

Hydrogen Road of Kawasaki Heavy Industries

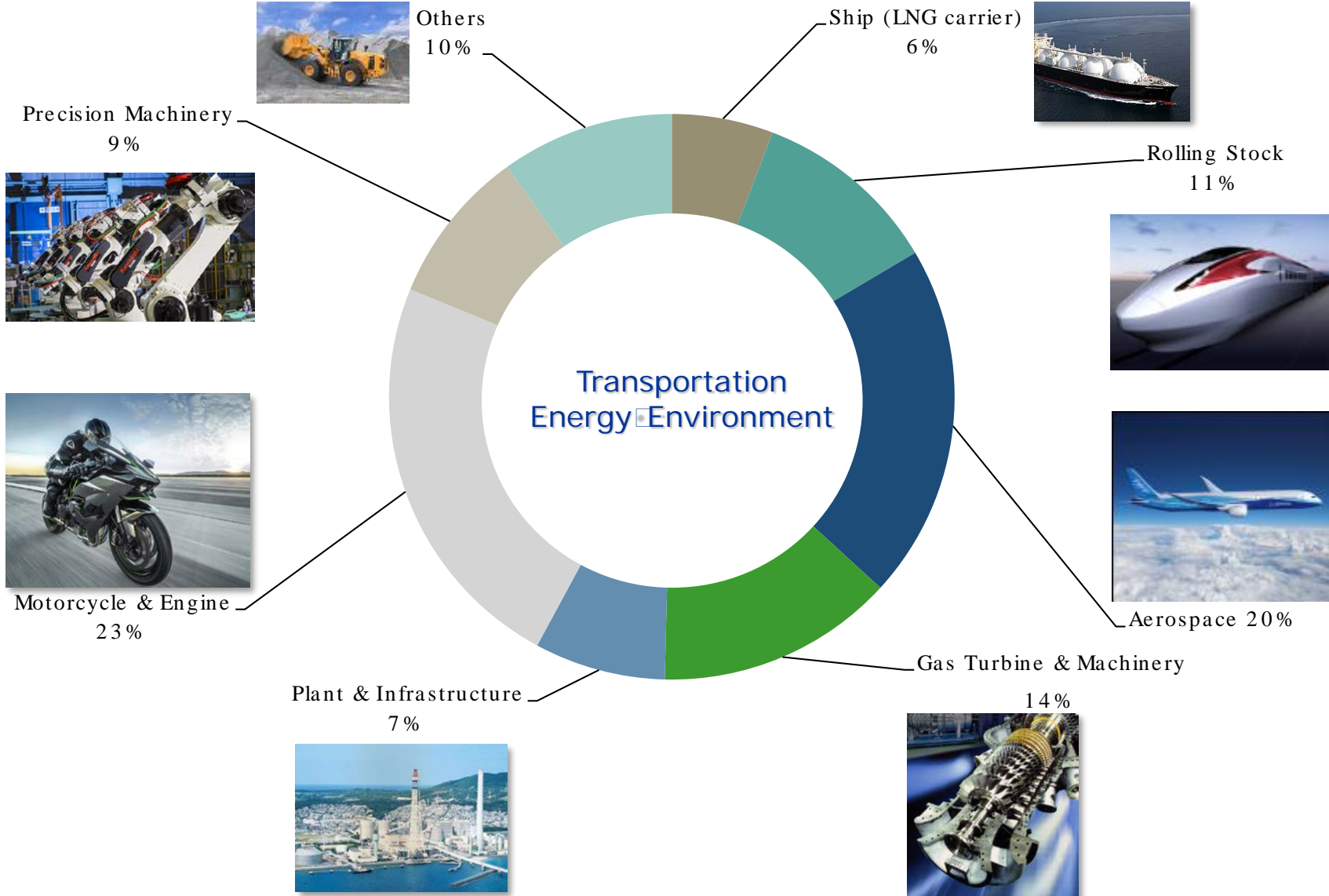
Development of Innovative Hydrogen Combustion Systems
for Industrial Gas Turbines

