

Mechanical Engineering Department

Academic Year – 2019-20	Class: TE
Semester – I	Date : 12/8/2019
CO: CO1, CO4	PO: PO1, PO2, PO4, PO12

Innovative Teaching Methods

Title of Innovation method/activity: Case study on Hot air oven

1. **Name of Faculty:** Dr. V. C. Shewale

2. **Subject:** Heat Transfer (302042)

3. Objective of Method:

- I. Understand the working of Hot air oven
- II. Understand the modes of heat transfer (conduction and convection)
- III. Create the awareness of energy saving
- IV. Describe the use of hot air oven for industrial applications

4. Topic Covered through Activity:

Heat transfer aspects such as conduction and convection modes of heat transfer in Hot air oven.

5. Description of method with Benefits (8 – 10 lines):

Working of hot air oven (available in heat transfer laboratory) has demonstrated by the faculty member in the laboratory. Faculty member has explained conduction and convection heat transfer modes involved in hot air oven from industry prospective. Role of thermal insulation for reduction of heat loss from energy saving point of view has been elaborated to the students. Group-wise questions are asked to the students on the present topic to assess the topic understanding.

Benefits of method:

- Students can learn better from examples than from logical development starting with basic principles. The use of case studies can therefore be a very effective classroom technique.
- It helps students to understand the practical aspects of system
- It teaches importance of energy saving to the students
- Students are actively engaged in figuring out the principles by abstracting from the examples.

The method:

Faculty member has demonstrated functioning of hot air oven (shown in Fig. 1). Use of temperature control and heat regulator knob for maintaining temperatures in the various industrial processes have been explained to the students. Models and heat transfer (conduction and convection) and quantification of heat transfer from hot air oven to the surrounding air using Fourier’s law of heat transfer and Newton’s law of cooling have been described. Questions are asked to the students and assessment is carried out.

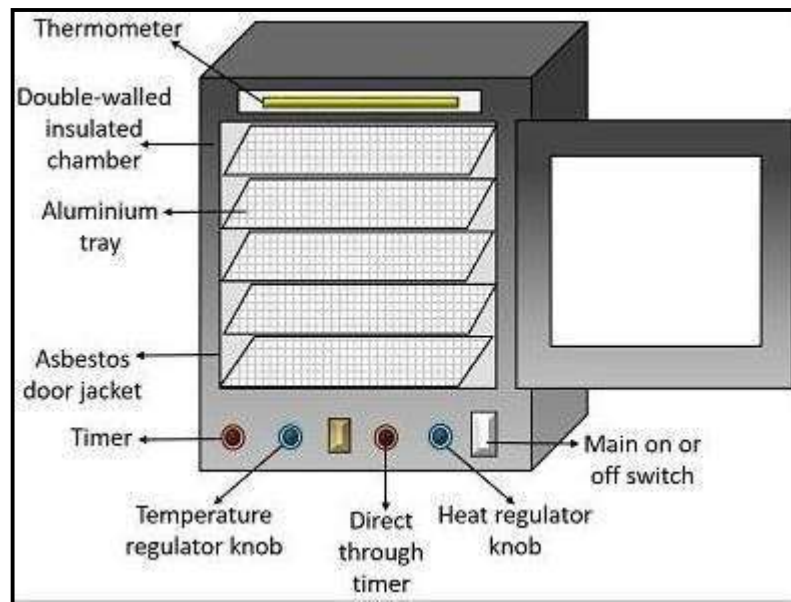


Fig. 1 Schematic diagram of hot air oven

Roles and Responsibilities

- **Teacher**

- Develop the awareness among the students about the industrial applications of hot air oven
- Demonstration of hot air oven
- Provide the study material and appropriate guide lines at every stage to the students
- Remain available during the completion of task.
- Prepare assessment methodology.

- **Student**

- Learn the conduction and convection modes of heat transfer
- Understand the practical aspects of hot air oven
- Understand the use of thermal insulation for heat loss purpose
- Answer the questions asked after demonstration

6. Assessment Tools

Assessment of students is carried out after the demonstration of case study on hot air oven. Marks obtained out of 10 are tabulated in the following Table.

