

WASTE HEAT RECOVERY

Test your knowledge on waste heat recovery through this quiz with ten multiple choice questions.

Name: _____

Organization: _____

Date: _____

1. A major advantage of waste heat recovery in industry is

- | | |
|--|---|
| <input type="checkbox"/> a. Reduction in pollution | <input type="checkbox"/> c. Both a and b |
| <input type="checkbox"/> b. Increased efficiency | <input type="checkbox"/> d. None of the above |

2. A recuperator is used mainly as a waste heat recovery system in a

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|--|---|
| <input type="checkbox"/> a. Boiler | <input type="checkbox"/> c. Compressor |
| <input type="checkbox"/> b. Billet reheating furnace | <input type="checkbox"/> d. None of the above |

3. In a low to medium temperature waste heat recovery system, the most suitable device is

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|---|--|
| <input type="checkbox"/> a. Economizer | <input type="checkbox"/> c. Air pre-heater |
| <input type="checkbox"/> b. Heat wheels | <input type="checkbox"/> d. Recuperator |

4. A regenerator is widely used in

- | | |
|--|---|
| <input type="checkbox"/> a. Reheating furnaces | <input type="checkbox"/> c. Heat treatment furnaces |
| <input type="checkbox"/> b. Baking ovens | <input type="checkbox"/> d. Glass melting furnaces |

5. An economizer is provided to reuse flue gas heat for

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|--|--|
| <input type="checkbox"/> a. Preheating the boiler feed water | <input type="checkbox"/> c. Preheating the stock |
| <input type="checkbox"/> b. Preheating the combustion air | <input type="checkbox"/> d. Preheating fuel |

Test your knowledge: Waste Heat Recovery

6. Which of the following is a capillary wick structure?

- a. Heat pump c. Heat wheel
 b. Heat pipe d. None of the above

7. The exchanger typically used in the pressurizing section of a dairy plant is

- a. Plate heat exchanger c. Shell and tube exchanger
 b. Run around coil exchanger d. All of the above

8. The waste heat source with the highest potential to recover quality waste heat is

- a. Cooling water c. Flue gases
 b. Products leaving the process d. Convective and radiant heat lost from exterior of equipment

9. Calculate the recoverable waste heat (Q, in kCal/hour) from flue gases using the following parameters:

- V (flow rate of the substance) 2000 m³/hr
 ρ (density of the flue gas): 0.9 kg/m³
C_p (specific heat of the substance): 0.20 kCal/kg °C
 ΔT (temperature difference): 120 °C
 η (recovery factor): 50%

- a. 21600 c. 25600
 b. 43200 d. 34000

10. In industrial operations fluids with temperature less than _____ are set as the limit for waste heat recovery because of the risk of condensation of corrosive liquids

- a. 80 °C c. 120 °C
 b. 100 °C d. 200 °C

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ANSWERS				
1. c	2. b	3. b	4. d	5. a
6. b	7. a	8. c	9. a	10. b