

Press Release



New Energy and Industrial Technology
Development Organization

<http://www.nedo.go.jp/english/index.html.jp>

March 17, 2011

Demonstration Project for an Environmentally-conscious, High-efficiency Arc Furnace in Thailand —Improving Energy Efficiency and Reducing CO₂ Emission by Using the Latest Electric Furnace Technology—

The New Energy and Industrial Technology Development Organization (NEDO) will implement a project at UMC Metals Ltd. in the Kingdom of Thailand demonstrating environmentally-conscious high-efficiency arc furnace* technology, which has been developed by NEDO and Yokohama-based, JP Steel Plantech Co. This project will commence from fiscal year 2011 and is scheduled to be carried out for three years. This furnace is approximately 30% more energy-efficient compared to conventional electric furnaces and complies with Japan's dioxin emission regulations. Using this project to establish a foothold, NEDO aims to promote the dissemination of this furnace technology throughout Southeast Asian countries.

Mr. Fumio Ueda, Executive Director of NEDO, and Mr. Arthit Wuthikaro, Director General of the Department of Industrial Promotion, Ministry of Industry of Thailand, signed a Memorandum of Understanding concerning this demonstration project on March 16 in Bangkok.

At the signing ceremony, Mr. Nattapon Nattasomboon, Deputy Permanent Secretary of the Ministry of Industry of Thailand, expressed his condolences and a moment of silence was observed for the victims of the Tohoku-Kanto Earthquake.

* This electric arc furnace uses heat from an electric arc formed between graphite electrode and feedstock (iron scrap or liquid steel) to melt iron and to raise the temperature of molten iron.

1. Project Overview

The steel and iron industry is the largest energy consumer among Thai industries, with arc furnaces consuming most of the energy used in the industry. In this project, an environmentally-conscious arc furnace, approximately 30% more energy-efficient compared

to conventional arc furnaces, will be installed at UMC Metals Ltd. in the Kingdom of Thailand. This furnace, equipped with off-gas treatment facilities, will comply with Japan's dioxin emission regulations. This project will be used to establish a foothold for the promotion of environmentally-conscious, high-efficiency arc furnaces throughout Southeast Asia.

(1) Technology

Figure 1 below shows a comparison between the arc furnace that will be introduced in this project and a conventional arc furnace. Off-gas generated in a conventional furnace is normally recovered by separate energy recovery equipment or emitted into the atmosphere through bag filters¹ without recovering energy. In environmentally-conscious, high-efficiency arc furnaces, hot gas generated during the scrap melting process is recovered and used to pre-heat scrap metal through a scrap pre-heating shaft integrated in the arc furnace. The gas is then sent to off-gas treatment facilities (Figure 2) where hazardous substances in the gas are decomposed under combustion using combustible substances in the gas. This off-gas treatment method was developed under a NEDO project relating to the development of technologies for reducing dioxin emissions from steelmaking processes, which was implemented in FY1999.

(2) Project period and budget:

Project period: FY 2011-FY 2013 (3 years)

Project budget: approximately 2.85 billion yen (NEDO portion: approximately 2 billion yen)