Cogen Europe Conference 11/2019

Madrid, Spain

Shahrad Adjili

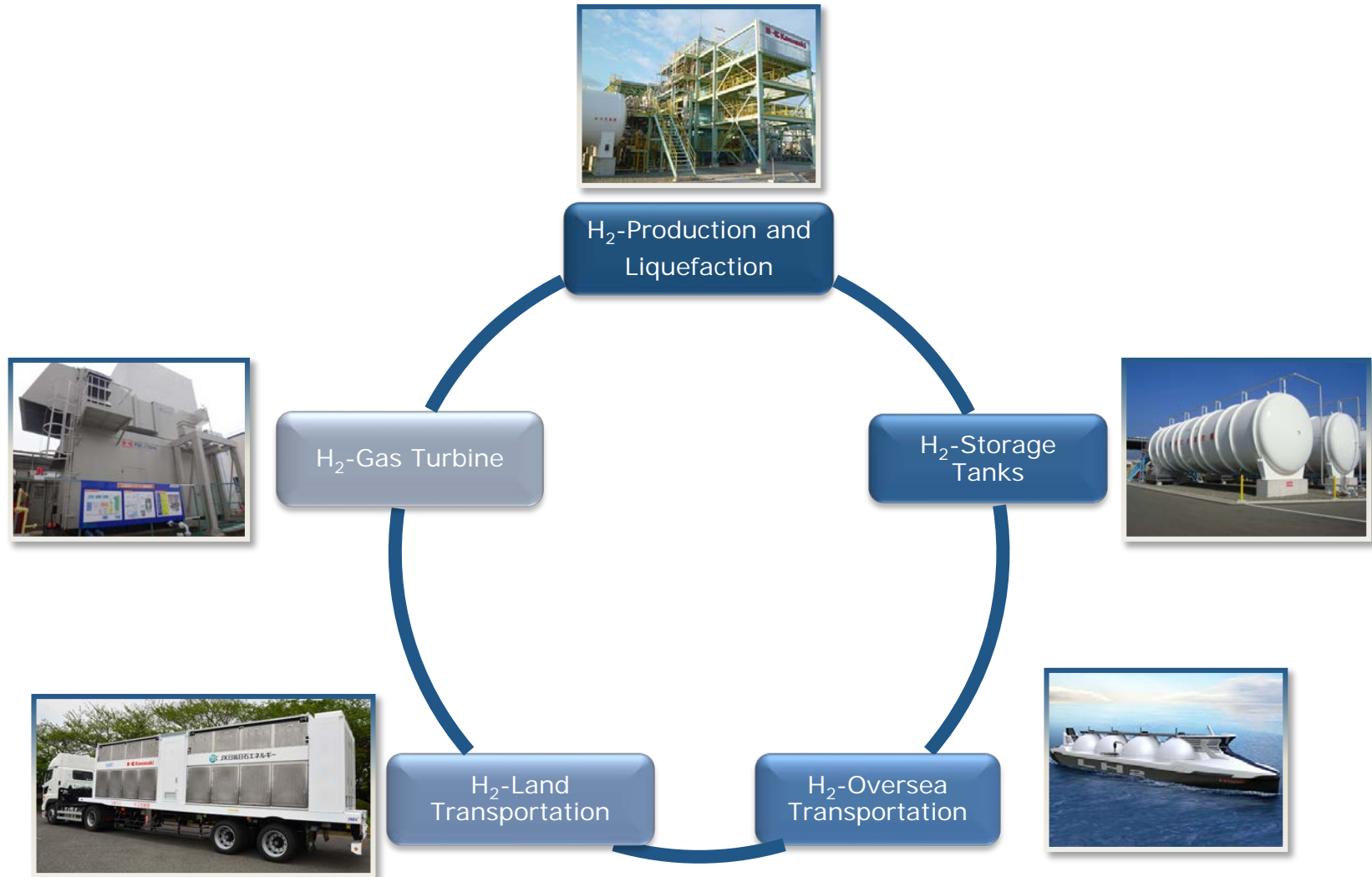
Kawasaki Heavy Industries – Segments



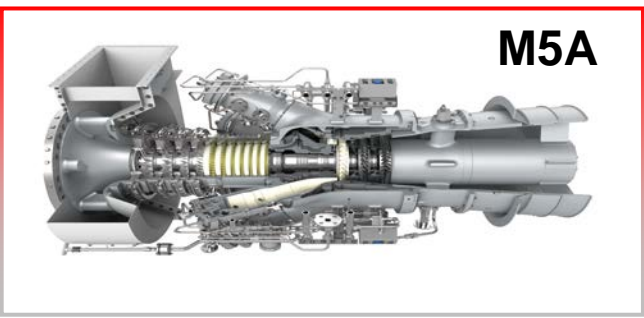
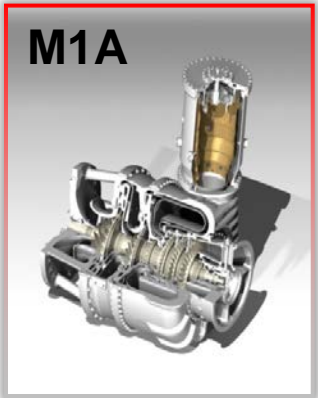
Hydrogen Way of Kawasaki Heavy Industries

