

Waste heat recovery in the Glass Industry with SPIE Energy Solutions



SPIE, sharing a vision for the future

Agenda

Part 1: Who is SPIE?

Part 2: Business model

Part 3: Waste heat recovery solutions in the Glass Industry

Part 4: Financing models

Part 5: References



Our worldwide presence

- SPIE S.A. can be found in nearly 460 locations in 34 countries worldwide.



- Is a leading independent European multi-service provider
- Is an expert for all complex solutions for building services
- The core of the brand is generated in the fields of electrical-, mechanical- and HVAC-engineering, energy, and communication networks as well as integrated facility and energy management services
- Has a high technical competence and a broad range of services
- Concentrates on profitable growing markets and provides full range single-source solutions: Developing, planning and managing of extensive facility management and energy management projects
- Generates a turnover of about 4.9 billion euro
- with more than 35 000 employees worldwide



SPIE Energy Solutions

We are responsible for:

- Innovative energy supply solutions for industrial customers
- Planning, installation, financing and operating of energy efficiency measures
- Contractually guaranteed energy cost savings
- Implementation energy management system according to ISO 50001



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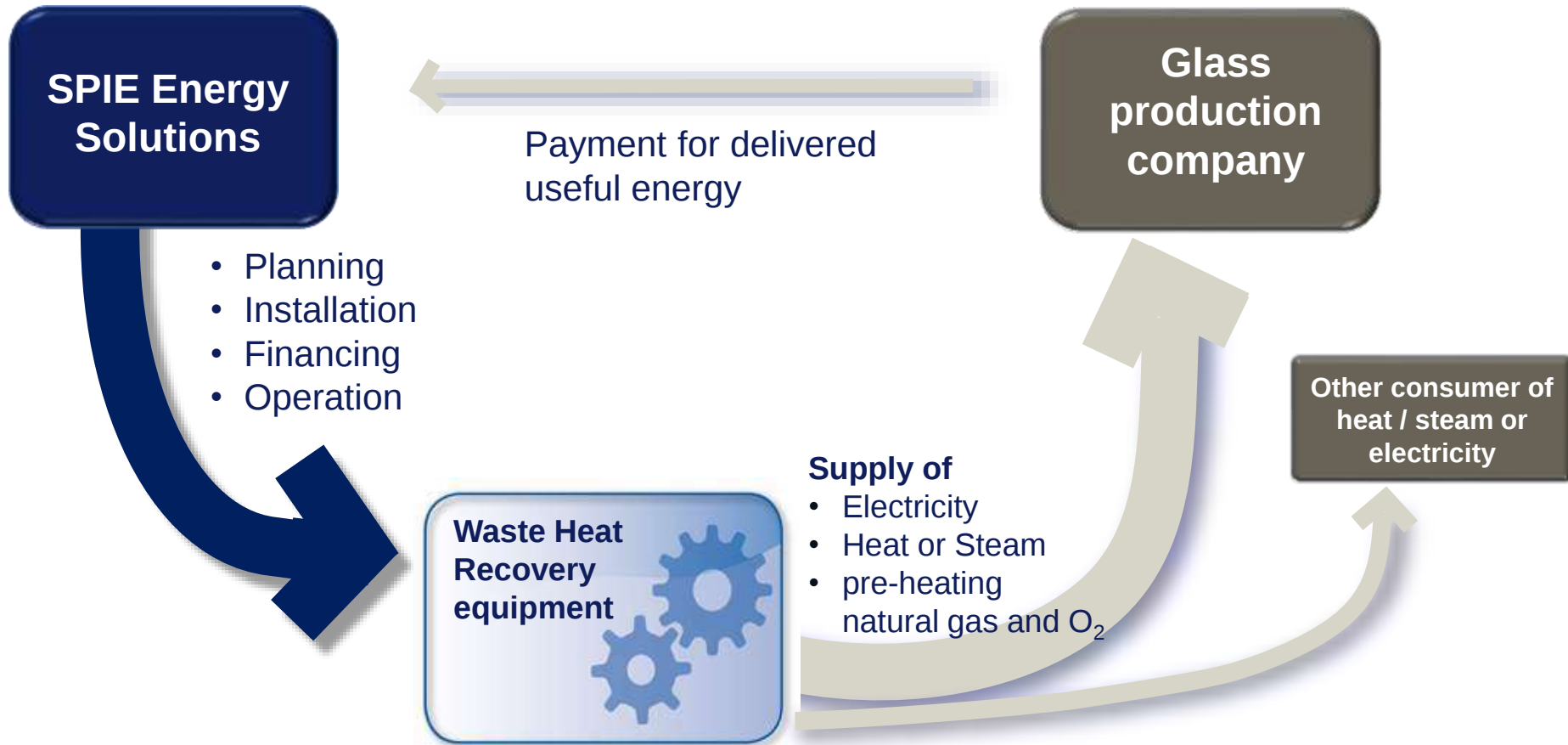
Part 3: Waste heat recovery solutions in the Glass Industry

