HPS sCO2 Power Systems

at Gas Turbine Compressor Stations

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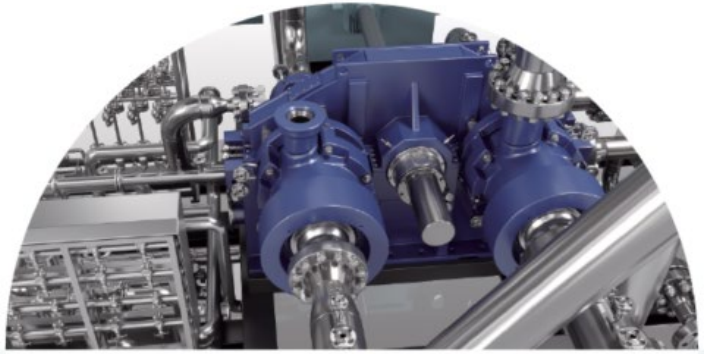
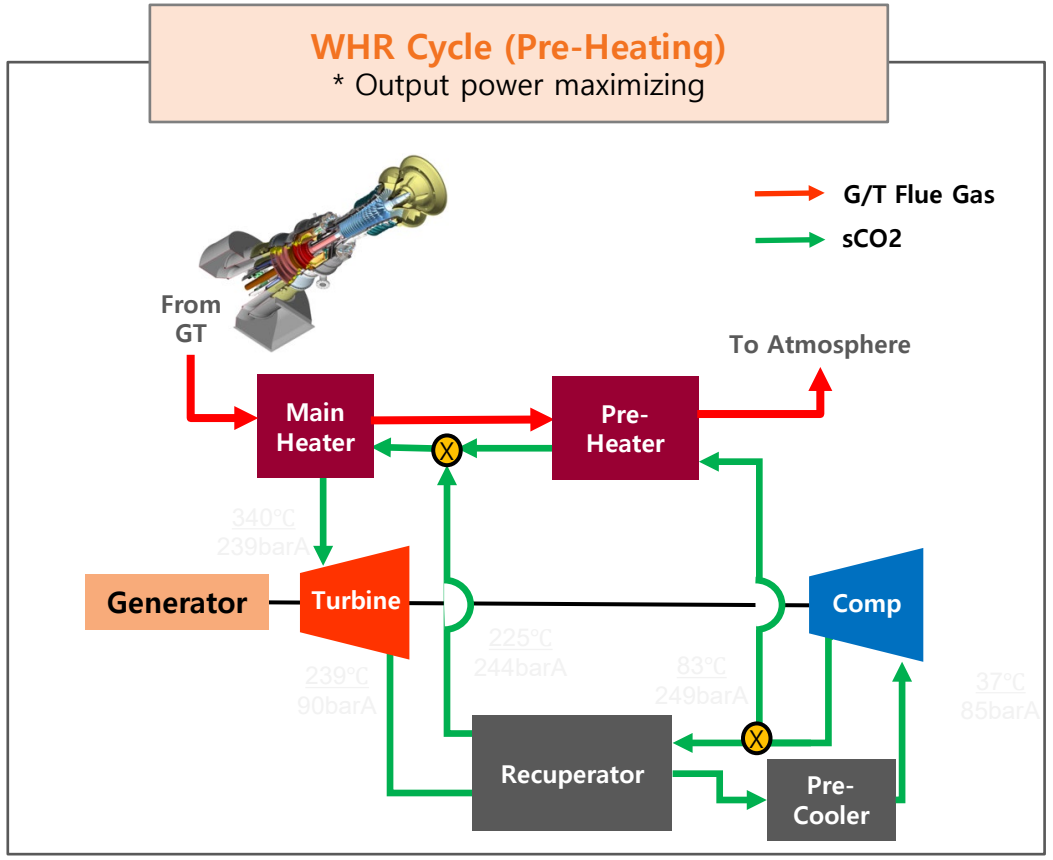
Contents