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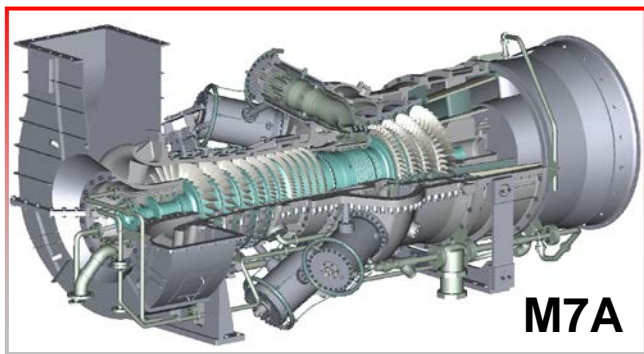
Products for H₂-Supply-Chain



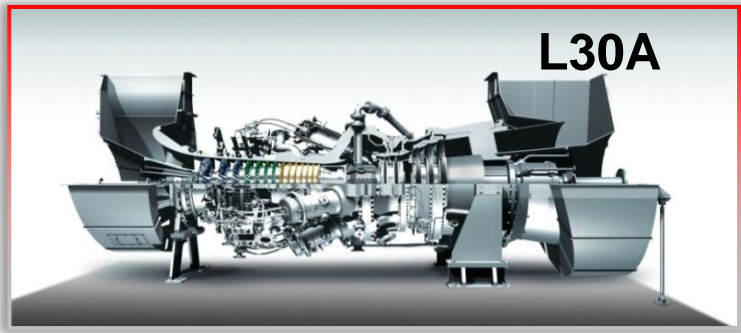
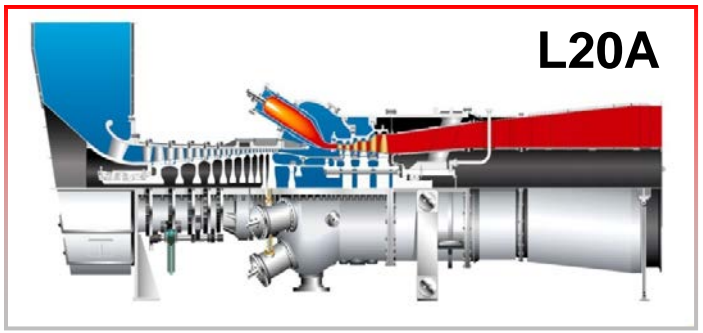
Kawasaki Gas Turbine Europe (KGE/KHI)