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High efficiency, guaranteed availability: Energy Supply Contracting (ESC)



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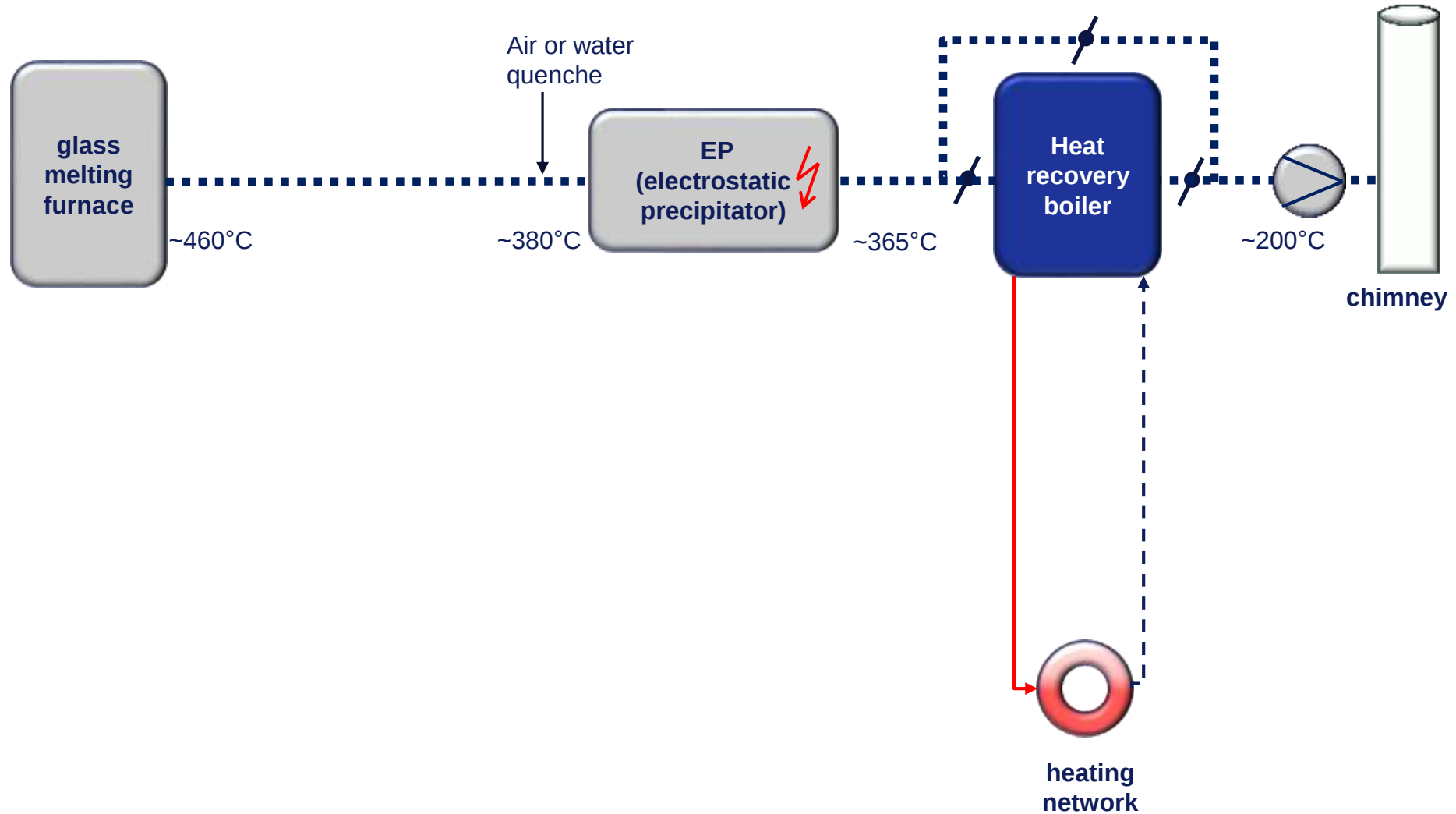
Part 3: Waste heat recovery solutions in the Glass Industry

