

26th World Gas Conference

1 – 5 June 2015, Paris, France

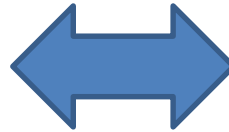


FUEL SWITCHING
KATZ SATO
Osaka Gas Co., Ltd.

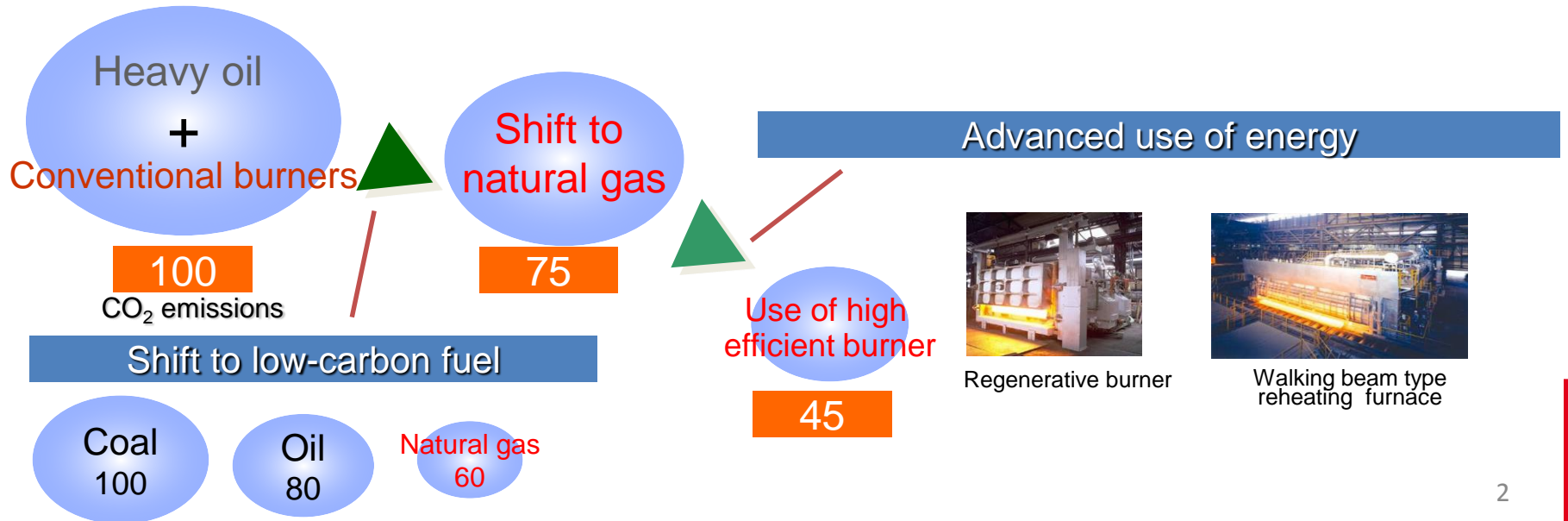


Introduction : What is “Fuel Switching”?