KG12-V

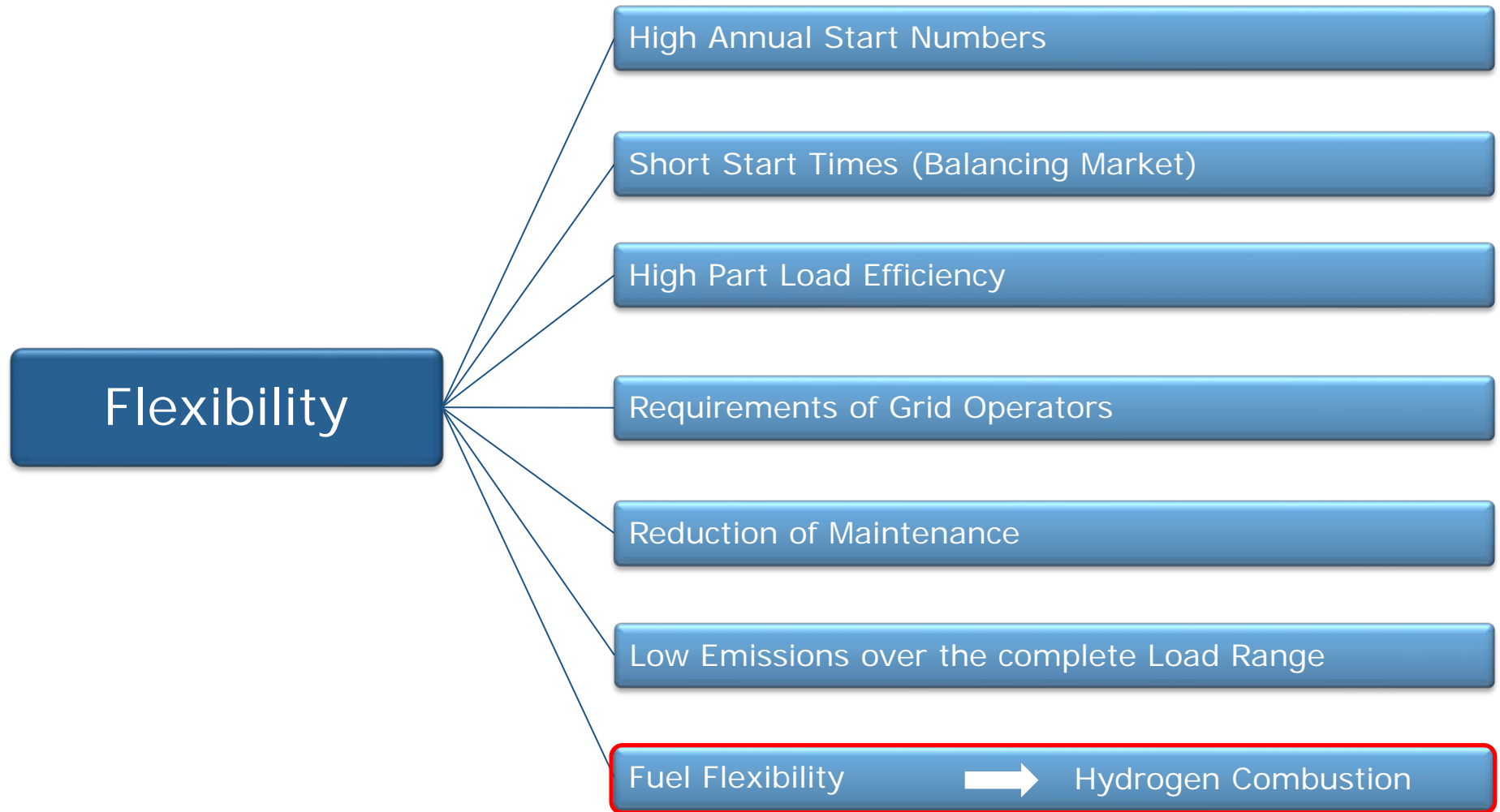


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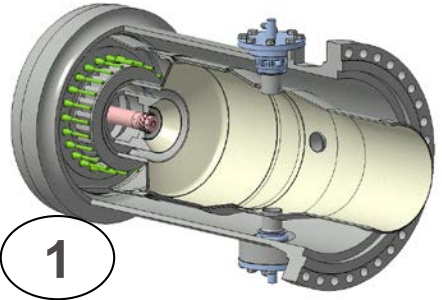
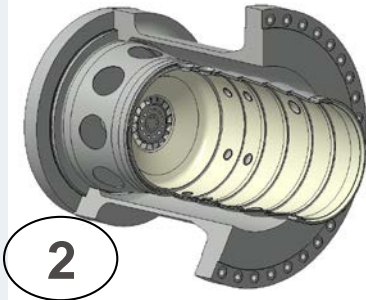
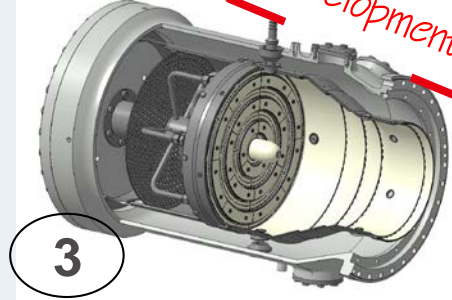



Requirements to modern Gas Turbines

Recent requirements to flexibility of Gas Turbines



Developments of Hydrogen Gas Turbines @ KHI

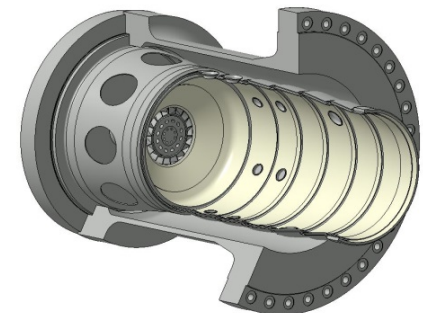
Overview of Combustor Developments

Combustor Configuration	DLE Combustor for Natural Gas	Diffusion Flame Combustor	DLE Micro-Mix Combustor
NOx Reduction	"Dry"	"Wet" Water/Steam	"Dry" <i>Latest Development</i>
			