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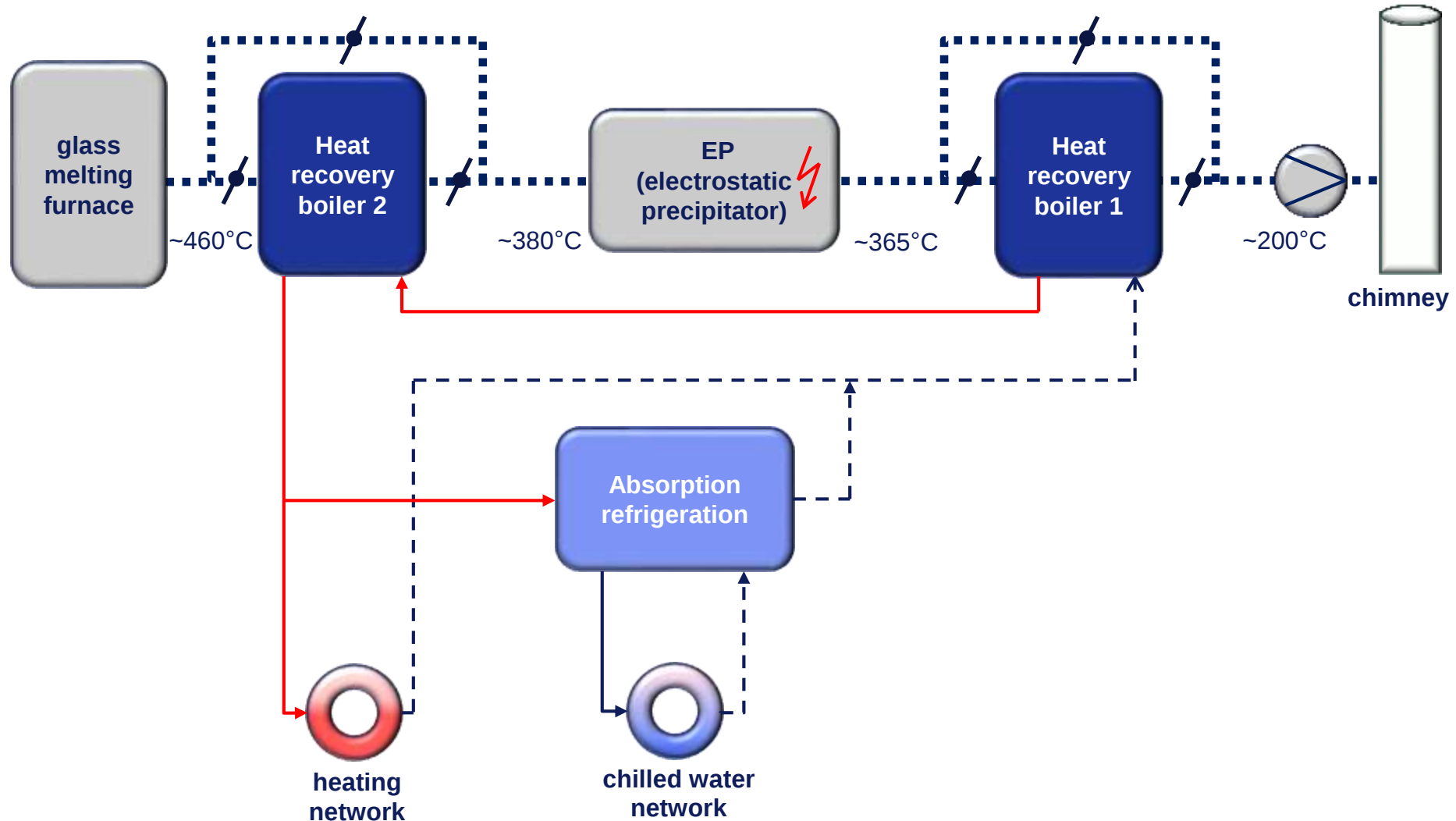
Part 5: References



