

---

## **“Energy & Exergy Analysis of a Boiler with different fuel like Indian coal, imported coal and L.S.H.S. Oil used in Gujarat Narmada Valley Fertilizers and Chemicals LTD., Bharuch”**

**Ketan T. Patel, Tushar D. Patel**

<sup>1\*</sup> Lecturer in Mechanical Engg. Department., Govt. Polytechnic Navsari

<sup>2\*</sup> Lecturer in Mechanical Engg. Department., Govt. Polytechnic Navsari

---

### **ABSTRACT**

Energy sector is one of the important areas in the economic development of any country. Meeting the growing energy demands at acceptable costs in various sectors like industries, commercial, transport, etc., is the challenge to the energy planner.

Different types of fuels used in boiler to improve their performance and finding them which are best for produced energy in economic and we can achieve maximum heat to convert in suitable work with minimum wastage or leakage of Heat at various systems. Here finding the efficiency of Boiler with different fuels by Direct and Indirect Method and analysis is done on basis of 1<sup>st</sup> and 2<sup>nd</sup> law. After completing the whole 1<sup>st</sup> law and 2<sup>nd</sup> law analysis of Boiler plant then compare which is best and economic fuel for use power generation. The Sankey and Grassmann diagrams are presented to depict the pictorial representation of Energy and Exergy flow in the system and the losses in the various components during normal operating condition have been identified.

The analysis shows that the 1<sup>st</sup> law efficiency of Boiler Plant with different fuels like Indian coal 76.54% as well as exegeric (rational) efficiency of the Boiler Plant are 37% respectively.

---

Date of Submission: 01-04-2024

Date of acceptance: 13-04-2024

---

