

Technology transfer initiatives by Japanese steel industry in environmental & energy saving fields

- Introduction of cooperative sectoral approach -

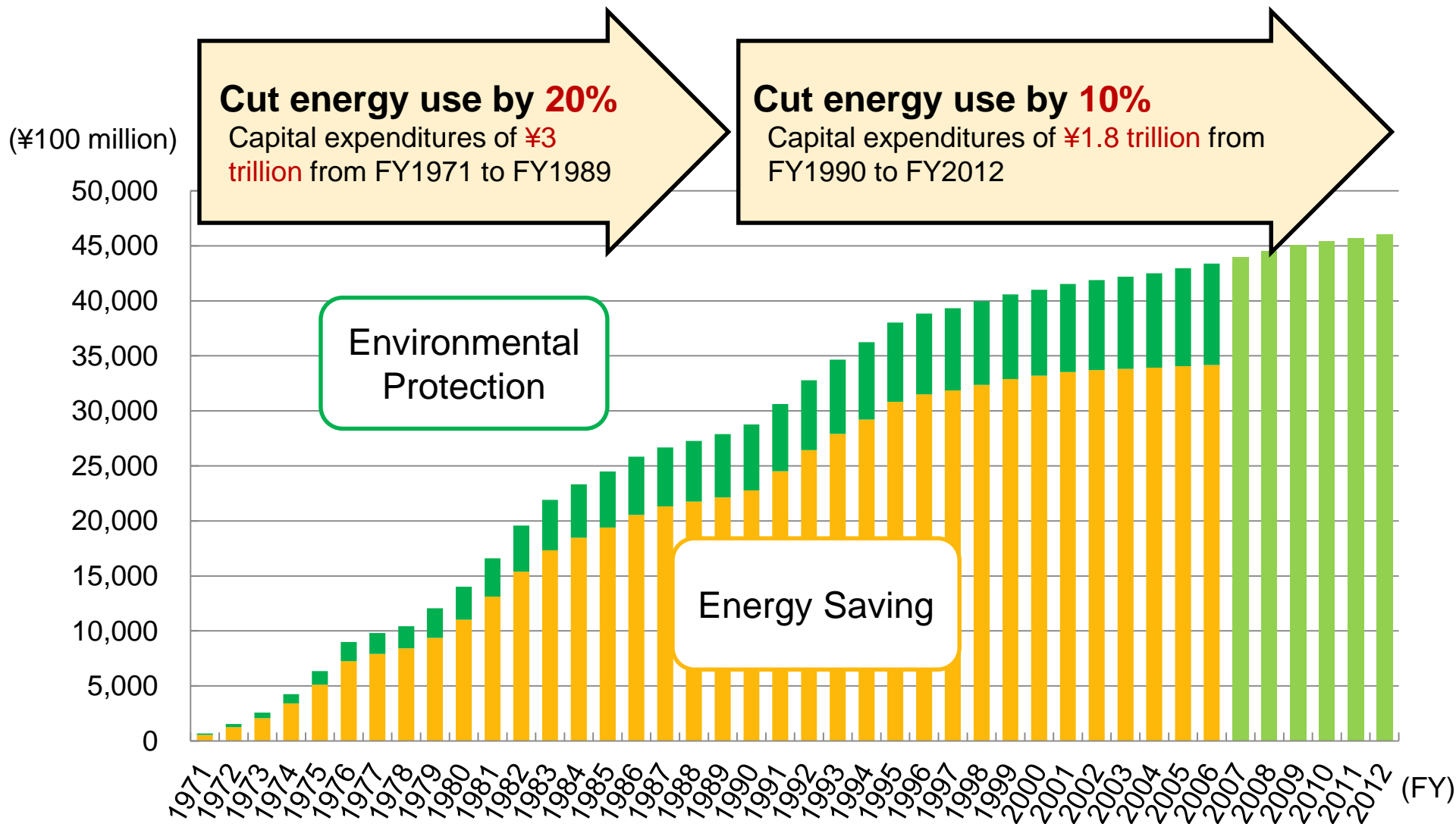
The 2nd CJK Cooperation Dialogue
Changchun, China
September 2nd, 2015

