

The 5<sup>th</sup> Government-Private Forum  
on the Cleaner Energy Future Initiative for ASEAN (CEFIA)

# CEFIA

## RENKEI Control Flagship Project

Presenters

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## Content

- What is RENKEI Control?
- RENKEI Control Flagship Project
- Visualization of RENKEI contribution from 2020 to 2022
- Standardization of FEMS

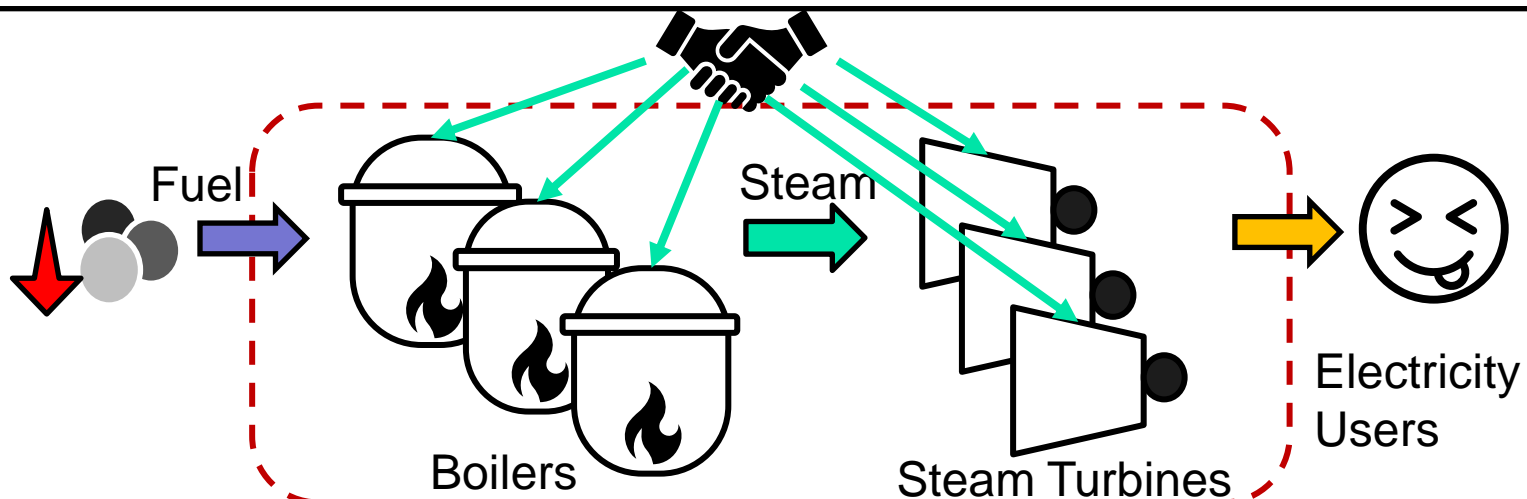
# What is RENKEI Control?

