

**OPTIMIZATION OF SOOT BLOWING OPERATION  
FOR LAKVIJAYA COAL POWER PLANT IN  
SRI LANKA**

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## DECLARATION

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## **ABSTRACT**

An optimization of soot blowing operation was carried out for Unit No.3 for Lakvijaya Power Plant in Sri Lanka. Average coal flow rate and flue gas temperature are the key indicators of boiler performance with soot blowing process. In accordance with ASMI PTC 4-1998, a mathematical modeling tool was developed to determine the boiler efficiency in present condition and different frequencies of soot blowing. The maximum efficiency of the boiler was determined as 79.76% at soot free condition. An equation was derived to express the relationship between input fuel consumption and soot blowing frequency. Maximum fuel cost saving can be achieved in between the frequency of 24 hours and 34 hours with respect to the normal operation of routing of soot blowing. Same frequency range gives the maximum cost saving in terms of effective cost. Considering the practical applicability daily soot blowing schedule is recommended.

**Key Words:** Soot blowing, Boiler performance, Flue gas temperature, Mathematical modeling.

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## LIST OF ABBREVIATIONS

APH	Air Preheater
CFD	Computational Fluid Dynamics
LVPP	Lakvijaya Power Plant
DA	Dry Air
DCS	Distributed Control System
GCV	Gross calorific Value
HHVF	Higher Heating Value of Fuel
LRSB	Long Retractable Soot Blower
PSO	Particle Swarm Optimization
RO	Reverse Osmosis
RSB	Rotary Soot Blower
WA	Wet Air

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