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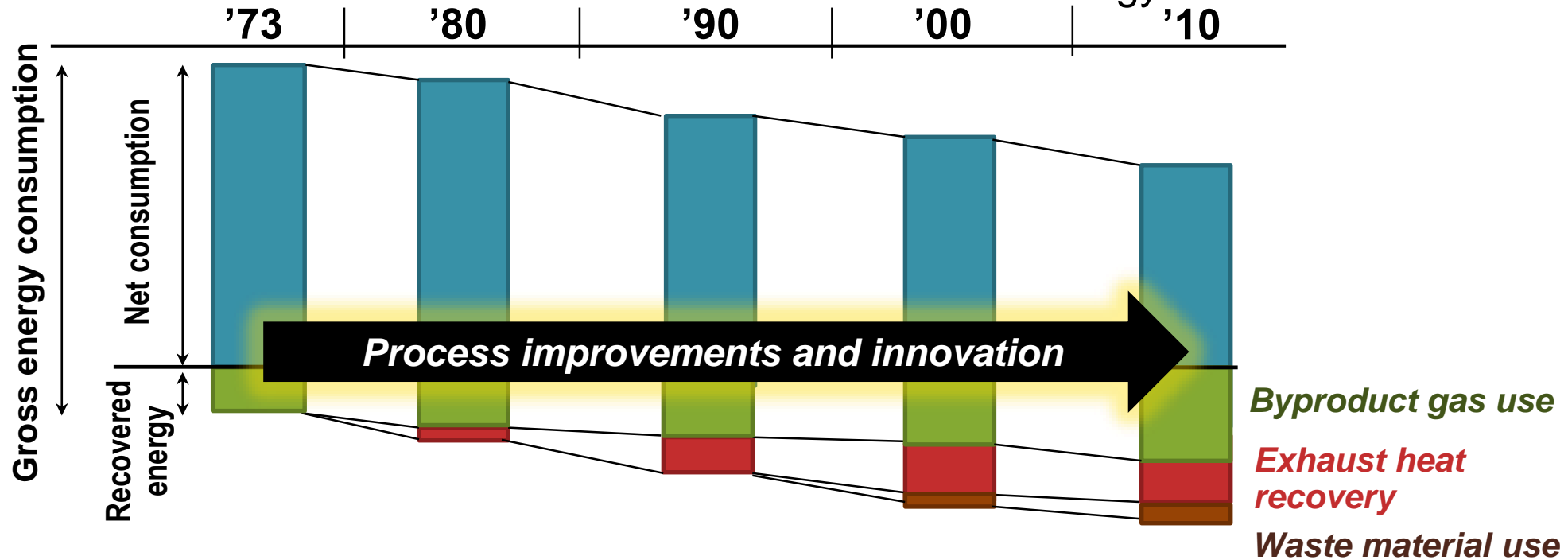
The Chair for International Environmental
Strategic Committee
The Japan Iron and Steel Federation

Investments for energy saving and environmental technologies in the Japanese steel industry



Utilization of energy saving technologies in the Japanese steel industry

Japanese steel industry reduces net energy consumption and increase the use of recovered energy



Examples

Process improvements and innovation: continuous casting, PCI, coal moisture control, optimization of logistics, SCOPE21

Byproduct gas use: gas holder, high-efficiency gas turbine combined cycle generation, hydrogen amplification, CO2 recovery