# Firstly, what is the meaning of Japanese word **RENKEI**?

**RENKEI** (連携) in the context of Japanese Language  
Collaboration, Cooperation, Linkage, Together



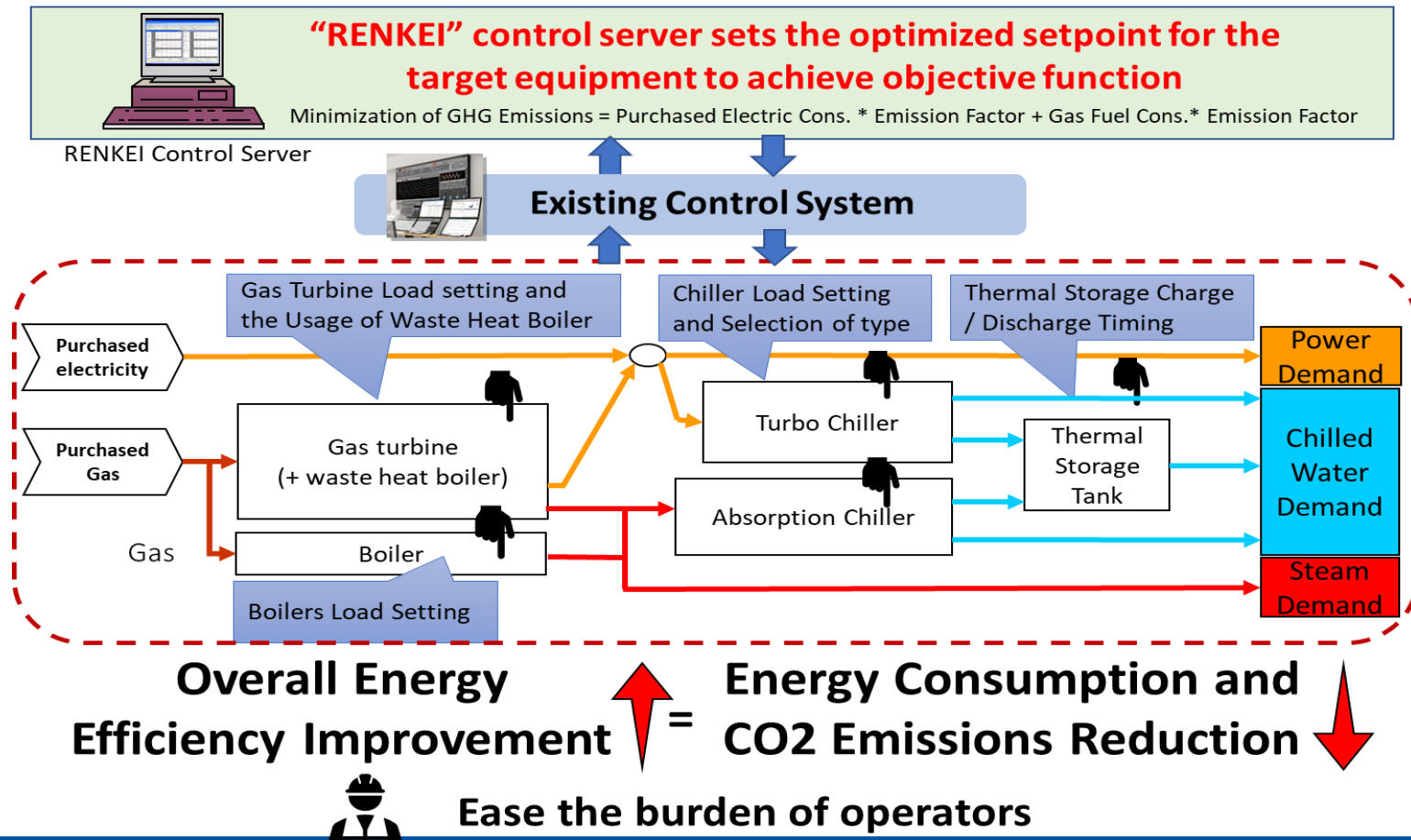
**RENKEI** in the context of control optimization  
Linking multiple equipment to collaborate together  
for optimum use of energy through control



# RENKEI Control

## The Purpose of RENKEI Control...

- to solve customer management issues (environmental problems) as well as energy saving (cost saving)
- to provides energy users with opportunities to achieve energy performance improvement without having to go through a major renewal or significant changes in existing facilities