Roll No.	Name of students	Understanding of working (4)	Understanding of modes of HT & Eq. (2)	Determination of heat loss (2)	Comments (2)	Total (10)
65	MORE SHIVAM JEETENDRA	3	1	2	2	8
66	MULMULE DUSHYANT SANJAY	3	1	2	1	7
68	NANKAR MANSI NITIN	2	2	1	1	6
69	NETAWANE TEJAS RAJENDRA	3	2	2	1	8
70	NIKAM KALPESH SATISH	3	1	2	2	8
71	NIKAM NIKITA BHAUSAHEB	3	2	2	2	9
72	NIKAM SAURABH YUVARAJ	3	2	2	1	9
73	PAGARE TANMAY SUNIL	3	2	2	1	8
74	PATADE PRATIK CHINDHU	3	1	2	1	7
75	PATIL AKSHAY DILIP	4	1	2	2	9
76	PATIL ANIKET RAJENDRA	4	2	2	2	10
77	PATIL DHANASHRI RAJENDRA	3	1	2	1	7
78	PATIL GANESH HIRAMAN	3	1	2	1	7
79	PATIL JAYESH RAMCHANDRA	4	2	2	2	10
80	PATIL NIRAJ SHRIDHAR	4	1	2	2	9
81	PATIL PIYUSH SUNIL	4	1	2	2	9
82	PATIL PRACHI RAJENDRA	3	2	2	1	8
83	PATIL RUTUJA SUNIL	4	1	2	2	9
84	PATIL SAMEER SANJAY	3	1	2	2	8
86	PATIL SIDDHARTH SUNIL	2	2	2	1	7
87	PATOLE TUSHAR SURESH	4	1	2	2	9
88	PAWAR AKASH RAJENDRA	3	1	2	1	7
89	PAWAR ANKITA SUNIL	3	2	2	2	9
90	PAWAR MAYUR RAVINDRA	3	2	2	2	9
91	PAWAR MEGHANA RAJENDRA	4	2	2	2	10
92	PAWAR PRANALI RAJENDRA	3	1	2	2	8
93	PAWAR PRIYANKA GAUTTAM	3	1	2	1	7
94	PAYGHAN PRADIP BHAGWAN	3	1	2	1	7

95	PRAJAPATI PRAKASH MOHAN	4	2	2	2	10
96	SEN PREETHESH TANMOY	3	2	2	2	9
98	RAJPUT KETURAJ KOMALSING	3	1	2	1	7
99	RAKIBE MANGESH VIJAY	3	1	2	1	7
100	RANDIVE PRANAV MOHAN	4	2	2	2	10
101	RASAL ANIKET SHASHIKANT	3	2	2	1	8
102	RAYATE AMRUTA MUKUND	4	1	2	2	9
104	SAOKAR NEHA UKHA	2	1	2	1	6
106	SHAIKH JISHAN CHANDBHAI	4	1	2	2	9
107	SHARDUL ESHWAR ARUN	3	1	2	1	7
108	SHELKE ABHISHEK SUNIL	3	1	2	1	7
110	SHINDE VAIBHAV DNYANESHWAR	4	1	2	2	9
111	SHIRSAT DARSHAN TANAJI	4	2	2	2	10
112	SHIRSATH POOJA SANJAY	3	1	2	2	8
113	SOMVANSHI AKASH NANDKUMAR	3	1	2	1	7
114	SONAR ANUJA KAILAS	3	1	2	1	7
115	SONAWANE HARSHALI SHIVAJI	3	1	2	1	7
116	BODHARE SUNIL VISHNU	3	1	2	1	7
117	SURAVASE VITTHAL KONDIBA	3	2	2	1	8
119	TALELE PRIYA HEMANT	3	1	2	1	7
120	THORAT ABHISHEK SATISH	3	2	2	1	8
121	KOLI VIVEK DILIP	4	2	2	1	9
122	VYAVAHARE CHINMAY	3	1	2	1	7
123	WABLE MANSI BHIKAN	3	2	2	1	8
125	WAGH TUSHAR ANIL	4	2	2	2	10
126	WATPADE RUSHIPRASAD	3	1	2	1	7
128	BURAD YASH RAJESH	3	1	2	1	7
129	DEORE AMOL RAMESH	3	2	2	1	8
130	GUPTA SWAMI HEMANT	4	2	2	2	10
131	HIRAY PRASANNA ABHAY	3	2	2	1	8
132	KHOLAMKAR MRUNAL MANISH	3	2	2	1	8
133	MOHAN DARSHANA SANJAY	3	2	2	1	8
134	KUTE GAURAV BHALA	4	2	2	1	9
135	PATIL NACHIKET SANJAY	2	1	2	1	6
136	KARE AVANTI DIPAK	4	1	2	2	9
137	WEDHANE NIKHIL JAYWANT	3	1	2	1	7
138	SANGEWAR VYOMKESH JEETENDRA	3	1	2	1	7
140	GAWARE KRISHNALEE DATTATRAY	4	1	2	2	9
141	BHADANE SAURABH RAVINDRA	4	2	2	2	10
142	KOTWAL GAURAV VIJAY	3	1	2	2	8
143	PAWAR YASH KRISHNA	3	1	2	1	7
144	BHOYE ROHIT PADMAKAR	3	1	2	1	7
145	SHIKALIKAR DANISH M	3	1	2	1	7

7. For review and critique contact: e-mail address of faculty and HOD.

shewale.vinod@kbtcoe.org, hod.mech@kbtcoe.org



Dr. V.C. Shewale
Subject In charge



Dr. S.B. Sonawane
Module Coordinator



Dr. A.B. Kakade
NBA Coordinator



Dr. S.P. Mogal
HoD