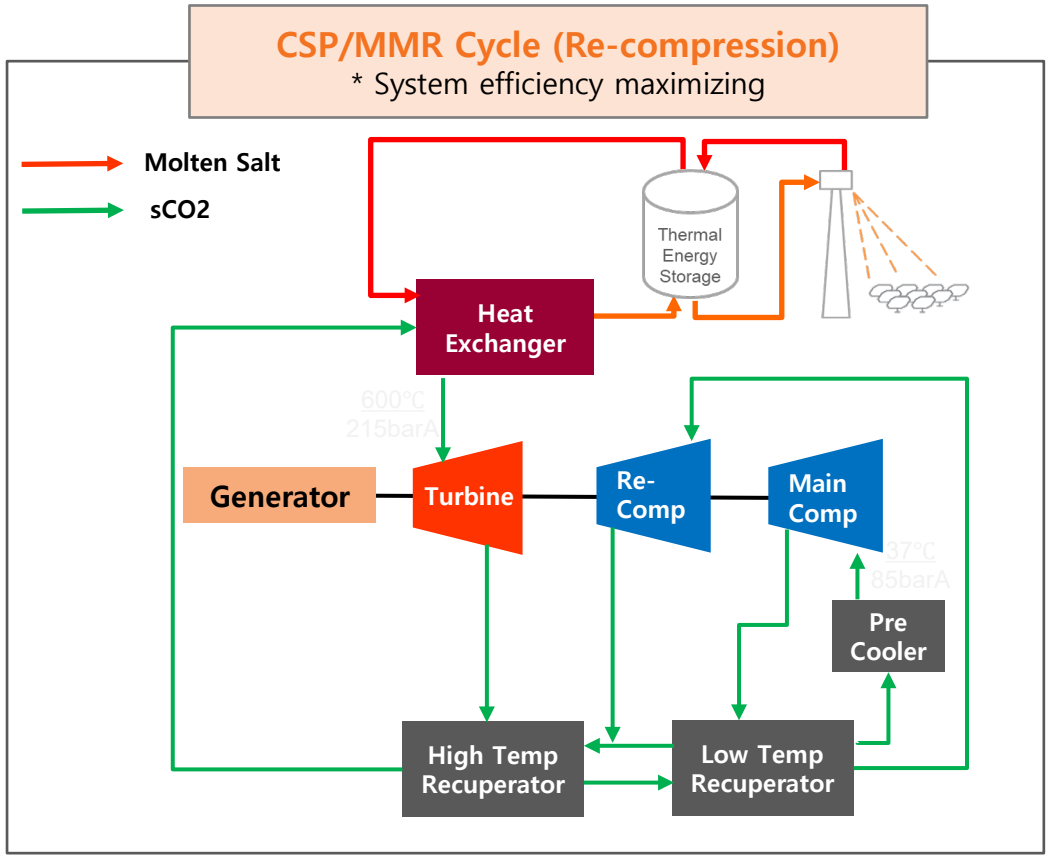


1. HPS sCO2 Bottoming Cycles

Cycles optimization for different applications

- WHR[1] : Power output maximizing cycle by recovering waste heat exhausting to atmosphere.
- CSP/MMR[2]: System efficiency maximizing cycle using high TIT(Turbine Inlet Temperature) by maintaining the high temperature of the heat source. (Heat source is closed-loop.)

