

Development and Demonstration of a CFB (Circulating Fluidized Bed) Boiler utilizing palm residue as a biomass fuel in Southeast Asia

Outline of renovation and demonstration

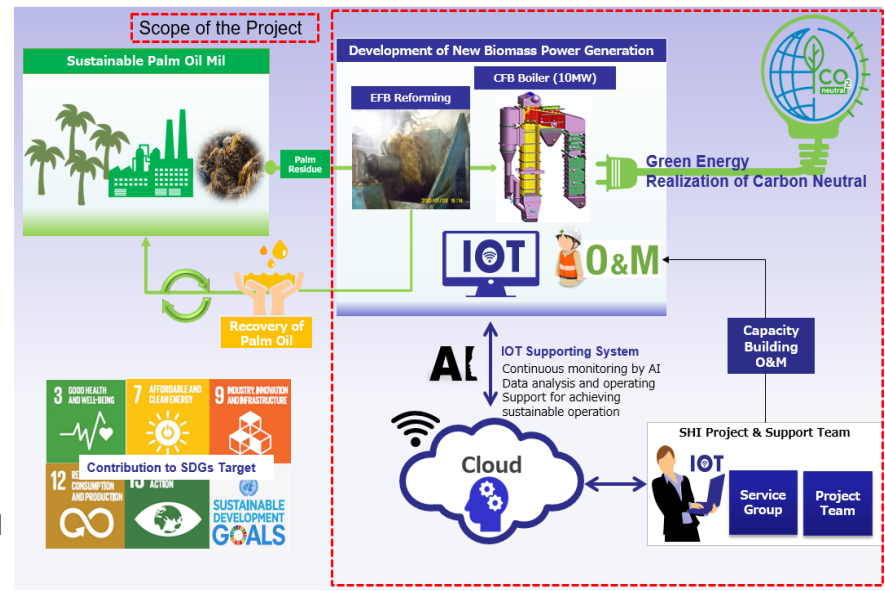
Representative participant : Sumitomo Heavy Industries, Ltd.

【Purpose of the Project】

In Malaysia, where the introduction of renewable energies is being promoted, EFB (empty fruit bunch), which is disposed as agricultural residue, can be utilized as biomass fuel resource as an alternative to fossil fuels by utilizing CFB Boiler, which is state of the art technology developed in Japan for biomass power generation contributing to reduce GHG emission and achievement of NDC target. The Project also aims to develop an IPP business model for the local production and local consumption of unutilized biomass resources, and to realize RE project under the same concept in the South East Asia.

【Outline of Renovation and Development】

- ◇ Development and demonstration of EFB pretreatment and reforming process since EFB contains high sodium and potassium content, which causes serious problem on sustainable operation.
- ◇ Development and demonstration of fuel handling system using fluidized air in order to reduce the risk of blockage arising from consolidation of EFB
- ◇ Demonstration of high efficient combustion of lower grade biomass fuel
- ◇ Development and demonstration of stable operation system by introducing IOT supporting system.



Outline of partner country / region

Site: Sarawak Province

In Malaysia, approximately 20 million tons of EFB are emitting annually. Sarawak province is one of the major palm oil industrial centers in Malaysia emitting 4 million tons of EFB. EFB have not yet been effectively utilized and normally disposed as agricultural waste due to high moisture content and unsuitability for combustion arising concerns for the generation of methane gas and adverse effects on the environment. The Project will create a biomass power generation market utilizing EFB contributing to decarbonization of electricity in Malaysia.

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Prospects of commercialization and diffusion in partner country / region

Prospects of commercialization
 STEP1: Construction of the model plant in Malaysia and achievement of stable operation
 STEP2: Development of JCM project under the same concept of the Project in Malaysia and Indonesia.
 STEP3: Returning of knowledge on utilizing of lower grade biomass resources to the biomass power generation market in Japan.

Prospects of diffusion
 Approximately 50 million tons of EFB are generated annually which is equivalent to 3,100MW, are not effectively utilized. In order to develop and promote the biomass power generation in the South East Asia, it is most important to save the power generation cost and to promote a utilization of unutilized biomass resources. The Project aims to develop new IPP business model which is cost effective and acceptable to the Market in the South East Asia where the introduction of the renewable energy is most important challenges toward net zero.