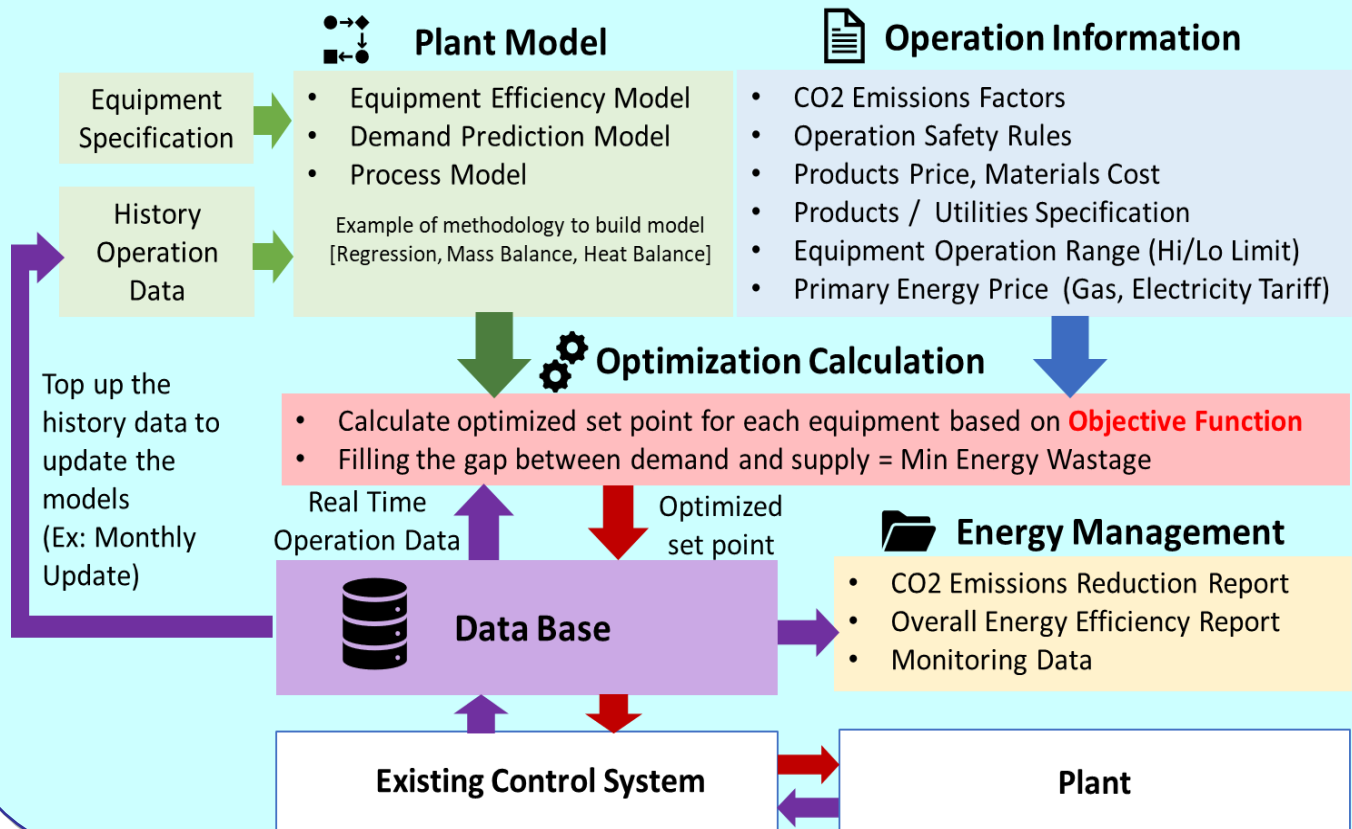
# Realization of RENKEI Control



RENKEI Control Server

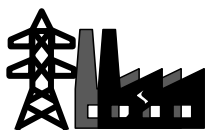
Each Control Vendors have own technology/optimizer to realize RENKEI Control for target system.

## Continuous Improvement Cycle in RENKEI Control Server



# Applicable Optimization by RENKEI

	Category	Applicable Optimization by RENKEI
1	Utility Plant	<ul style="list-style-type: none"> <li>• Boiler Plant Optimization</li> <li>• Turbine Plant Optimization</li> <li>• Boiler Turbine Plant Optimization</li> <li>• Co-Generation Plant Optimization</li> <li>• Chilled Water Plant Optimization</li> <li>• Air Compressor Plant Optimization</li> </ul>
2	Utility Plant and Demand Side	<ul style="list-style-type: none"> <li>• District Cooling Plant Optimization with Demand Prediction for Building Side</li> <li>• Utility Plant and Manufacturing Plant Total Optimization</li> <li>• Smart City (Power and Heat) Total Optimization</li> </ul>



Utility Plants in many kind of industry.  
(Steam, Hot Water, Chilled Water, Electricity, Cogeneration)