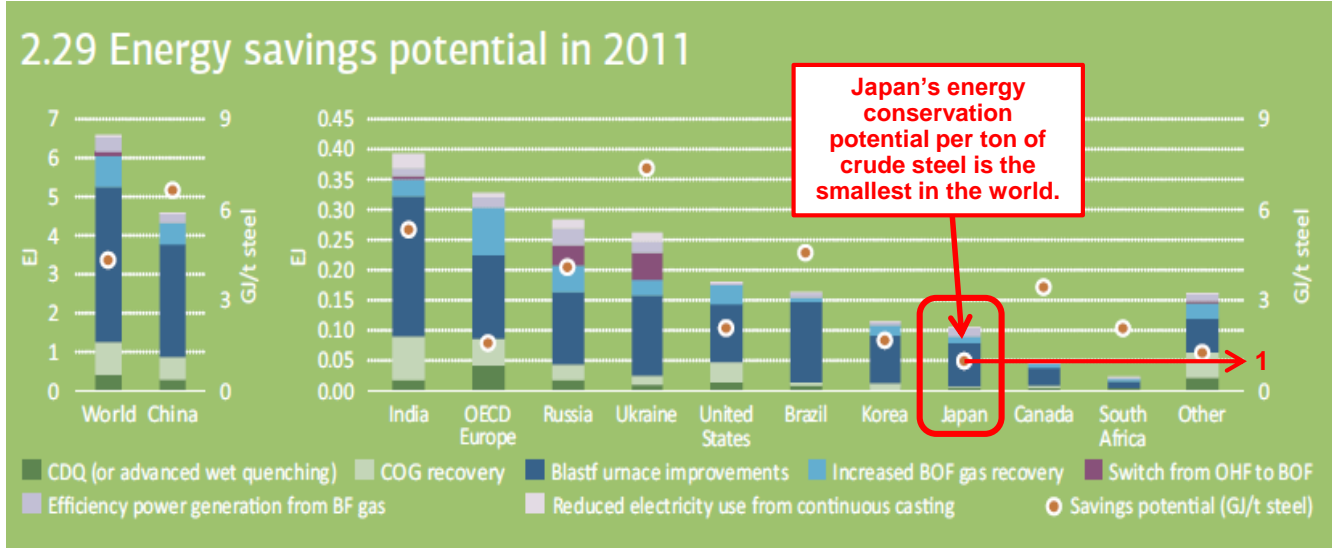
Exhaust heat recovery: TRT, CDQ, regenerative burners, mid-low temp. heat recovery

Waste material use: waste plastics and tires

International Comparison of Energy Efficiency in the Steel Industry

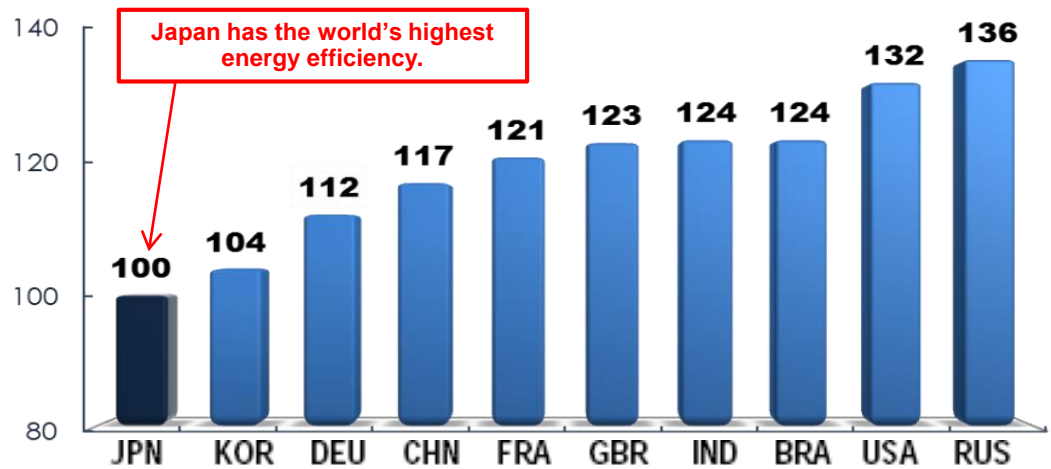
According to the IEA, Japan has world's smallest potential for energy conservation per ton of crude steel. According to RITE, Japan has the world's most energy efficiency steel industry. These figures demonstrate that virtually all steel mills in Japan use existing technologies and that there is very little potential for further energy-conservation measures.

