

INDUSTRIAL ELECTRIC OVEN



1. General Information

Parameter	Specification
Machine Type	Industrial Electric Batch Oven
Heating Method	Electric Resistance Heating
Heating Element	Open Coil Kandhal A1
Application	Heat Treatment / Drying / Curing
Control System	PLC + HMI with Thyristor Power Controller
Power Supply	415 V, 3 Phase, 50 Hz

2. Oven Capacity

Parameter	Value
Internal Width	1400 mm
Internal Depth	2400 mm
Internal Height	2000 mm
Working Volume	6.72 m ³
Equivalent Volume	≈ 6720 Liters

3. External Dimensions

Parameter	Size
Width	1800 mm
Depth	2600 mm
Height	2400 mm

Includes:

- 200 mm thermal insulation
 - Outer structural body
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4. Oven Construction

Structural Frame

Parameter	Specification
Frame Material	Mild Steel Square Pipe

Parameter	Specification
Pipe Size	40 × 40 × 5 mm
Structure	Heavy duty welded frame

Frame includes:

- Bottom base frame
- Vertical support columns
- Top roof frame
- Reinforcement supports

Inner Chamber

Parameter	Specification
Material	Stainless Steel SS304
Sheet Thickness	2 – mm
Fabrication	Laser Cut + Bending + TIG Welding
Finish	Smooth ground surface

Insulation

Parameter	Specification
Material	Ceramic Fiber Blanket
Thickness	200 mm
Density	128 kg/m ³
Temperature Rating	1260°C

Layer construction:

Outer MS sheet

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Ceramic fiber insulation

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SS304 inner chamber

Outer Body

Parameter	Specification
Material	GI Sheet
Thickness	2 mm
Finish	Powder Coated / Heat Resistant Paint

5. Door System

Parameter	Specification
Door Type	Double Leaf Hinged Door
Outer Plate	GI Sheet
Insulation	Ceramic Fiber
Inner Plate	SS304 Sheet

Door Hardware:

- Heavy duty hinges
 - Toggle clamps
 - High temperature gasket sealing
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6. Heating System

Heating Element

Parameter	Specification
Type	Open Coil
Material	Kandhal A1
Max Element Temperature	1400°C

Material composition:

Element Content

Iron	Balance
Chromium	~22%
Aluminum	~5.8%

Heater Power

Parameter	Value
Total Heater Power	84 kW
Voltage	415 V
Phase	3 Phase
Frequency	50 Hz

Heater Zone Layout

Zone	Location	Power
Zone	1 Left Wall	42 kW

Zone	Location	Power
Zone 2	Right Wall	42 kW

Heater Coil Arrangement

Coil	Power
Coil 1-6	– 7 kW each (Left Side)
Coil 7 – 12	7 kW each (Right Side)

Total Coils: **12**

7. Ceramic Insulator System

Purpose:

- Support heater coils
- Prevent electrical short circuit
- Withstand high temperature

Installation layout:

Oven Wall

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Ceramic Insulator

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Kandhal Heater Coil

Typical spacing:

150 – 250 mm between supports

8. Air Circulation System

Parameter	Specification
Blower Quantity	2
Motor Rating	5.5 kW each
Fan Type	High Temperature Centrifugal Fan
Function	Uniform heat distribution

Total blower power: **11 kW**

9. Temperature Measurement

Parameter	Specification
Sensor Type	K-Type Thermocouple
Quantity	6
Locations	Top / Bottom / Middle / Heater Zone

10. Electrical Control System

Component	Specification
Controller	PLC + HMI
Heater Control	Thyristor Power Controller
Control Panel	Floor Mounted Industrial Panel