District Cooling Plant for Buildings



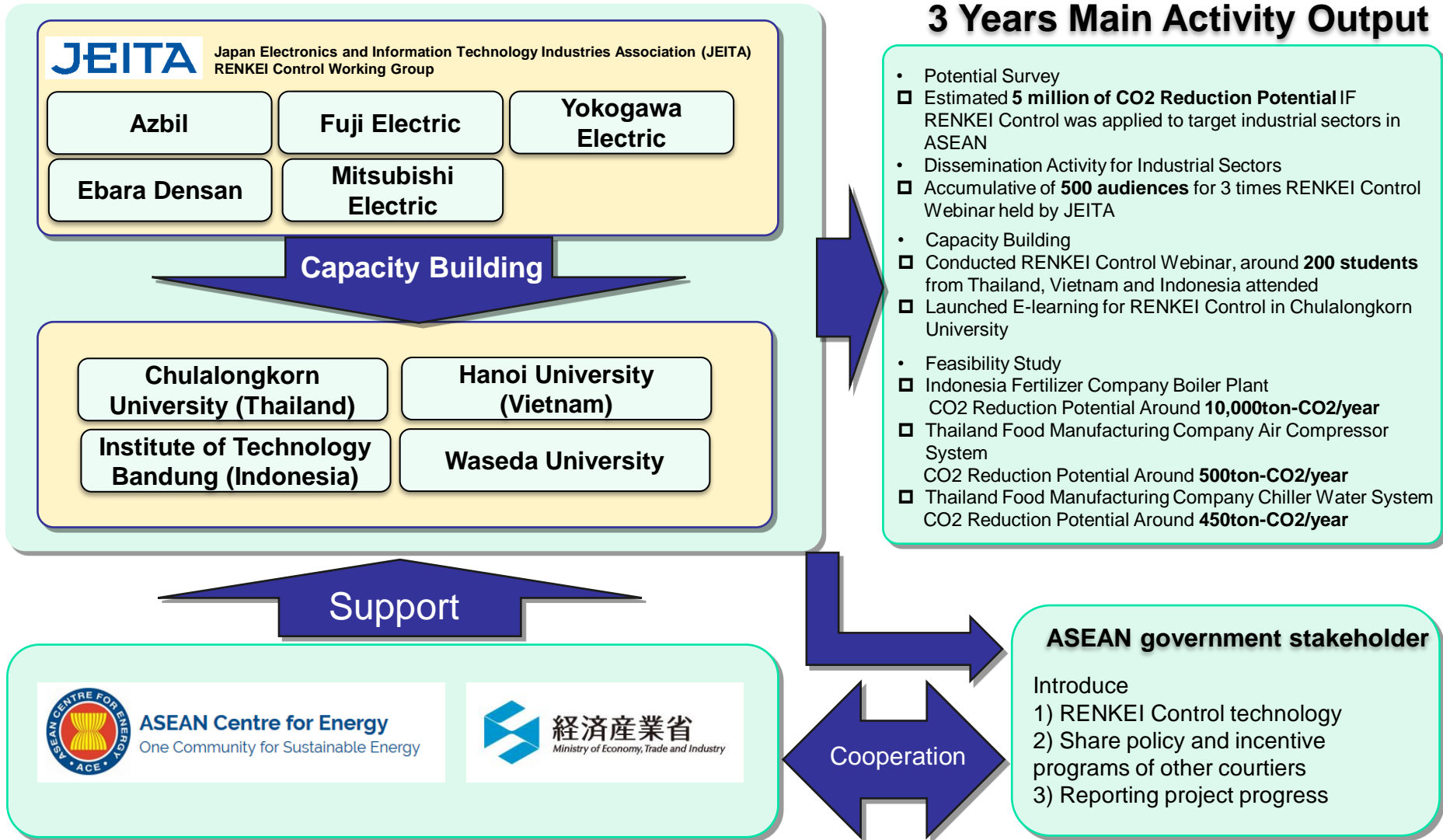
Smart City

Energy Supplier    Energy Consumers

# RENKEI Control Flagship Project



# RENKEI Control Flagship Project Overview FY2020~2022

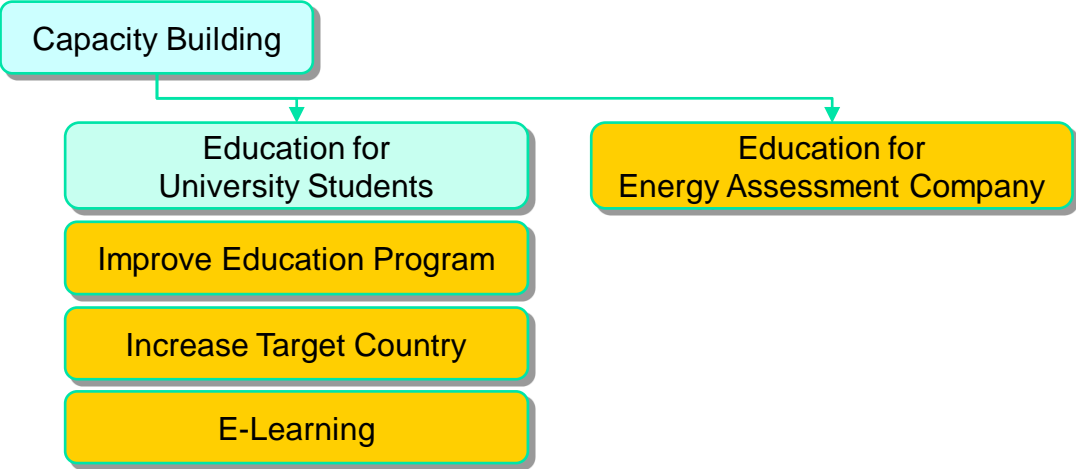


# 15<sup>th</sup> JEITA CHAIRMAN AWARD



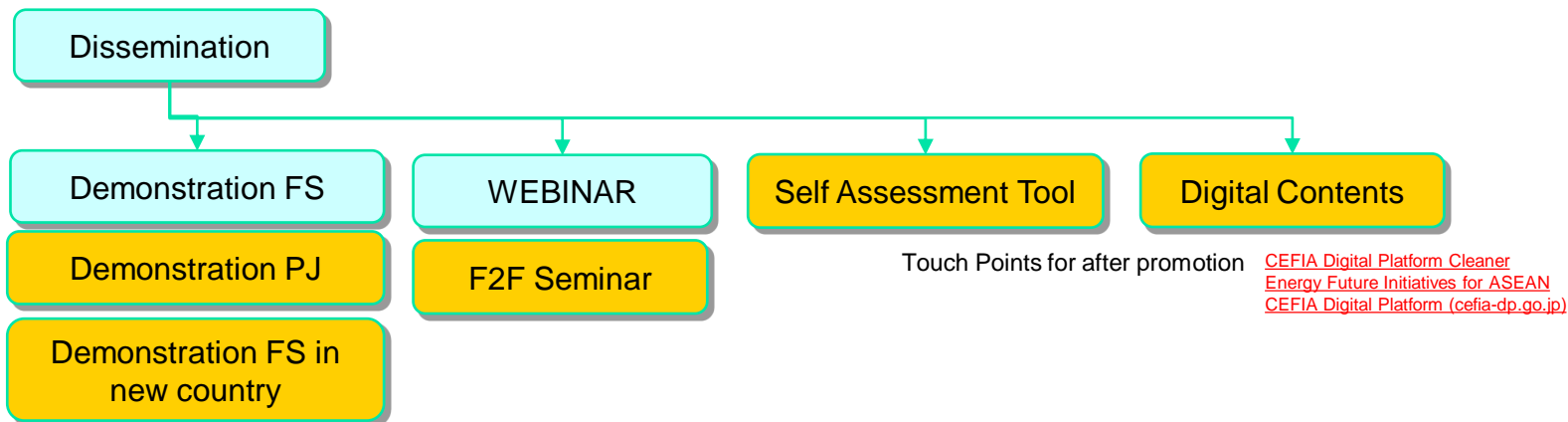
第15回JEITA会長賞受賞者 | JEITA電子情報技術産業協会

# Capacity Building Activity For FY2023



Target Countries	Education for University Students		Education for Energy Assessment Company
	Webinar	E-learning	Webinar
Thailand	○	○	
Indonesia	○	○	
Malaysia	○	○	○
ASEAN University Network	○		