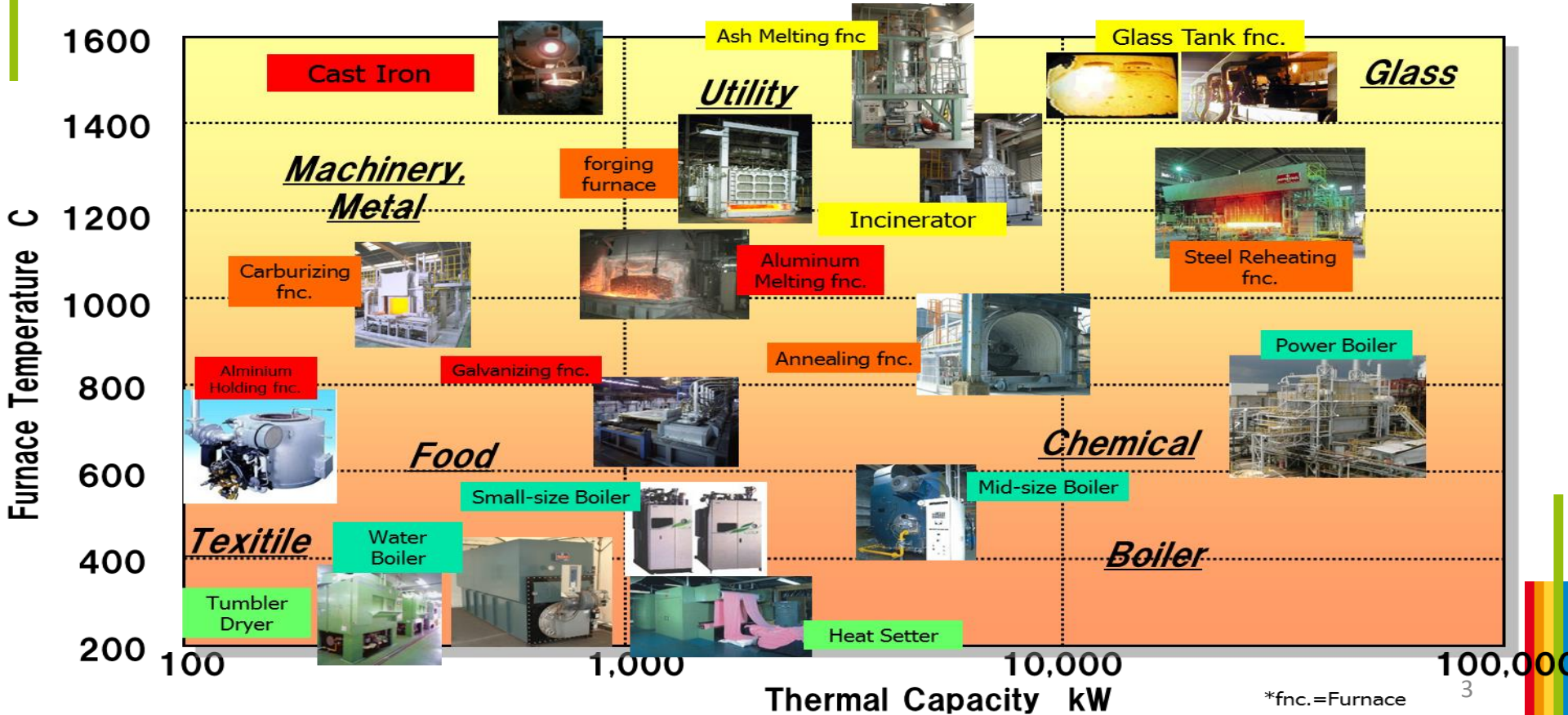
- Benefit of Fuel Switching
 - Natural Gas Industry
 - Global Environment



- Obstacles
 - Initial Investment: Infrastructure/Equipment
 - Quality of Product

