

“THERMODYNAMIC ANALYSIS OF AIR CONDITIONING SYSTEM USING WASTE HEAT OF STEEL PLANT”

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of the Degree of

Master of Technology In Mechanical Engineering

With specialization in Renewable Energy Technology

By
SAURABH
(2K13/RET/09)

Under the guidance of
DR. RAJESH KUMAR
(Associate Professor)
Department of Mechanical Engineering



DELHI TECHNOLOGICAL UNIVERSITY

Shahabad Daulatpur
Bawana Road, Delhi-110042, INDIA
SESSION 2013-15

CERTIFICATE

This is to certify that the project entitled “Thermodynamic Analysis Air conditioning system Using Waste Heat of Steel Plant” being submitted by me, is a bonafide record of my own work carried by me under the guidance and supervision of Dr. Rajesh Kumar (Associate Professor) in partial fulfilment of requirements for the award of the Degree of Master of Technology in Renewable Energy Technology from Department of Mechanical Engineering, Delhi Technological University, Delhi.

The matter embodied in this project either full or in part have not been submitted to any other institution or University for the award of any other Diploma or Degree or any other purpose what so ever.

Saurabh

Registration Number: DTU/13/M-Tech/200

University Roll Number: 2K13/RET/09

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

DR. RAJESH KUMAR

(Associate Professor)

DEPARTMENT OF MECHANICAL AND PRODUCTION ENGINEERING

DELHI TECHNOLOGICAL UNIVERSITY

Shahabad Daulatpur, Bawana Road, Delhi-110042, India

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Saurabh

University Roll Number: 2K13/RET/09

Abstract

This report is concerned with an idea of Air conditioning in an integrated steel plant using waste heat recovery unit and vapour absorption refrigeration system. As we know that in an integrated steel plant hot metal is produced in blast furnace and this hot metal is converted in to steel in LD converter. This molten steel is casted in to slabs and ingots for the production of HR coils, CR coils and Rails etc. In all these processes lot of heat input is required and out of which lot of heat is rejected to the atmosphere in the form of waste heat. During casting of slabs in continuous casting shop of the steel plant cooling of molten steel takes place and the heat stored in the steel is rejected to the atmosphere, we can use this waste heat using a waste heat recovery system. This waste energy or heat can be used to carry out different processes and one of them is Air conditioning.

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Important Notations

S.NO.	Notation	Definition
1.	CCS	Continuous Casting Shop
2.	HSM	Hot Strip Mill
3.	SM	Slabbing Mill
4.	COG	Coke Oven Gas
5.	B.F	Blast Furnace
6.	°C	Degree Celsius
7.	K	Kelvin
8.	T	Ton
9.	m	Meter
10.	HR	Hot Rolled
11.	CR	Cold Rolled
12.	HRCF	Hot Rolled Coil Finishing
13.	CRM	Cold Rolling Mill
14.	M	Mega
15.	k	Kilo
16.	Cal	Calorie
17.	C.D.I	Coal Dust Injection
18.	SMS	Steel Melting Shop
19.	cm	centimetre
20.	hr	Hour
21.	COP	Coefficient of Performance
22.	Btu	British thermal unit
23.	°F	Degree Fahrenheit
24.	CO	Carbon Monoxide gas
25.	CO ₂	Carbon Dioxide gas
26.	H ₂	Hydrogen gas
27.	CH ₄	Methane gas
28.	CBM	Coal Bed Methane
29.	Cons.	Consumption
30.	Ref.	Reference
31.	V-A	Vapour Absorption
32.	ISP	Integrated Steel Plant
33.	thm	Ton of Hot metal
34.	tcs	Ton of Crude Steel
35.	tss	Ton of Saleable Steel
36.	Sp.	Specific
37.	Fig	Figure

