reduce the global consumption

Example:

- **The Organic Rankin Cycle: Create electricity**
 - ⇒ lower vaporization temperature = energy efficiency
 - ⇒ Lower latent heat = state change of matter facilitated
- **Wastewater heat recovery system : Reuse the heat**
 - ⇒ A passive system to exchange heat
 - ⇒ High potential : 30 to 70%
- **Led lighting: Reduce consumption**
 - ⇒ Saving energy from ventilation thanks to the low power LED which does not heat a lot

Ship service – saving energy

5.1	Ship service	
		Goal
5.1.1	Waste Heat Recovery (WHR)	
5.1.1.1	<i>WHR based on Organic Rankin Cycle</i>	<i>To create electricity</i>
5.1.1.2	<i>WHR system from exhaust gas</i>	<i>To create electricity</i>
5.1.1.3	<i>Wastewater heat recovery system</i>	<i>To reuse heat</i>
5.1.2	Heating, ventilation, air conditioning	
5.1.2.1	<i>Heat recovery from ventilation</i>	<i>To reuse heat</i>
5.1.2.1	<i>HVAC optimized</i>	<i>To reduce electrical consumption</i>
5.1.3	Lighting system	
5.1.3.1	<i>Led light</i>	<i>To reduce electrical consumption</i>
5.1.3.2	<i>Fiber optic lighting</i>	<i>To reduce electrical consumption</i>

Hotel load – Saving water

- Two goal :
 - Reduce water consumption
 - Reinvent water consumption

Example:

- **Recycling shower : To reduce water consumption**
 - ⇒ Four liter are kept in a tank
 - ⇒ Any more water is used
- **Washing machine without water : Reinvent water consumption**
 - ⇒ CO₂ at 31°C and high pressure
 - ⇒ With a biodegradable co-solvent