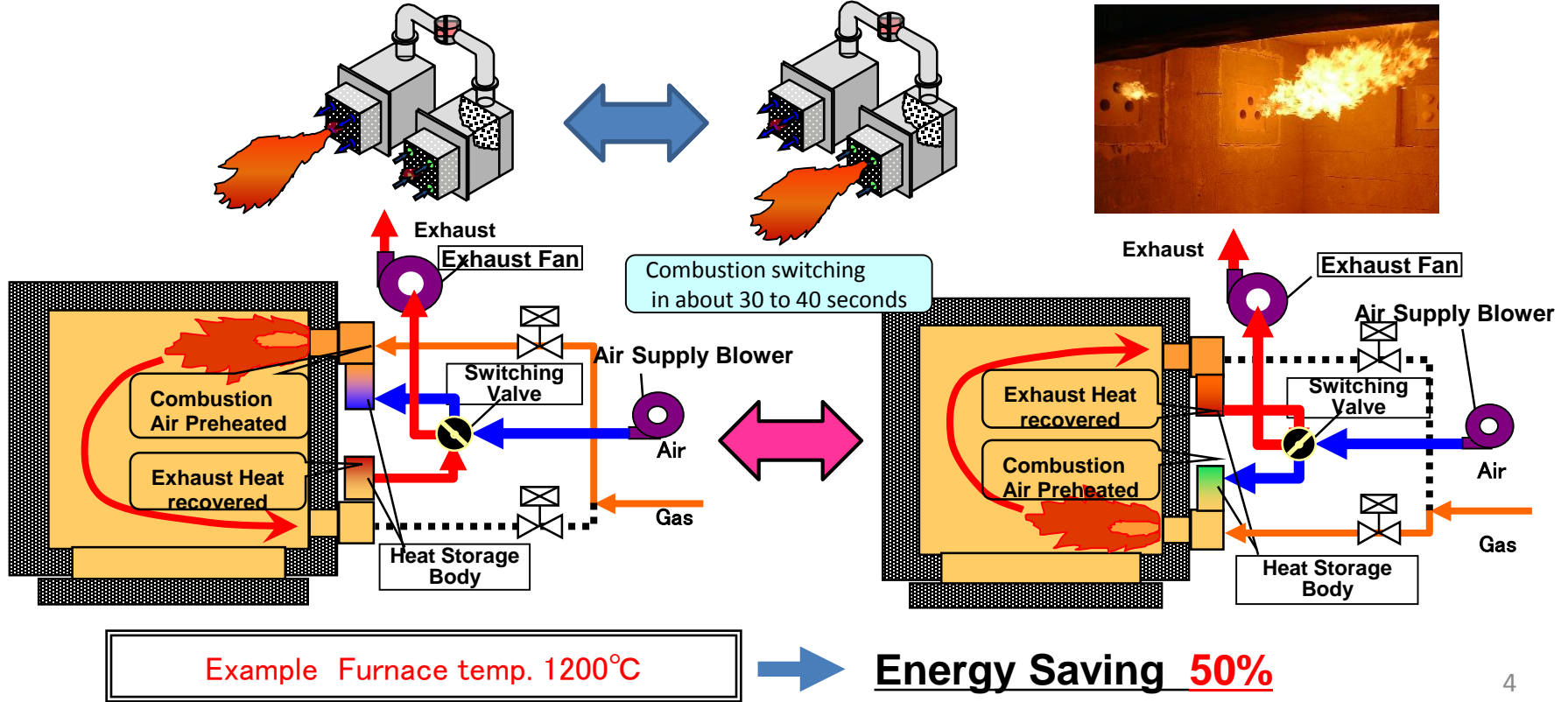


Energy Saving and Maintaining the Product Quality



Solution : Re-generative Burner

- Mechanism of heat recovery by Re-generative burner



Summary

Items	Countermeasure	Energy Saving Ratio	Remarks
Excess Air Ratio	Readjustment of Combustion Air /Gas Ratio	Excess Air Ratio 1.4→1.1 at Furnace Temp.=900°C Energy Saving 18%	<ul style="list-style-type: none"> • Introduction minute gas /air control system • Monitoring by orifice meter
	Furnace Pressure Control	O2 Conc. In the furnace 10%→4% at Furnace Temp.=800°C Energy Saving 30%	Keeping Furnace pressure positive +0.5-1mmH ₂ O (+5-10Pa)
	Seal Enhancement (Improving Air Tightness)	O2 Conc. In the furnace 6%→4% at Furnace Temp.=900°C Energy Saving 14%	Improvement of the structure of the door
Waste Heat Recovery • Heat recovery by Hot Air • Product Preheating	Installing Heat Exchanger	Heat recovery by Hot Air of 300°C at furnace Temp.=900°C Energy Saving 16%	Installing <ul style="list-style-type: none"> • Heat exchanger • Recuperative burner • Waste heat boiler
	Adopting Re-regenerative Burner	Heat recovery by Hot Air of 1000°C at furnace Temp.=1200°C Energy Saving 50%	
	Product Preheating by Extending Furnace Length	Product preheating at O2 Conc. In the furnace 2% Exhaust gas Temp.900→700°C Energy Saving 10%	
Reduction of Furnace Wall Radiation	Strengthen the insulation	Surface of furnace Temp. 120°C→80°C Energy Saving 1-2%	
Reduction of Heat Accumulation by Furnace Wall	Strengthen the insulation by Adopting Ceramic Fiber	Furnace wall Firebricks 369t→Ceramic fiber block175t Reduction of Heat Accumulation 97%	
	Strengthen the insulation by Veneering	Adding ceramic fiber blanket of 50mm veneering to firebrick of 365mm at furnace temp.1000°C Reduction of Heat Accumulation 20-33%	