Max. H2 Content	60vol%	100vol%	100vol%
Status	In operation @ Akashi Works 	Final Combustor Test, 2016 Applied to KOBE Demonstration Plant, 2018 	Combustor under development 

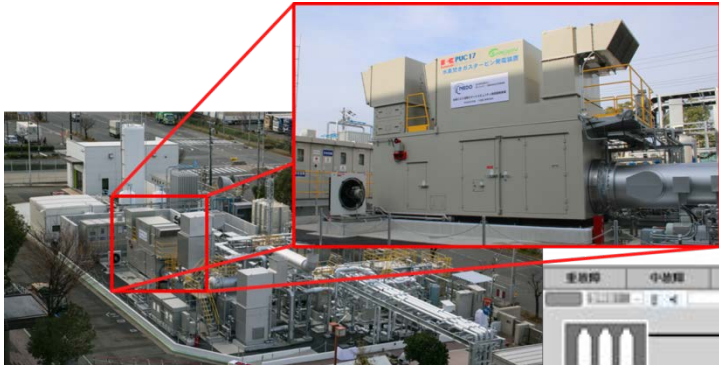
World's First H2-Power Plant at Kobe Port



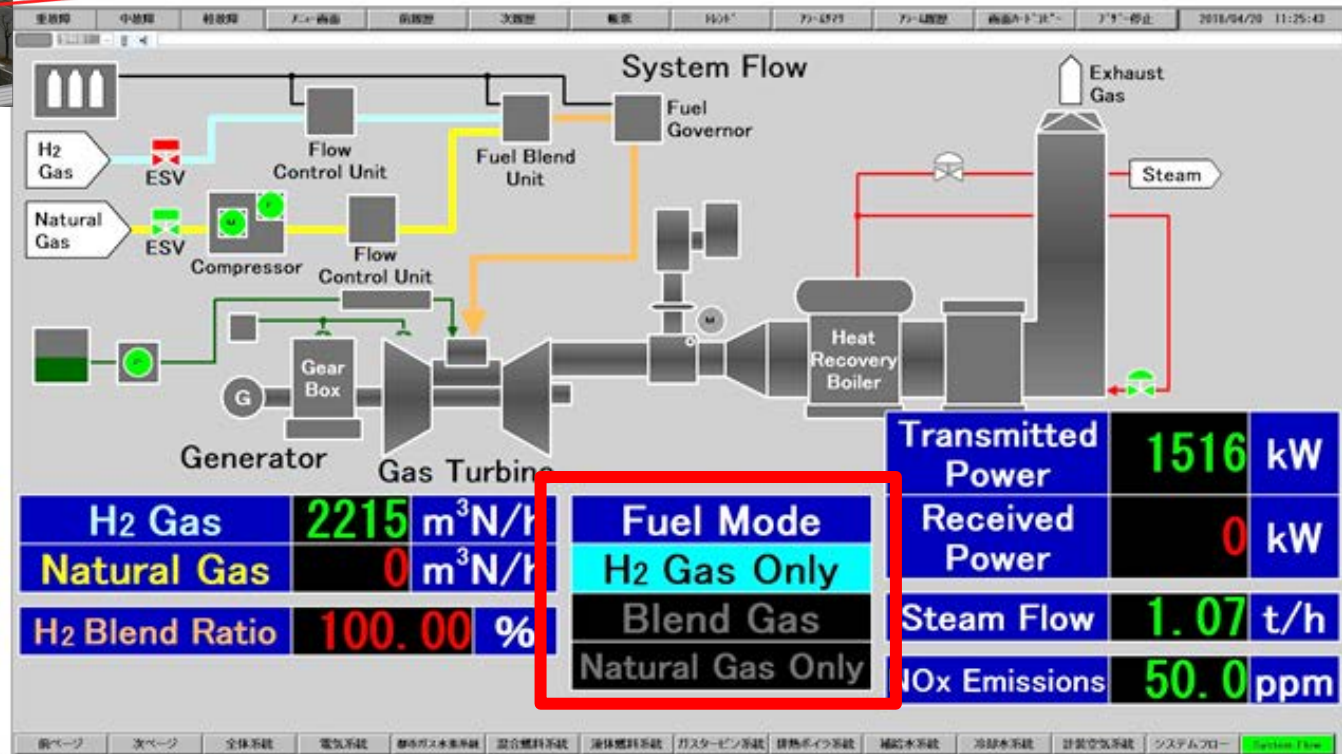
Diffusion



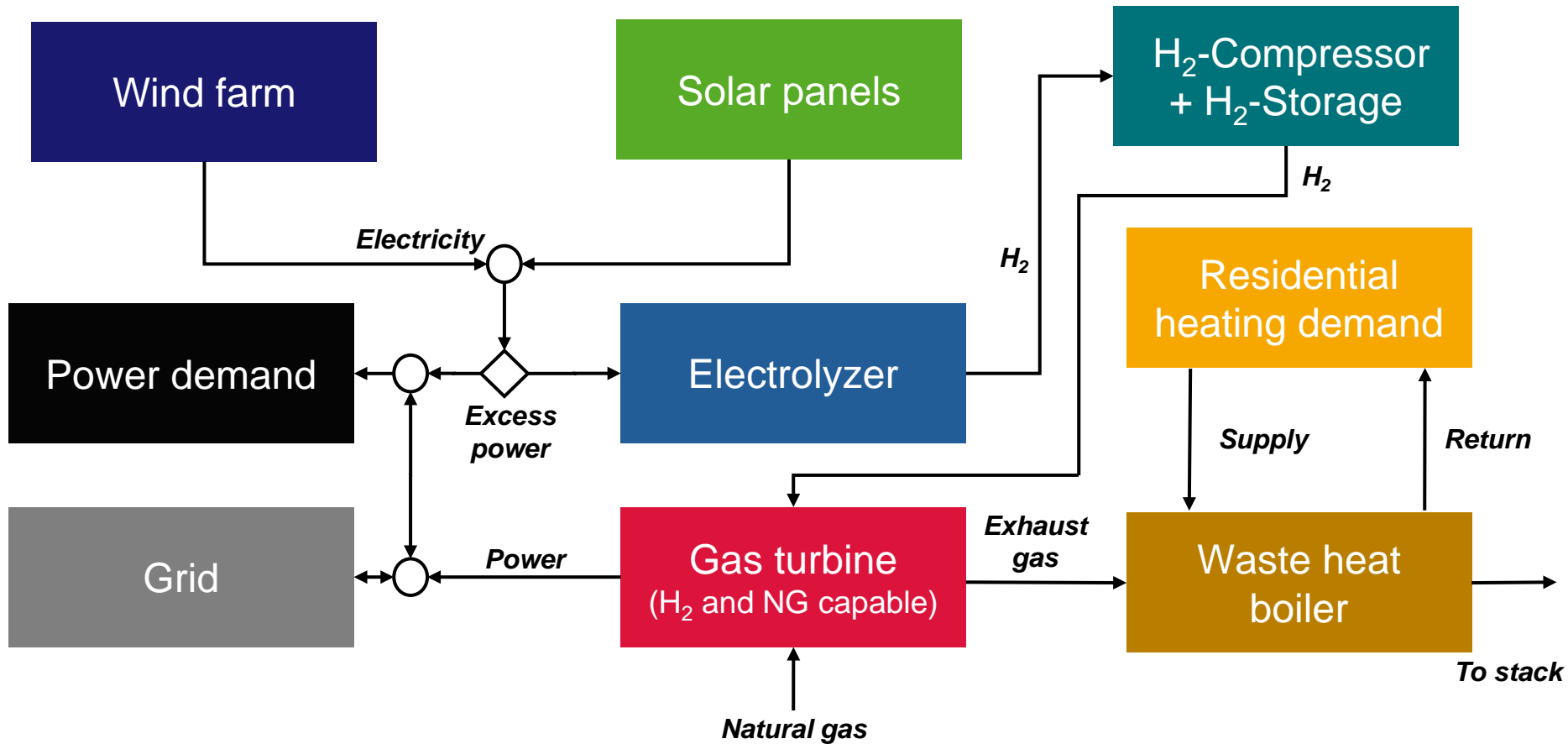
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User Control Interface



Innovative Power Plant with Renewable Energy Supply



世界の人々の豊かな生活と地球環境の未来に貢献する
“Global Kawasaki”