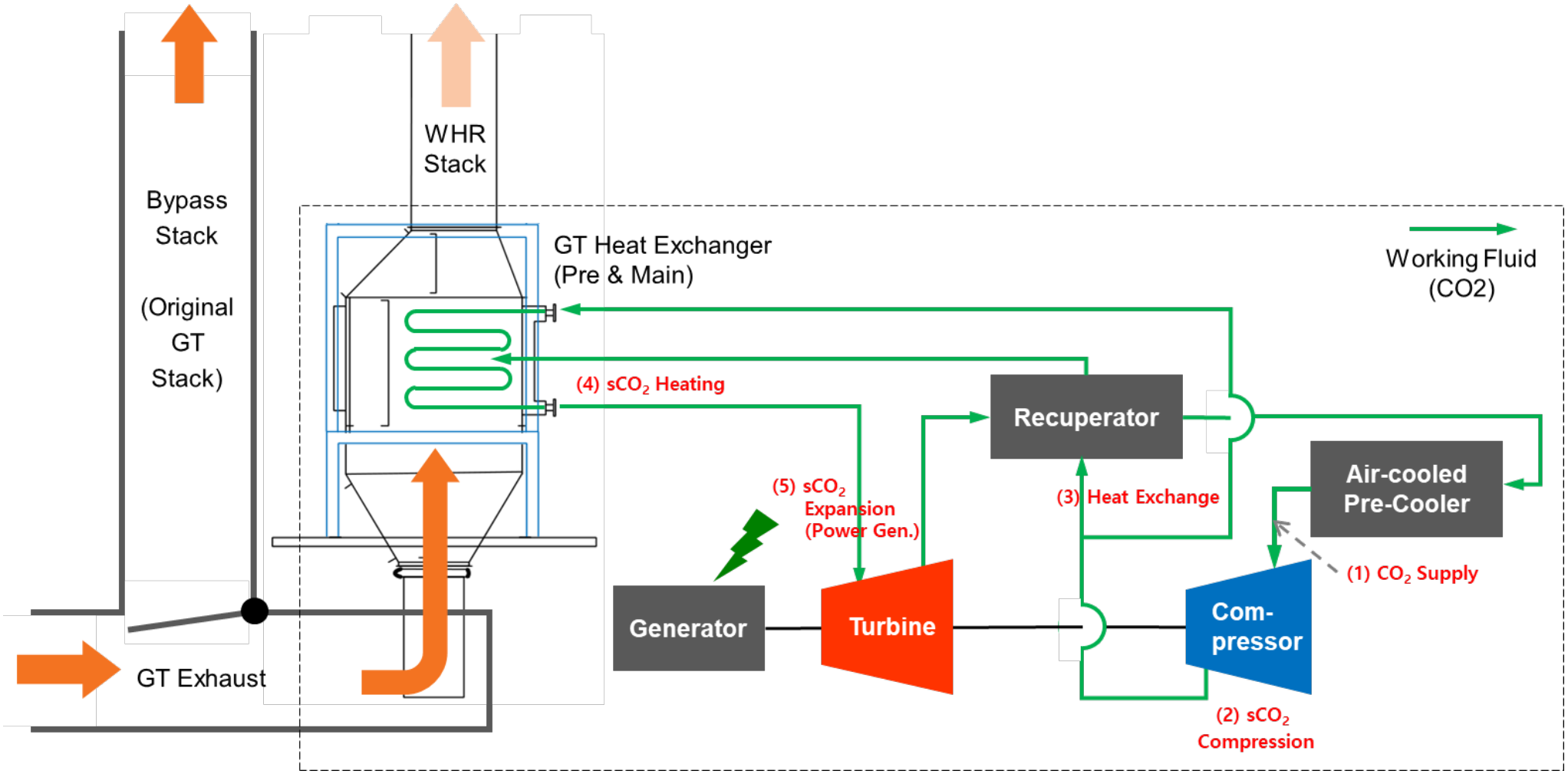




1) WHR : Waste Heat Recovery
2) CSP/MMR - Concentrated Solar Power / Micro Modular Reactor

1. HPS sCO2 Bottoming Cycles

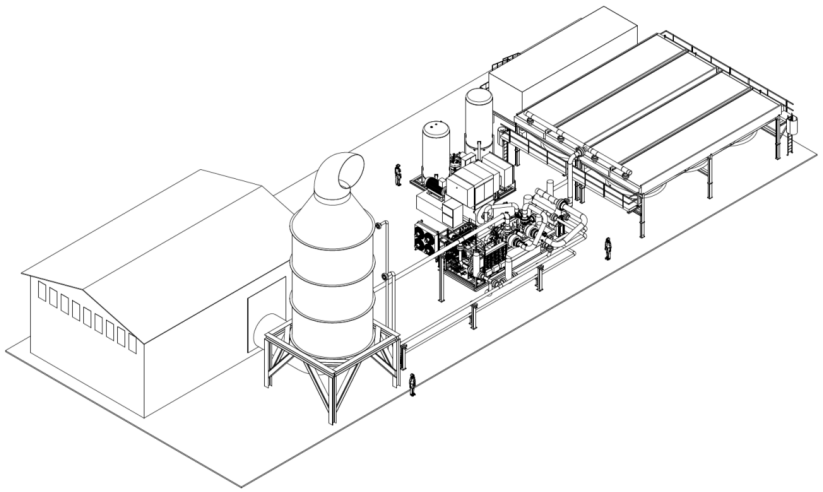
Recuperated Pre-Heating Brayton Cycle for WHR application at Gas Turbine Compressor Stations