Energy Saving Potential from Transferring and Promoting Energy Conservation Technologies (2011)



Source: IEA "Energy Technology Perspective 2014"

Comparison of Steel Industry Energy Efficiency (2010)



Source: RITE* "Estimated Energy Unit Consumption in 2010" (converted to an index by JISF)

*RITE : Research Institute of Innovative Technology for Earth



Overview of APP Steel Task Force (since 2006 to 2010)

- The Asia-Pacific Partnership on Clean Development and Climate (APP) aimed to accelerate the deployment and development of clean energy technologies within the Asia-Pacific region.
- APP Steel Task Force launched several energy saving & environmental protection projects and shared the outcomes at regular meetings.

APP Steel Task Force Meetings (2006-2010)

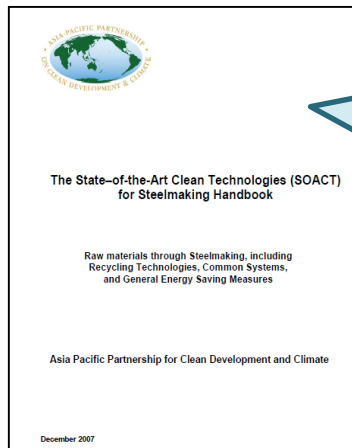
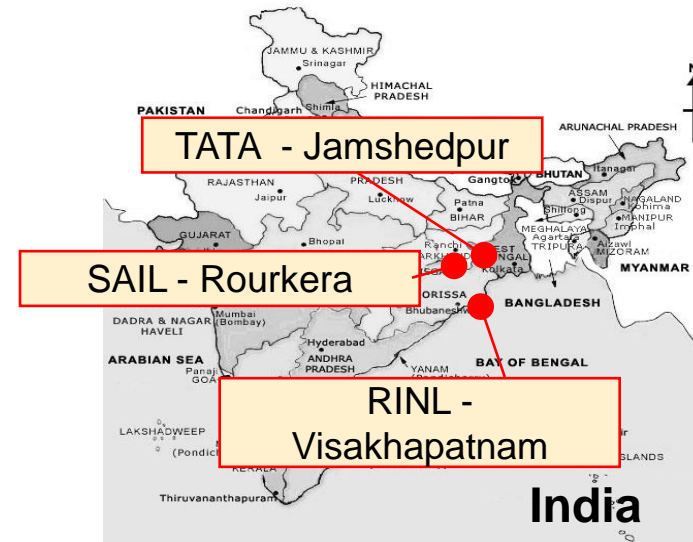
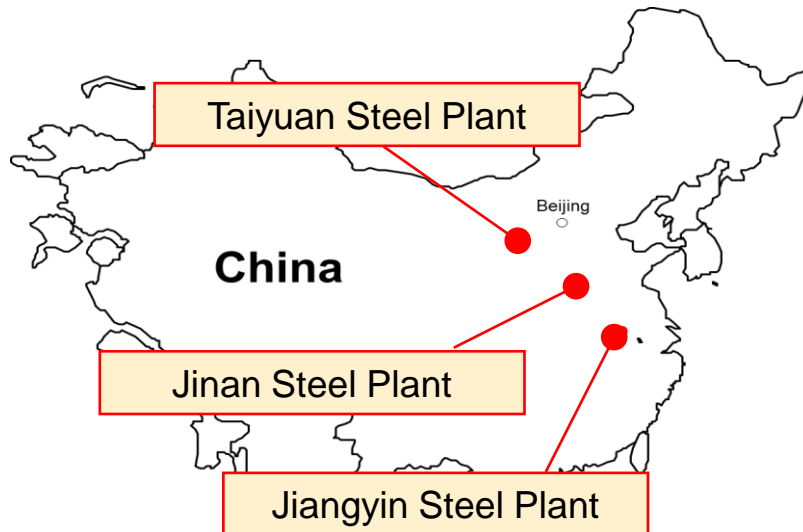
2006	Apr	1 st Steel TF in Berkeley (US)
	Sep	2 nd Steel TF in Tokyo (Japan)
2007	Mar	3 rd Steel TF in Kolkata (India)
	Oct	4 th Steel TF in Wollongong (Australia)
2008	Apr	5 th Steel TF in Busan (Korea)
	Nov	6 th Steel TF in Beijing (China)
2009	May	7 th Steel TF in St. Louis (US)
	Oct	8 th Steel TF in Toronto (Canada)
2010	May	9 th Steel TF in Kobe (Japan)
	Nov	10 th Steel TF in Tokyo (Japan)