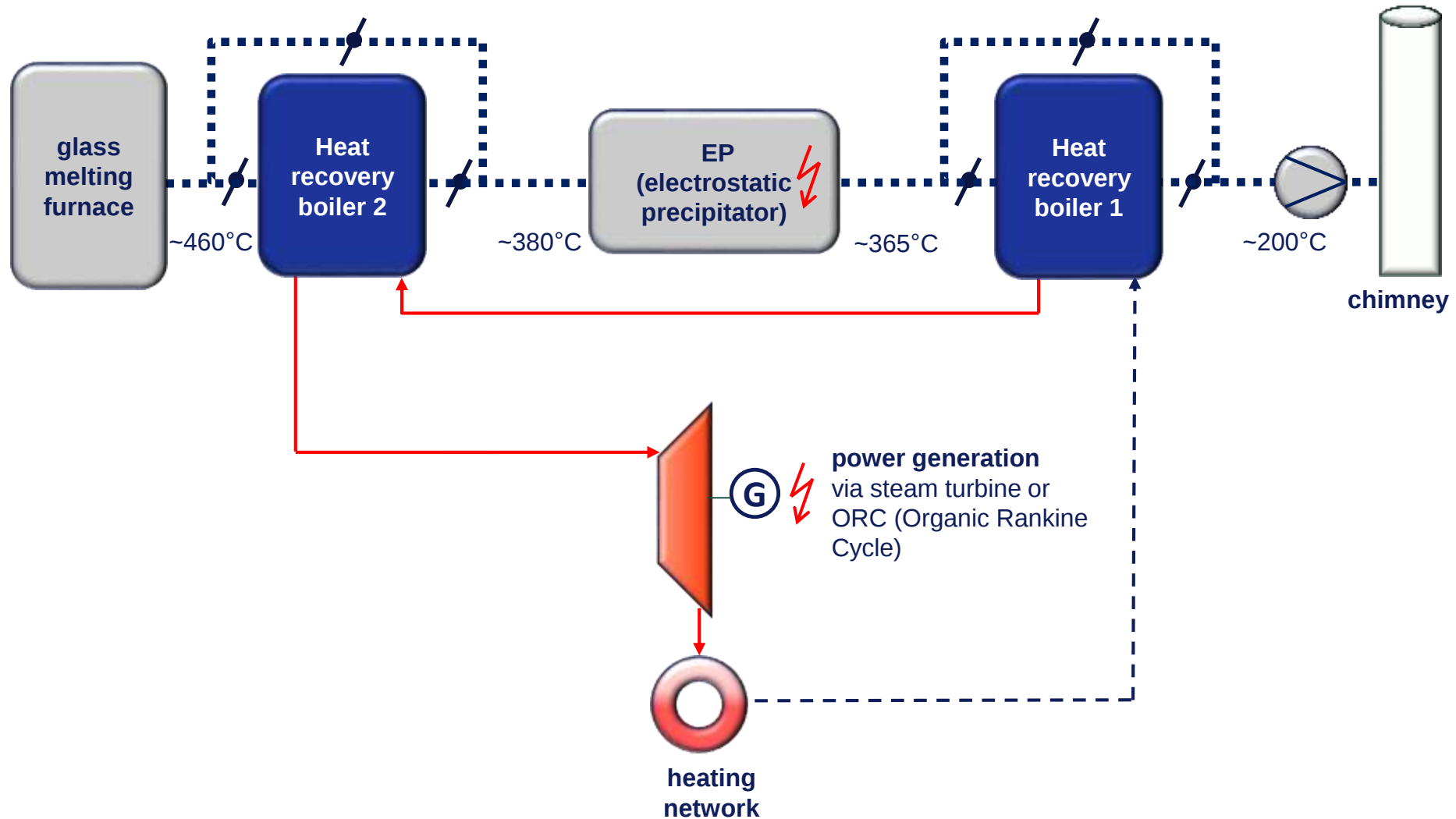
1. Waste heat recovery to generation of heat