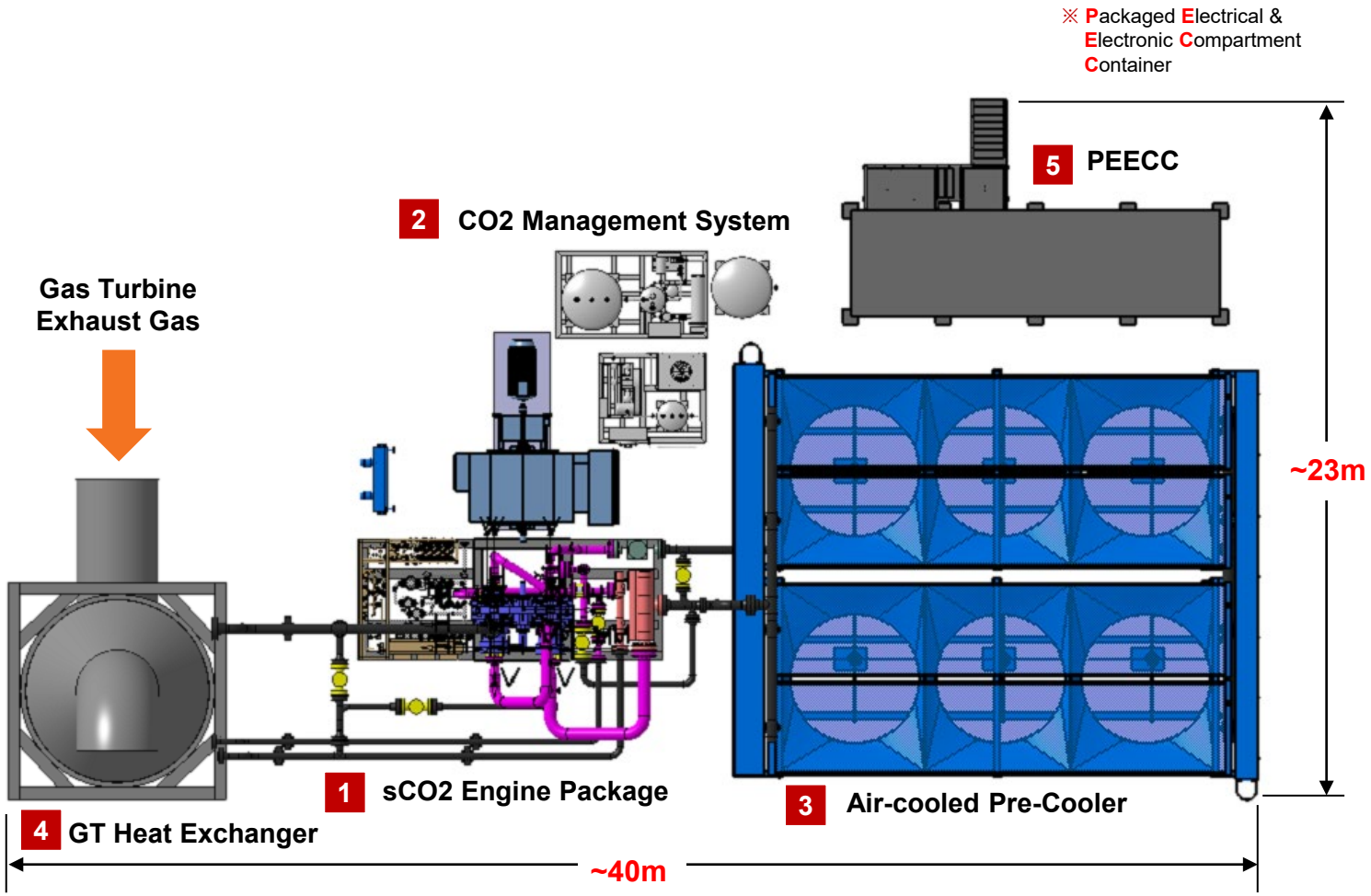


2. sCO2 Power Systems Configuration

sCO2 WHR Power System consists of five modules and the interconnecting piping and valves

1. *sCO2 Engine Package*
2. *CO2 Management System*
3. *Air-cooled Pre-cooler*
4. *GT Heat Exchanger*
5. *PEECC**