3rd Steel TF in Kolkata (India)

APP Steel TF Project – Steel Plant Diagnosis

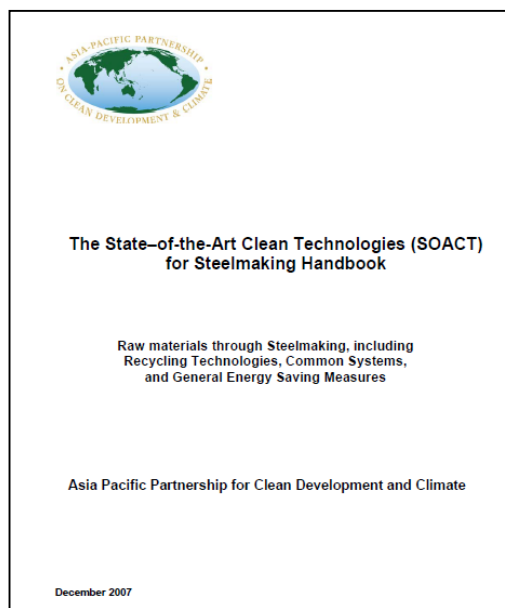
Japanese experts conducted **steel plant diagnosis in China (2007) and in India (2008-2009)** to examine the potentials for energy saving and environmental protections.



SOACT Handbook for steel plant diagnosis

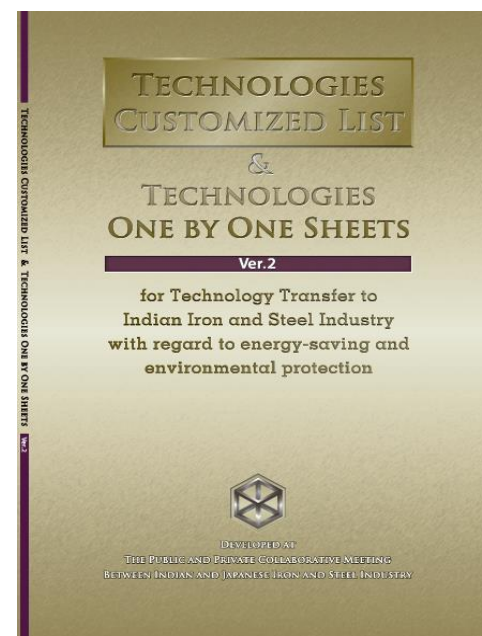
Experts recommended suitable technologies for each plant based on SOACT Handbook and other references

APP Steel TF Project – SOACT Handbook



Customized for India
based on technology
references* in the world
including SOACT Handbook

* SOACT Handbook
NEDO Handbook
EU-IPPC BAT
USA-EPA BACT etc.



APP Steel TF established *the State-of-the-Art Clean Technologies (SOACT) Handbook* relating to environmental protection and energy saving.

- ✓ 42 energy saving technologies
- ✓ 22 environmental technologies

India-Japan Collaborative Meeting published *Technologies Customized List* which contains suitable energy saving technologies for Indian steel industry.