# Dissemination Activity For FY2023



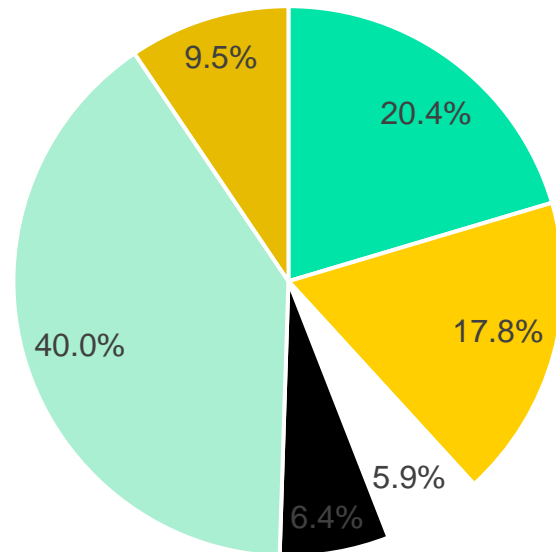
Target Countries	Demonstration FS		WEBINAR	RENKEI Seminar
	Demonstration FS	Demonstration PJ	For Industries	F2F
Thailand	Food Factory (Compressor)	○	○	○
Indonesia	Fertilizer (Boiler)	○	○	
Malaysia	District Cooling (Chiller)			○

# Visualization of RENKEI contribution

# Potential Contribution of RENKEI Control for ASEAN

Estimation of potential CO2 emissions reduction if RENKEI Control was applied to the target industrial sectors in ASEAN countries is **5million CO2/year....**

CO2 emissions reduction potential by RENKEI Control



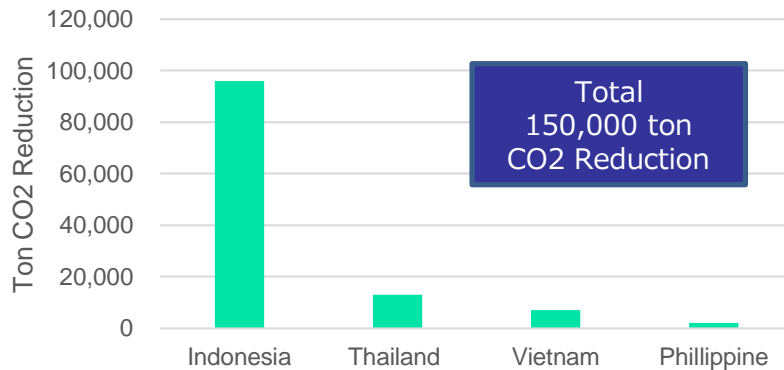
■ Thailand ■ Malaysia ■ Phillipines ■ Singapore ■ Indonesia ■ Vietname

\*The industrial sector energy consumption data used for estimation of CO2 emissions for each country is obtained from International Energy Agency.

# RENKEI Control Contribution from 2020 to 2022

## CO2 Reduction through RENKEI Control by JEITA RENKEI Control WG Member:

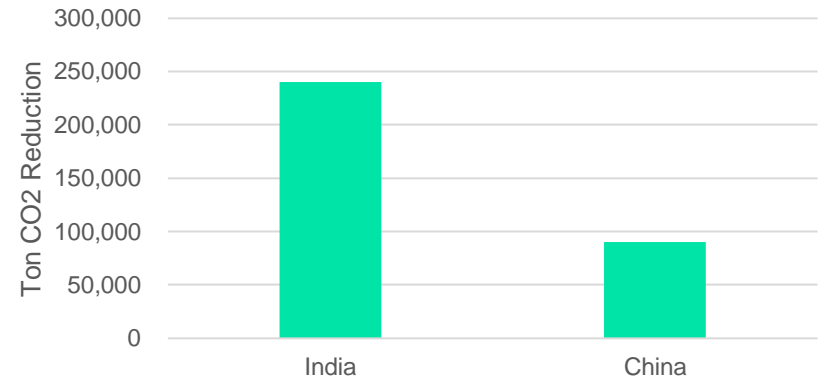
CO2 reduction from 2020 to 2022  
for JCM countries



