

Nos. Nival → 9243/12371

THERELEK DIE HEATING AND ALUMINIUM AGEING OVEN
JINDAL ALUMINIUM LIMITED.,

Ref.: TESQ22/22101068,
Date: 04/08/2022

PRICE SCHEDULE:

S No.	Description	Qty	Unit Rate	Total Rate
1.	DESIGN, MANUFACTURING, SUPPLY, INSTALLATION & COMMISSIONING OF DIE HEATING OVEN.	14 Nos	₹ 15,00,000.00	₹ 2,10,00,000.00
2.	DESIGN, MANUFACTURING, SUPPLY, INSTALLATION & COMMISSIONING OF ALUMINIUM AGEING OVEN.	2 Nos	₹ 93,00,000.00	₹ 1,86,00,000.00
TOTAL Three Crores Ninety Six Lakhs only.				₹ 3,96,00,000.00

Taxes if any applicable will be extra.

Note: Nickel bearing items if offered in our proposal based on current market rate. As there is substantial fluctuation in the price of nickel bearing items. Accordingly, we can keep the price offered valid for your acceptance for 2 weeks only. Any revision of quotes we shall inform.

Standard Terms and Agreements

Payment Terms

Advance 40% along with the purchase order and balance 60% + 100% Taxes against proforma invoice before dispatch.

Payment: 30% Advance against ABG valid for 7. 60% against PI before ship after imp 10% after commissioning subject to sub of PBG valid for one year.

Installation and Commissioning: 100% with taxes and duties (if any) payable within 1 week from the date of commissioning.

Price Base: Ex - works, Bangalore

Approx Freight - ₹. 2,50,000/-

Validity: The proposal is valid for 45 days from the date of submission.

Specification: The technical specification, data, weight etc. specified in the quotation and attached enclosures are only approximate and not binding. We reserve the right to modify the design during manufacture, if in our opinion such modification constitutes an improvement

Delivery: Within 24 weeks from date of receipt of confirmed order along with advance.

Packaging & forwarding: extra - Approx. 2% of equipment value.

Nil

Freight & Insurance: Seller will support until loading of the equipment in customer designated freight forwarder. The expenses towards freight and insurance should be borne by customer.

Discussed with Mr. Nival and agreed 26/7/22



Force Majeure: Standard clause applicable. UNDER NO CIRCUMSTANCES, CANCELLATION OF THE ORDER WILL BE ENTERTAINED ONCE WE ACCEPT THE ORDER.

Warranty: We under take to replace or repair at our sole discretion any defective parts that need replacement or repair due to reasons attributable towards workmanship or materials. This warranty valid for a period of 12 months from the date of commissioning or 18 months from the date of dispatch, which comes earlier. This warranty does not include parts subject to normal wear and tear on those damaged due to improper operation or handling. Under no circumstances, do we undertake liability for indirect or consequential loss to damage of any value. This warranty given in lieu of and excludes every condition of warranty whether statutory or otherwise whatsoever not herein expressed.

Installation & Commissioning: We shall depute our technician for the installation and commissioning work. All installation materials and work required to be ready at site including electrical cables, piping, fittings, structure materials, supports etc. have to be done by you on your account and provided to us during commissioning as per DAP agreement. If these materials procured by us, the extra cost with applicable taxes levied at actual.

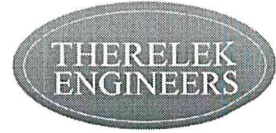
Inspection: Your authorized representative for whom we shall intimate you can carry out inspection at our site, prior to its dispatch.

We would request your review of our offer and should you have any queries, please revert to us for prompt response.

Looking forward to your earliest response.

For Therelek Engineers Pvt Ltd.,

S. Balasubramaniam
Director - Marketing



Heat Treatment Systems & Industrial Heating Solutions

DIE HEATING OVEN AND ALUMINIUM AGEING OVEN

PREPARED FOR:

M/S. JINDAL ALUMINIUM LIMITED
Address: Jindal Nagar, 16 km, Tumkur Road
Bangalore-560 073
Mobile: +91 96111 95368
E-mail: rajgopal@jindalaluminium.com

Ref.: **TESQ 22/22101068**

DATE: 04/08/2022

THERELEK ENGINEERS PVT. LTD.

70-71, III Phase, Peenya Industrial Area
Bangalore, Karnataka - 560 058, India

Phone: +91-80-2839 5101 / 102

Fax: +91-80-2839 5103 / 2553 3747

Email: info@therelek.com

Website: www.therelek.com

To,
M/s. **JINDAL ALUMINIUM LIMITED**
Jindal Nagar, 16 km, Tumkur Road
Bangalore - 560 073

Kind Attn: Mr. Rajgopal C Sarda

Sub: REQUIREMENT OF DIE HEATING OVEN AND ALUMINIUM AGEING OVEN

Ref.: Your e-mail dated 24/07/2022

We thank you very much for your email regarding your above requirement. Based on the inputs, we take pleasure in enclosing our techno-commercial proposal covering your requirement.