Hotel load – Saving water

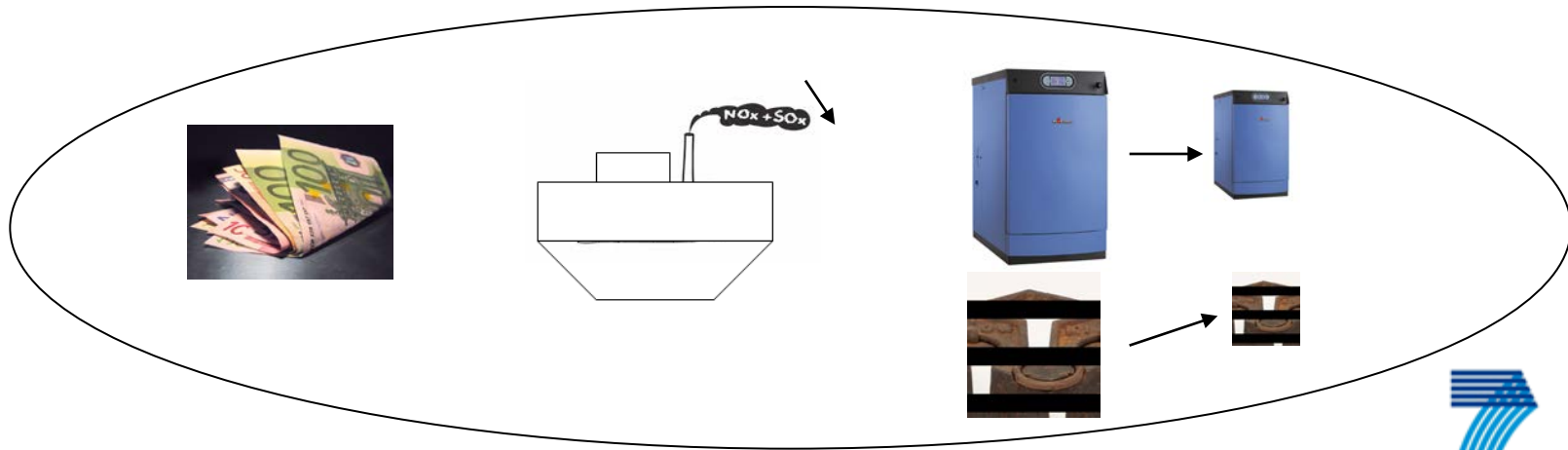
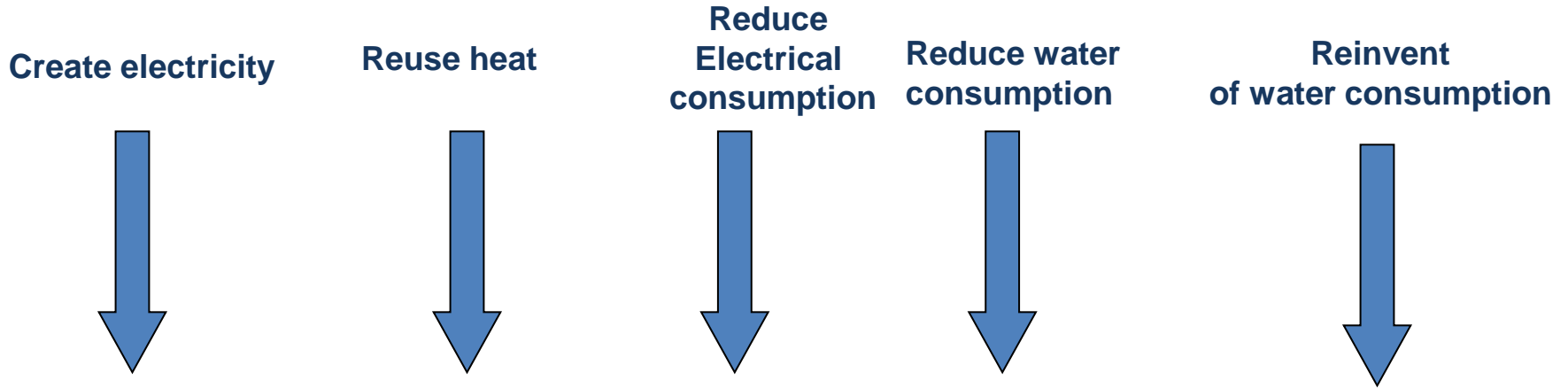
5.2	Hotel load	
		Goal
5.2.1	Shower/Tap	<i>To reduce water consumption</i>
5.2.1.1	<i>Shower pulsation</i>	
5.2.1.2	<i>Shower at water restriction</i>	
5.2.1.3	<i>Flow regulator</i>	
5.2.1.4	<i>Thermostatically controlled shower</i>	
5.2.1.5	<i>Recycling shower</i>	
5.2.2	Washing machine without water	<i>To reduce source of water consumption</i>
5.2.3	Dishwasher without water	<i>To reduce source of water consumption</i>

Cargo Handling, refrigeration – Saving energy

5.3	Cargo Handling, refrigeration	
		Goal
5.3.1	Marine absorption chiller	To reduce electrical consumption

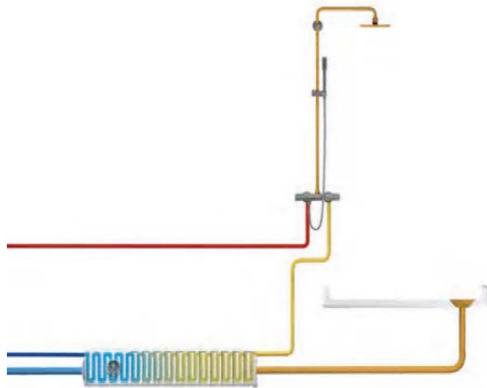
- **Marine absorption chiller:**
 - ⇒ Waste heat replaces compressor
 - ⇒ 80% electrical energy are saved

Why to save energy and water?



Some examples

Shower Water heat dealer :
70% efficiency



Water saving device : Flow reduction
40% of gain



Consumption indicator :
30% of gain

ThermoCycle® WRG - Le système de préchauffage idéal



Washing machines water waste dealer :
15kWh for 1000L waste water

Thank you