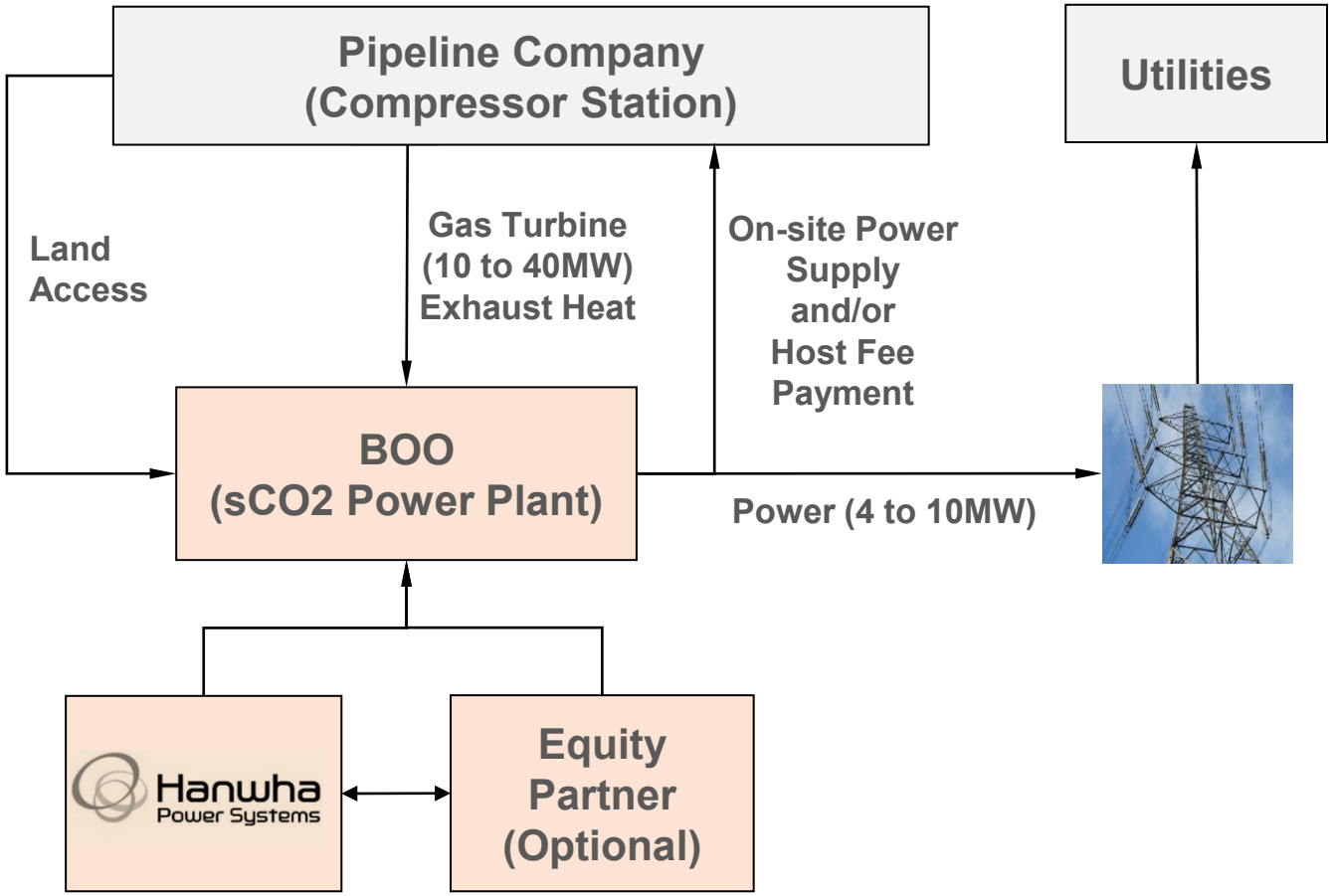


< 5MWe class sCO2 WHR Power System Layout >

3. Business Model

Hanwha sCO2 WHR BOO(Build, Own, Operate) Business Plan

BOO Business Structure



3. Value Propositions

Environmental Value Propositions

<table>
<tr><th>Item</th><th>Hanwha sCO2 Power System</th></tr>
<tr><td>Emission Offset[1)]</td><td>▪ 1MW power generated by sCO2 system will save approximately[1)]:
<table>
<tr><th>Power Plan
Fuel Source</th><th>CO2 Emission
(metric tons per year)</th><th>SO2 Emission
(metric tons per year)</th><th>NOx Emission
(metric tons per year)</th></tr>
<tr><td>Natural Gas</td><td>3,300</td><td>0.016</td><td>1.96</td></tr>
<tr><td>Coal</td><td>7,800</td><td>7.23</td><td>4.77</td></tr>
</table></td></tr>
<tr><td>Environmental Credits Potentials</td><td>▪ Creates tradable renewable energy credits & emission reduction/offset credits
→ CO2, NOx, SOx
▪ Waste Heat Recovery is qualified as “Green Power” in many states in US
→ Qualified in some states’ RPS (Renewable Portfolio Standard)</td></tr>
<tr><td>Emission Free</td><td>▪ Electricity generation with no additional fuel and no additional emissions
▪ Decarbonization option for clients’ portfolios
▪ Zero GHG emissions</td></tr>
<tr><td>ESG Value</td><td>▪ Waste to power in the compressor stations creates the value of ESG management</td></tr>
</table>

1) Offsetting energy generated by Natural Gas and Coal fuel and assuming the capacity factor of 85% (7,446hr/yr) for 1 MW

Thank You

Hanwha Power Systems

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