INTRODUCTION

For over 40 years we have been providing end to end solutions ranging from conceptualization, planning, design, manufacture, installation, commissioning, training, refurbishing and on-demand services of Industrial furnaces, kilns, ovens and vacuum systems. For the past 20 years, we have been serving various sectors of the manufacturing industry from automotive, infrastructure, general engineering to aerospace with our heat treatment services. Therelek Engineers has supplied and commissioned over 5400 systems as on date, and has over 200 repeat customers. Our conformity to the most stringent global standards, standardization and refinement of processes, process documentation and traceability, meticulous planning and scheduling evidenced in the accreditations and customer approvals that we have from some of the most quality conscious companies in the world. We are a NADCAP accredited, ISO 9001: 2015, ISO 14001, ISO 45001, ISO 17025 & AS 9100 Rev C certified company.

Our cross functional team consists of world class Engineers, Metallurgists, Fabricators and Technicians, and are coupled with our state of art R&D facility, fully equipped material sciences laboratory, modern design tools including CAD, 3D modeling, FEA & FMEA. Our quality emphasis policy is and has always been - only the best material and manufacturing processes go into the makings of our products and services, with a steady focus on continual improvement and innovation aimed towards our customer's success and satisfaction.

We have considered the following for your requirement of Die Heating Oven and Ageing Oven.

1. Die Heating Oven

The chamber size considered is 700 x 700 x 700 with an operating temperature upto 180 - 600°C

This is top open furnace using hydraulic system for loading the dies.

2. Aluminium Ageing Oven

Chamber Size : 10,000mm L x 2,750mm W x 3,300mm H
Bulk loading : 15,000 Kgs Nett.
Cycle time for aging : 4 hrs. approx. (40mts heat up to 180°C + 180 mts soaking)
Capacity Per day : 5 cycles per day and 75 tons/day approx.

The salient features are.

- • 2 Nos. package ~~LPG~~ *will run on LPG/LNG* burners (imported each of capacity 600 KW).
- • The hot air blower is of capacity 60 KW 850m³/hr at 800mmWC.
- • The chain drive provided for to & fro movement of the trolleys is 10 HP with 3-inch pitch chain.
- 2 doors with electromechanically operated geared motor of 1 HP each - one at each end
- Adjustable louvers on 2 side walls of the inner chamber for effective heat distribution on distributors.
- The insulation provided is 150mm mineral wool.
- The maximum temperature of operation will be 200°C.

1. DIE HEATING OVEN

Sr.	Parameters	Technical Specifications
1.	Chamber Dimension	700 mm (L) x 700 mm (W) x 700 mm (H).
2.	Max temperature	600 deg C.
3.	Power rating	36 KW
4.	Power supply	415/440 V, 3 Phase, 50 HZ, AC.
5.	Temperature control	Digital display ON/OFF type temperature controller with Safety Temperature controller of Eurotherm make.
6.	Thermocouple	K type.
7.	Casing	Oven casing will be fabricated with mild steel plates reinforced with heavy sections to withstand mechanical load and thermal stresses developed during heating and cooling. Structure will be welded or fastened whichever is most suitable to the operation.
8.	Door	Pneumatically operated door, made out of heavy-duty mild steel structural and thick mild steel plates.
9.	Air circulation system	Fan with 2 HP motor capacity will be provided.
10.	Baffle	Oven will be provided with Stainless steel baffle and hearth plate.
11.	Insulation	All the sides of the oven and door will be lined with graded layers of ceramic fibre blankets. Oven collar will be with high density fire bricks.
12.	Heating elements	Heating element will be made out of Kanthal grade wire will be provided inside the chamber with refractory tube supports.
13.	Control Panel	A sheet steel fabricated self-standing control panel which will house all the control instruments and necessary switch gear items neatly wired and ferruled will be supplied along with the oven.
14.	Painting	All the mild steel parts given with rust preventive coating and final finish with paint.

