Technology transfer initiatives by Japanese steel industry in environmental & energy saving fields - Introduction of cooperative sectoral approach -

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

Cut energy use by 20%
Capital expenditures of ¥3 trillion from FY1971 to FY1989

Cut energy use by 10%
Capital expenditures of ¥1.8 trillion from FY1990 to FY2012

Source: METI
Utilization of energy saving technologies in the Japanese steel industry

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

Gross energy consumption

Process improvements and innovation

Byproduct gas use
Exhaust heat recovery
Waste material use

Recovered energy

Net consumption

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

Source: JISF
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.

*RITE: Research Institute of Innovative Technology for Earth

Source: IEA “Energy Technology Perspective 2014”

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

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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.

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<th>APP Steel Task Force Meetings (2006-2010)</th>
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<tr>
<td>2006 Apr 1&lt;sup&gt;st&lt;/sup&gt; Steel TF in Berkeley (US)</td>
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<td>2006 Sep 2&lt;sup&gt;nd&lt;/sup&gt; Steel TF in Tokyo (Japan)</td>
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<td>2007 Mar 3&lt;sup&gt;rd&lt;/sup&gt; Steel TF in Kolkata (India)</td>
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<td>2007 Oct 4&lt;sup&gt;th&lt;/sup&gt; Steel TF in Wollongong (Australia)</td>
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<td>2008 Apr 5&lt;sup&gt;th&lt;/sup&gt; Steel TF in Busan (Korea)</td>
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<td>2009 May 7&lt;sup&gt;th&lt;/sup&gt; Steel TF in St. Louis (US)</td>
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<td>2009 Oct 8&lt;sup&gt;th&lt;/sup&gt; Steel TF in Toronto (Canada)</td>
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<td>2010 May 9&lt;sup&gt;th&lt;/sup&gt; Steel TF in Kobe (Japan)</td>
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<td>2010 Nov 10&lt;sup&gt;th&lt;/sup&gt; Steel TF in Tokyo (Japan)</td>
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Japanese experts conducted steel plant diagnosis in China (2007) and in India (2008-2009) to examine the potentials for energy saving and environmental protections.

Experts recommended suitable technologies for each plant based on SOACT Handbook and other references.
APP Steel TF Project – SOACT Handbook

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

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.
ありがとうございました！

谢谢！

감사합니다！

ありがとうございます！