- ✓ 19 energy saving technologies

SOACT Handbook: <http://asiapacificpartnership.org/english/soact2nd.aspx>

Technologies Customized List: <http://www.jisf.or.jp/en/activity/climate/Technologies/index.html>

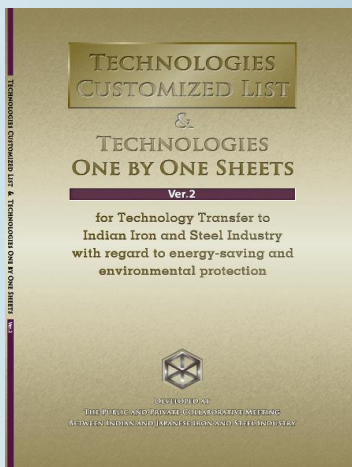
Example: India-Japan collaboration

Indian and Japanese steel industry has been developing public and private partnership since 2011 and promoted energy saving in Indian steel industry.

Public and private meeting



Business Seminar with Japanese suppliers



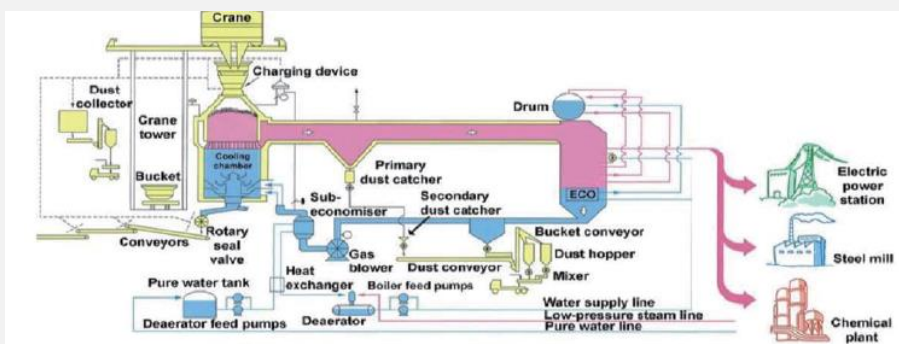
Technologies Customized List Ver.2

Steel Plant Diagnosis using ISO14404



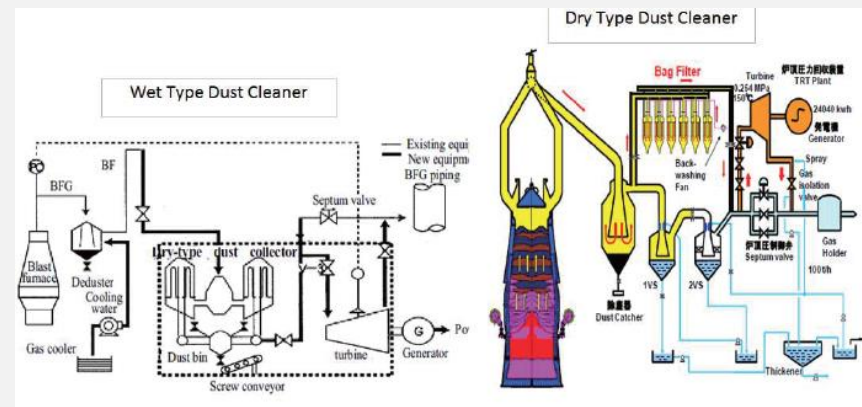
Technology Transfer to Indian Steel Industry

CDQ (Coke Dry Quenching)



10 CDQs have been installed by Japanese engineering companies to India triggered by NEDO model project

TRT (Top Pressure Recovery Turbine)



5 TRTs have been installed by Japanese engineering companies to India

With Japanese energy saving technologies, Indian steel industry will be able to reduce CO₂ emission by 13 Mt per year.

谢谢!

감사합니다!

ありがとうございました!