**Industries:**

Indonesia-HVAC, Chiller, Boiler System  
Thailand-HVAC, Chiller, Air Compressor  
Vietnam-HVAC, Chiller  
Phillipine-HVAC, Chiller

CO2 reduction from 2020 to 2022  
for Non-JCM countries



**Industries:**

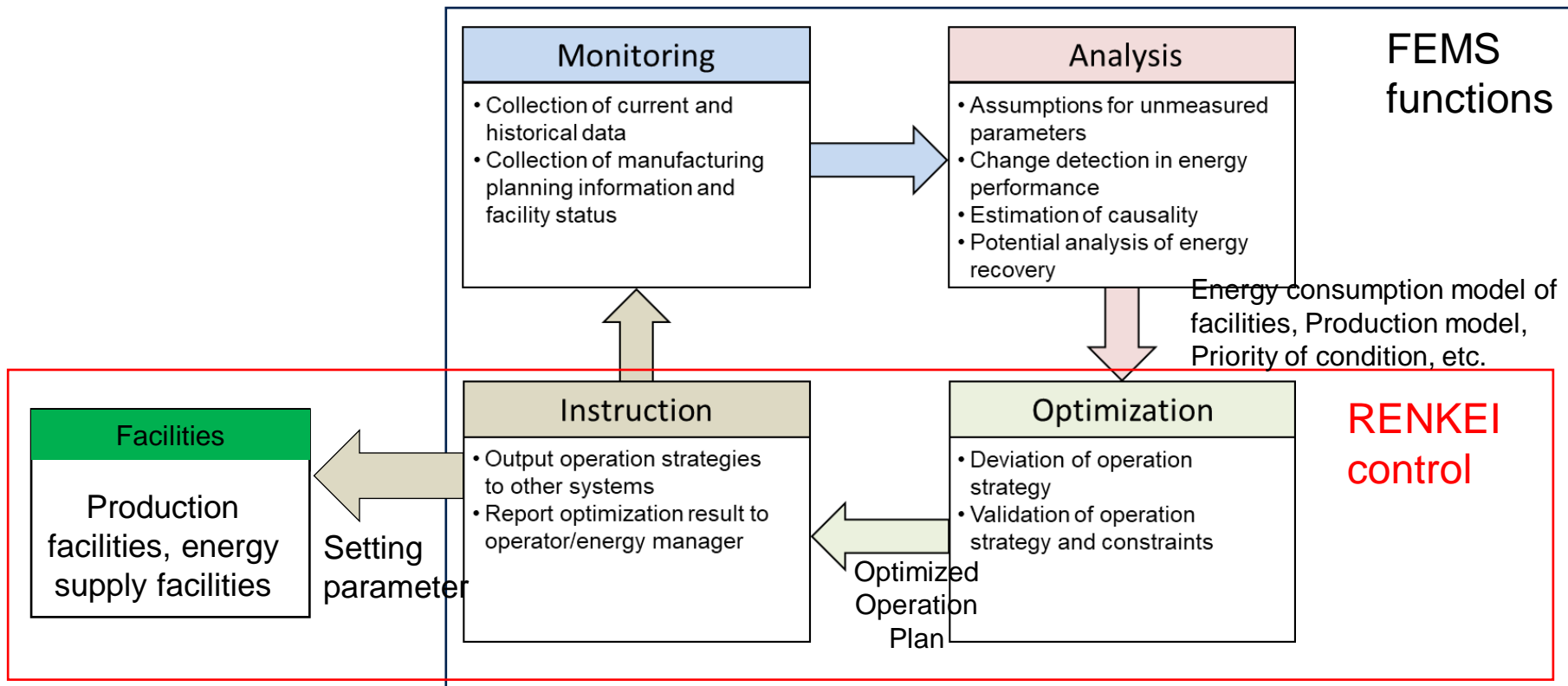
India – Steel Company  
China – Textile, Aluminum

# FEMS IEC Standardization



# IEC standard for FEMS which include RENKEI Control

The FEMS international standard will be **published in Sept. 2023**  
FEMS can accelerate whole optimization with supporting RENKEI control.



Thank You