2. ALUMINIUM AGEING OVEN.

S No	Parameters	Technical specifications
1)	Chamber Size	10,000mmL x 2700mmW x 3300mmH
2)	Bulk loading	15000 Kgs Gross.
3)	Temperature to be maintained	180° C ± 5°C
4)	Cycle time for aging	4 hrs. approx.
5)	Number of zones	3 zones.
6)	Temperature controller	PID type Digital display type
7)	Safety controller	Safety temperature controller
8)	Doors	Vertical lifting type on either sides duly insulated.
9)	Door operation	Motorized. Necessary interlocks will be provided to cut of the blower while door is opened so that heat generated inside the oven will be retained and heat loss can be minimized.
10)	Movement of charge	By means of chain conveyor system driven with the help of gear motor.
11)	Number of drives	2 Nos
12)	Capacity of gear motor	5.5 KW each.
13)	Conveyor chain	One set
14)	Power supply	415 V+/- 10%, 3 Phase, 50 Hz.
15)	Heater Battery	Radiator with Blower - 850m ³ /hr - 2 Nos.
CONSTRUCTIONAL DETAILS OF FURNACE		
16)	Casing	The casing of the furnace will be of double walled construction inner casing and baffles made out of Mild Steel sheets of 16 SWG and outer casing of 14 SWG mild steel sheets suitably reinforced with angles and channels with welding or screw joints wherever necessary. The space between the two casing will be filled with insulation for a thickness of 150 mm.
17)	Doors	The Furnace will be provided with vertical lifting type two doors at either ends of the furnace. The doors will also be double walled construction with insulation. Edges of the doors will be given proper sealing to prevent heat loss through the door side. Doors will be operated with the help of geared motor with chain and sprocket.
18)	Ducting	Necessary ducting will be provided for air circulation. Required pipe lines with valves are also in our scope for hot air circulation. Cladding will be provided for all the pipe lines, outside ducting etc.
19)	Chain Conveyor System	Chain conveyors as shown in drawing driven separately with the help of 5.5 KW geared motor. Both these motors can be operated separately.

20)	Temperature control	The temperature of the furnace will be controlled through digital display type Temperature controller. Thermocouples with suitable length of lead wire.
21)	Control Panel	All temperature controllers, safety controllers and electrical switch gear items will be neatly housed in a control panel wired, Safety controllers and necessary interlocks will be provided.
22)	Painting	All the mild steel parts will be given with a rust preventive and the final outer finish will be of heat resistant aluminum paint.
23)	Note	A representative drawing of an aging oven supplied by us to a Middle East customer is enclosed of capacity - 6000 Kgs/batch for aluminium parts is enclosed for reference only. Detailed drawings will be submitted to you for your approval before starting manufacturing.
24)	Exclusions from our scope of supply	1. Charge baskets 2. Rails and civil work. 3. Utilities at site like, crane, fork lift, water, power, LPG, compressed air etc.
25)	INTERLOCKS	Necessary interlocks will be provided to cut of the blower while door is opened so that heat generated inside the oven will be retained and heat loss can be minimized. We are also offering PLC for automation.

Field Services

Installation Supervision and Start-Up

- Electrical wiring of the equipment
- Start-up of the furnace
- Function test

Time schedule for assembly supervision and start-up will be 3-4 Weeks.

Training

Training conducted following the completion of start-up. The Buyer names the personnel for training.

Training of operating and maintenance personnel for:

- Operation of the furnace
- Explanation of the documentation
- Explanation of the interlocking and safety functions
- Explanation of maintenance work and intervals
- Explanation of spare part lists and drawings

Supplies and Services by Buyer (without cost for Seller)

- Necessary foundation and civil engineering furnished according to installation plan.
- Field and supply lines for process gases, exhaust lines, compressed air and electrical power are furnished and installed in accordance to the agreed interconnecting points according to the layout drawing with service list.
- All necessary services are available in the specified amount and quality.
- Waste disposal of the packing material.
- During start-up the operating and maintenance personnel has to be present for training.
- Notification of the plant to the local authorities for acceptance / registration / start-up permission.

Above listing of Buyer's supplies and services does not claim completeness in all respects. Generally, it has assumed that all items, which are not specifically specified and priced out in this quotation, are not part of the seller scope of supply and provided by Buyer.

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Srinivasan
Vacuum Division

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Acceptance

Pre-shipment Inspection

This inspection accomplished to ensure a proper and complete supply of the contracted scope of supply. Individual components completed in their scope, but the equipment may not fully assembled. Inspection of individual components may take place at different locations. The Buyer may send his own inspector at his own cost to witness the pre-shipment inspection(s). The Seller has the right to determine when the equipment is ready for delivery. The pre-shipment inspection (cold function test) consists mainly of:

- Control of mechanical dimensions and other quality issues according to Seller's drawings, part lists and check lists
- Function control of motors, recirculation fans, mesh belt etc.
- Control of safety systems

System Acceptance Procedures

Acceptance carried out at Buyer's works by demonstration of the specification according to the "Acceptance Protocol" agreed between the Buyer and the Seller.

If one of the acceptance steps reached, the failed step repeated. Each party covers their respective cost for the repetition, until the specified value proven. Minor defects not interfering with the function of the system are not a reason for non-acceptance.

The Buyer submits to the Seller free of charge all necessary items and support for all inspection and acceptance processes at Seller's request:

- Parts (originals and scrap) at reasonable volume
- Loading grids
- All consumables like gas, electricity, etc.
- Handling personnel
- Laboratory and respective services.

If acceptance test delayed, due to reasons for which the Seller is not responsible, the furnace equipment automatically accepted one (1) month after notice of shipment or delivery.