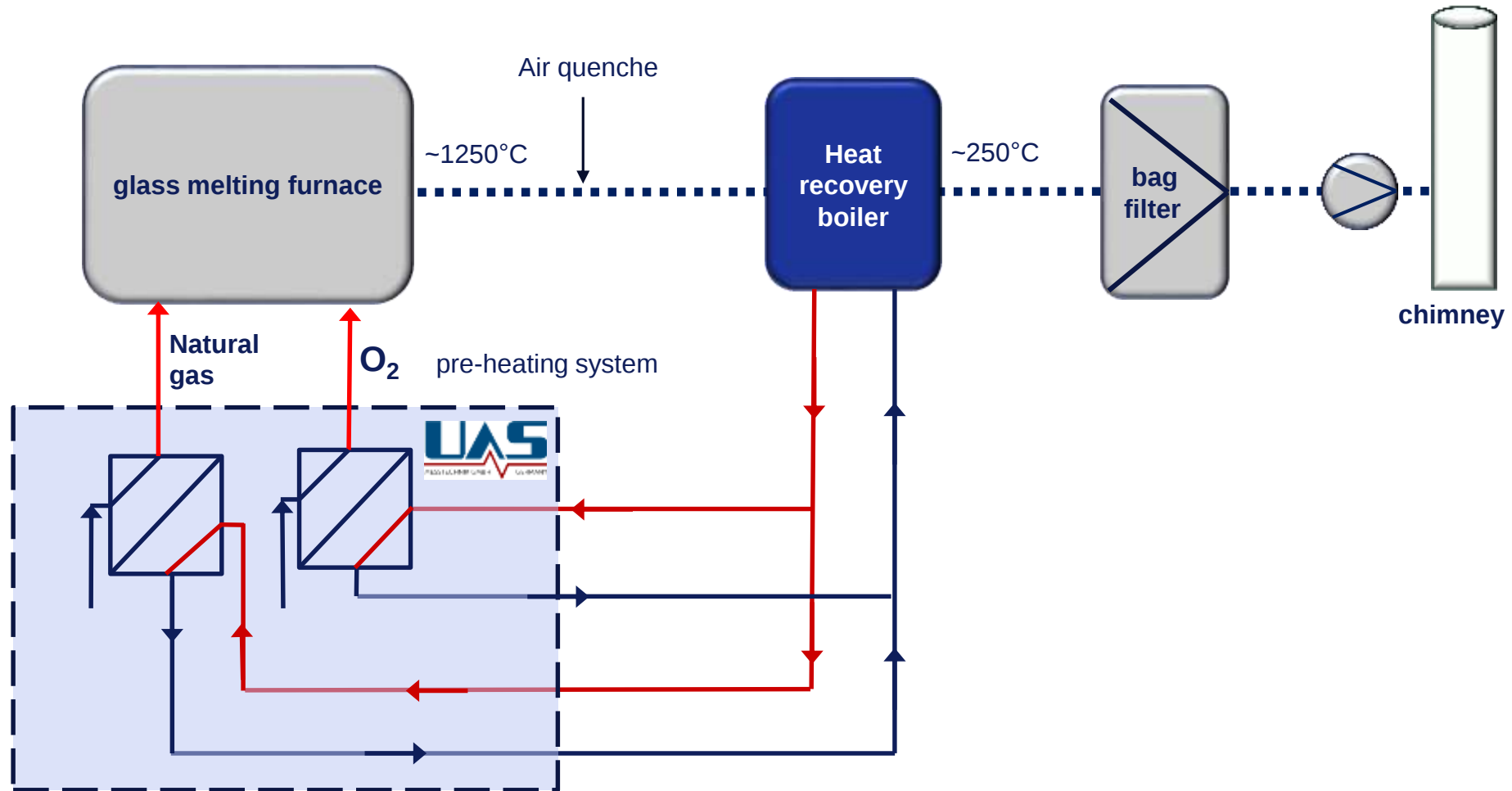
2. Waste heat recovery to generation of heat and chilled water



3. Waste heat recovery to power generation and heat



4. Waste heat recovery with pre-heating system (example for oxygen furnace)



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Financing model

- In addition to the technical advantages, we also generate significant benefits for our clients, in financing of the investment for the efficiency measures
- These benefits could be the application of our **off-balance sheet financing model**

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Extract of our references in the glass industry

Saint Gobain Glass, Herzogenrath and Stolberg (Germany)



- General overhaul of the supply technology systems during the general repair phase of the Herzogenrath plant
- Installation of new, capacity-optimized steam turbines at both sites (with 700 kW or 1 MW electrical output, respectively)
- Modernisation of water preparation systems and the heat supply
- Renovation of the control technology throughout all supply systems
- Funding of the total investment
- Operation of the useful energy supply

Extract of realized projects steam generation in the glass industry



Extract of our references in the glass industry

Pilkington Deutschland AG, Weiherhammer and Gladbeck (Germany)



- Installation of waste heat recovery boilers in the waste gas pipe systems of the glass melting furnaces
- Modernisation of the existing heating network at the site
- Operation of the waste heat recovery boilers
- Funding of the total investment
- Efficiency guaranteed

Extract of our references in the glass industry

Wiegand-Glas, Großbreitenbach (Germany)



- Installation of new
 - waste heat recovery boilers in the waste gas pipe system of the glass melting furnace
 - district heating pipeline
 - absorption refrigeration to generate chilled water
- Modernisation of the existing heating network
- Efficiency guaranteed

Extract of our references in the glass industry

Saint Gobain Sekurit, Herzogenrath (Germany)



- Installation of new
 - combined heat and power generation (CHP) with a capacity of 2 MW electrical output
 - heat generation (2 x 3 MW) and main heat distribution systems
 - chilled water supply system including three new chillers with a total capacity of 1.350 kW
- Funding of the total investment
- Operating of the media supply

Extract of our references in the glass industry

Pilkington Automotive, Witten (Germany)



- Installation of combined heat and power generation (CHP) with a capacity of 1,2 MW electrical output
- Modernisation of the existing heating network at the site
- Technical service
- Funding of the total investment

Thank you very much!



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