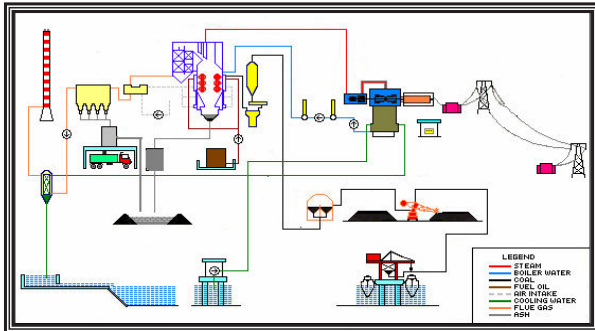
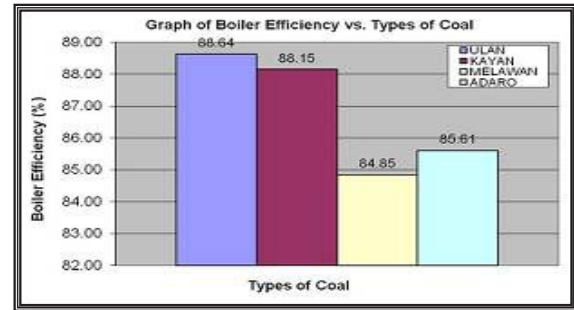


Seeding Fund Project

Study on the Impact of Different Types of Coal to TNB Coal-Fired Power Plant



Electrochemical cell setup



Experimental Setup Diagram

Project Overview

The impacts of coal properties on power plant performance is expected to be minimized as purchasing of coal is based upon compliance with the coal limit specifications/boiler specifications. The main coal limiting properties are calorific value, total moisture, ash content, total sulphur, HGI and Initial Deformation Temperature.

From the coal properties analysis for 17 types of coal, it was found that most of them are within the stipulated limits. However, there are several coal types that have high ash contents, such as Drayton, RB1, Rollestone, Tanito, Teluk Bayur and Ulan, which means a higher tendency to form ash depositions. A coal assessment quality model (CAQM) has been developed to predict the suitable coal to be fired. Among the coal that were analyzed, Arutmin and Ulan coal gave the highest boiler efficiency (91.07% and 90.35%, respectively) based on the boiler efficiency calculations.

However, the cost (total cost unit efficiency, RM/ton) of using them is higher (143.44 and 142.31 respectively) compared to other coal types. The coal types that have

lower boiler efficiency and lower costs are Adaro and Kayan. CAQM prediction and practical observation achieved a reasonable agreement in results, i.e. within 2-3% deviation..

Deliverables

- Report on the impact of different coal types to the boiler performance in terms of combustion performance and fuel efficiency.
- Recommendation on the suitable coals for future TNB Power Plant.

Benefits

- a) Assessment of the coals to be purchased can be done using the developed Coal Quality Assessment Software.
- b) Early prediction of boiler performance for the selected coals can be conducted using the developed Coal Quality Assessment Software.