

FY2015 Feasibility Studies with the Aim of Developing a  
Joint Crediting Mechanism

# **High-Efficiency Thermal Power Generation in Thailand**

New Energy and Industrial Technology Development Organization (NEDO)

Mitsubishi Research Institute, Inc.

# High-Efficiency Thermal Power Generation in Thailand

Conducted by: Mitsubishi Research Institute, Inc.

This study will promote widespread use of world-class Japanese low-carbon technology in Thailand to achieve reduced greenhouse gas emissions.

## Study Summary

This study aims to install a world-class 500 MW integrated coal gasification combined cycle (IGCC) power plant utilizing air-blown gasifier technology at the Electric Generating Authority of Thailand (EGAT) Mae Moh plant as part of its renewal plan.

## Study Items

1. Study of current trends and policies regarding climate change and markets in Thailand.
2. Assessment of business conditions and preparation of a financing and investment environment.
3. Specification of MRV methodologies.
4. Estimation of GHG reduction and other economic effects.

## Partner/Site

Counterparts

- EGAT Mae Moh plant
- Local consultants



Project site

- Mae Moh district, Lampang Province, Thailand

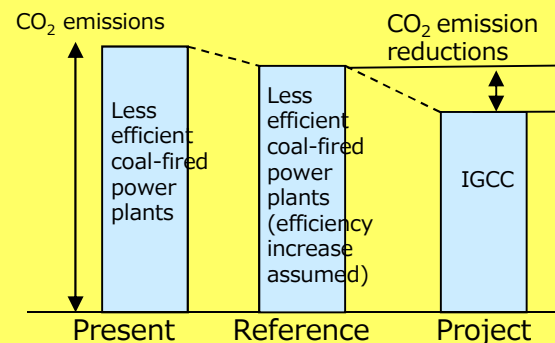
## Estimated Reduction Amount

Reduction amount: 360,000 tons CO<sub>2</sub>/year

### Reference Emissions

Current situation

- Weighted average of existing coal-fired power generation units in the Mae Moh region of Thailand
- Assume efficiency increase compared to BaU



### Project Emissions

- The introduction of an IGCC coal-fired power plant will reduce increased use of less efficient power generation in Thailand.

## Summary of Introduced Technology

### Features of IGCC System

#### 1) High thermal efficiency

Achieves the world's highest thermal efficiency in verified technology of coal-fired power generation.

#### 2) Coal flexibility

System flexibility and capability has already been verified with many types of coal from around the world.

#### 3) High environmental performance

Plant efficiency is 10 to 20 percent higher than the net plant efficiency of a USC power plant. Accordingly, the emission intensity of CO<sub>2</sub>, SO<sub>x</sub>, NO<sub>x</sub> and dust is lower due to high thermal efficiency.

Circulating water for cooling is reduced by 30 percent because it uses a gas turbine combined cycle system.

#### 4) Efficient usage of slag

Combusted coal is discharged in the form of glassy slag having a volume that is half that of fly ash from conventional coal-fired plants. This slag has potential commercial applications such as road paving materials or a fine aggregate for concrete.

