

ABSTRACT

This project examines the feasibility study of conversion of fuel used in Bang Pakong Power Plant to Orimulsion Firing. The overall concept of the conversion is to add Orimulsion firing capacity to the existing Bang Pakong thermal units.

Main technical feasibility study is to consider on plant modification, the additional equipments and compatibility of existing equipments on Orimulsion operation. Atomization of the fuel is satisfied by using F-jet type (Two types liquid atomizer.). The optimum temperature for combustion is approximately 50°C to 65°C and existing systems can be renovated to achieve this condition. Steam generators can be utilized with Orimulsion by adding heat transfer surface area to superheater and economizer, soot blowers, low NO_x burner. The overall efficiency is still expected to be on the order of 1 to 2% lower than that for similar oil fired boiler.

Air Emissions analysis mainly for Sulfur Oxide, Standard is 320 ppm but Orimulsion firing and utilized FGD to control Oxide of Sulfur to be 90 ppm. Waste Water will be accomplished by means of gravity clarifiers addition of chemicals, flocculation, sedimentation and sludge removal. Safety; Orimulsion is considered non flammable at even the high ambient temperatures experienced in Thailand.

Economic evaluation revealed that we can save \$0.00959/kWh. Annual generation to electricity consumption with this power plant is 13,997,647 MWh. It means saving about 5,000 million baths per year.

The result indicates that the conversion of Bang Pakong units to Orimulsion is technically feasible, environmentally acceptable, and is also economically attractive. The project could be implemented according to the studies.