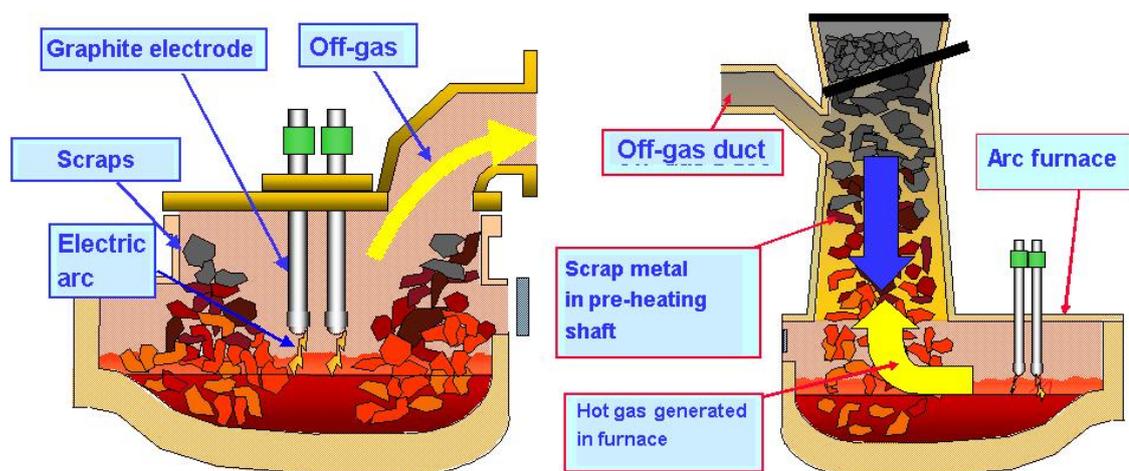


Figure 1: Conventional Electric Arc Furnace (Left) and an Environmentally-conscious, High-Efficiency Arc Furnace (Right)

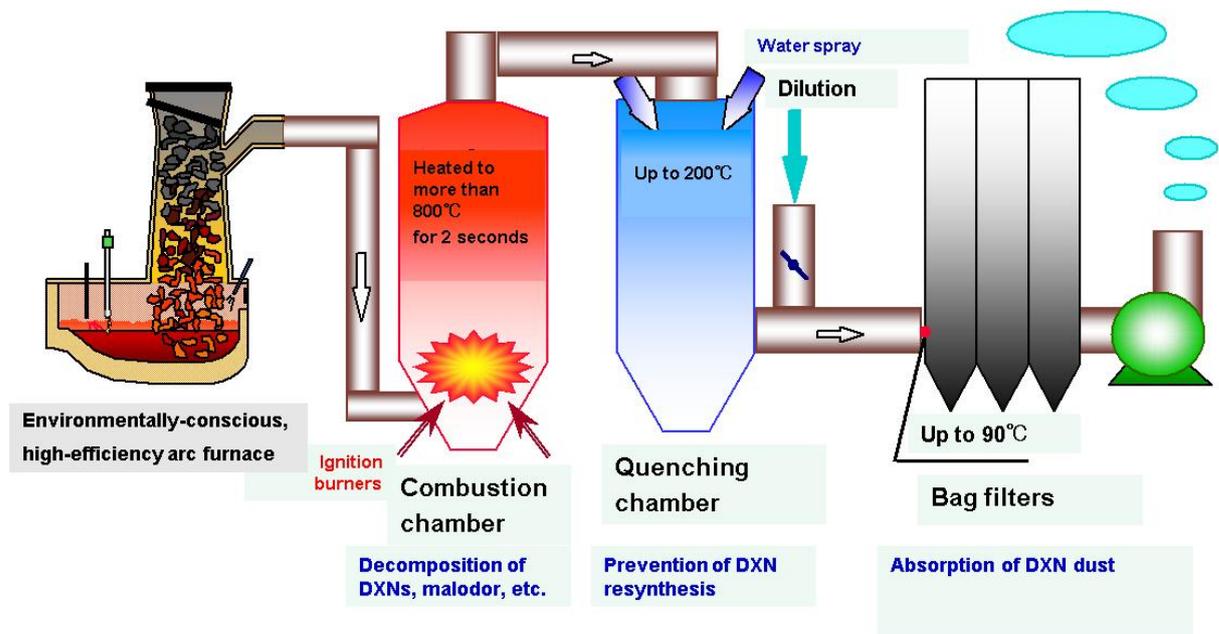


Figure 2: Off-Gas Treatment Flow

(3) Installations

This arc furnace technology is currently in operation in Japan and abroad. Installation models operating as commercial steelmaking facilities are as follows:

- 1st model installed in December 2001 (Kishiwada City, Osaka)
- 2nd model installed in November 2005 (Himeji City, Hyogo)
- 3rd model installed in September 2008 (Sendai City, Miyagi)
- 4th model installed in October 2010 (Incheon City, Korea)

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Glossary:

¹ Equipment that removes dust from off-gas generated in an arc furnace and emits the treated gas into the atmosphere.