

## CORRESPONDING AUTHOR'S STATEMENT

Panji Rasworo  
Universitas Mercu Buana  
rasworopanji1@gmail.com  
085945911486/082111730372

September 6, 2021

Dear JONEM's Editor,

I/We wish to submit an original research article entitled "Efficiency analysis of CFB boiler 2X60 MW PLTU PT. X unit 2 with direct and indirect methods" for consideration by JONEM. I/We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere. I am willing to follow the revision process given by the team of editors and reviewers, and will not withdraw articles that I have submitted.

In this paper, I/we report on / show that:

Topic	:	Efficiency analysis of CFB boiler 2X60 MW PLTU PT. X unit 2 with direct and indirect methods
Brief Background	:	Electrical energy is the energy that is needed today to cover human needs and carry out their activities all the time. There are many types of power plants in Indonesia, one of which is the Steam Power Plant. PLTU PT X is assigned to distribute electrical energy according to the needs of one of the Petrochemical Companies in Serang, Banten. The problem at PLTU PT X unit 2 explains that the calorific value of the coal used is different, namely the calorific value of coal (GCV) at the site test (data collection) is lower than the coal design, and there is heat loss or energy losses, so it is necessary to analyze and compare the losses and performance of boiler efficiency using direct and indirect methods. With the assumption of this background, this research will discuss "Analysis of 2x60 MW CFB Boiler Efficiency PLTU PT X Unit 2 with Direct and Indirect Methods.
Research Problem	:	<ol style="list-style-type: none"><li>1. The occurrence of heat loss or energy losses when the boiler works to convert water into steam.</li><li>2. The calorific value of coal at the time of the site test (data collection), is lower than the expected coal design.</li></ol>
Overview of Method	:	The method used in this study is a direct and indirect method where the method uses the steam property software or steam table and The Sugar Engineers Psychrometric calculation. The standard for calculating boiler efficiency used is ASME PTC 4.1 Power Test Code Steam Generator Units.
Significant Finding	:	The results of this study indicate that the boiler efficiency with the direct method is 81.68% at the site test and 83.85% at the design time. design so that the use during the Design conditions is more efficient than during the site test conditions and it is observed based on the two tests that the largest heat loss that can affect the performance of the boiler working efficiency is to convert water into steam, namely moisture in fuel.

We have no conflicts of interest to disclose. Thank you for your consideration of this manuscript.

Sincerely,

A handwritten signature in black ink, appearing to read 'Panji Rasworo', is placed above the printed name.

Panji Rasworo



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All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript.

### Author 1

Name : Panji Rasworo  
Affiliation : Universitas Mercu Buana  
Email Address : rasworopanji1@gmail.com

### Author 2

Name : Your name  
Affiliation : Your Affiliation  
Email Address : Your email address

### Author 3

Name : Your name  
Affiliation : Your Affiliation  
Email Address : Your email address

### Author 4

Name : Your name  
Affiliation : Your Affiliation  
Email Address : Your email address

### Author 5

Name : Your name  
Affiliation : Your Affiliation  
Email Address : Your email address