

# DYNATECH FURNACES



# PRODUCTION VACUUM FURNACES

[www.dynatechfurnaces.com](http://www.dynatechfurnaces.com)

# STATE OF THE ART PRODUCTION VACUUM FURNACES



Dynatech Furnaces offers a range of Production Vacuum Furnaces. These furnaces are manufactured in India with state of the art globally sourced components to ensure dependability, reliability and guarantee long time performance and sturdiness. With the largest installation base of production vacuum furnaces in India, Dynatech has evolved into "the Vacuum Furnace" Company of India. With a design, which ensures maintenance free operation and the after sales service that Dynatech provides, when needed, ensures that the Dynatech Vacuum Furnaces are the best!

## TYPICAL APPLICATIONS

\*Tool Steel  
Hardening  
like hssd2, D3, H11  
etc.

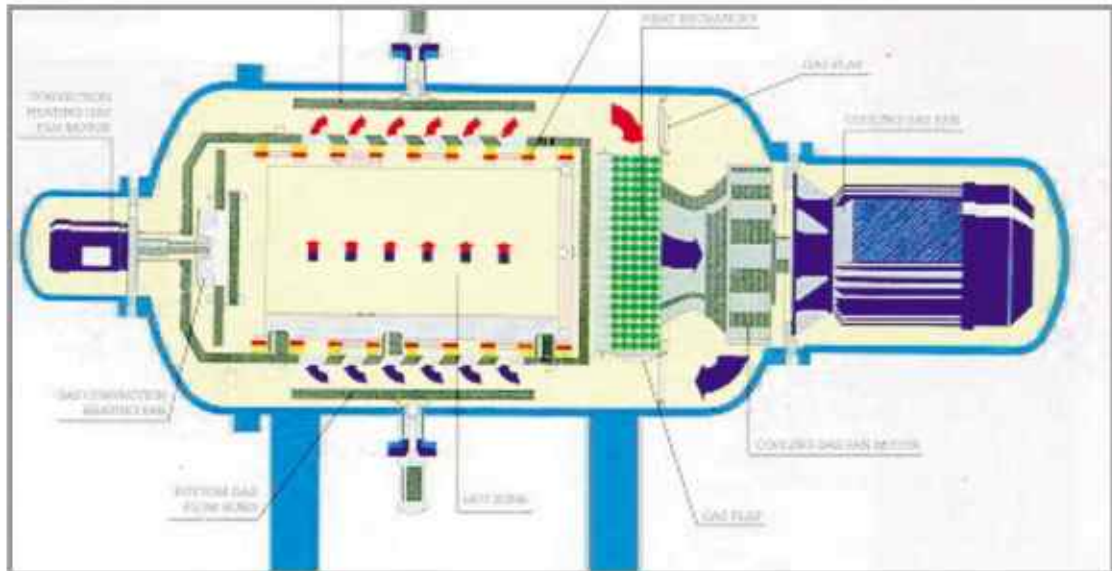
\*Copper Steel Brazing  
with paste and wire

\*Gas Turbine and  
Parts heat treatment

\*Bright Annealing  
stainless parts

\*Sintering of HSS Powders  
with dewaxing

# THE VACUUM WAY OF HEAT TREATING, BRAZING & SINTERING



## STANDARD FEATURES

- OPERATING VACUUM UPTO  $10^{-3}$  TORR &  $10^{-5}$  TORR LEVELS
- TEMPERATURE UPTO 1,320 C
- GAS OVER PRESSURE QUENCH FACILITY UPTO 10 BAR WITH INTEGRAL HEAT EXCHANGER AND FAN WITH ADAPTABILITY
- TEMPERATURE UNIFORMITY OF +/- 5 C FOR HEAT TREATMENT & BRAZING AND +/- 2 C FOR SINTERING
- UNIQUE FLAP FORMAT OF QUENCH PRESSURE GAS INLET
- UNIQUE DOOR LIP SEAL FOR VACUUM & PRESSURE USE
- GRAPHITE INSULATION LINED WITH COMPOSITE PANELS
- PRESSURE QUENCH GAS FLOW FLEXIBILITY AVAILABLE

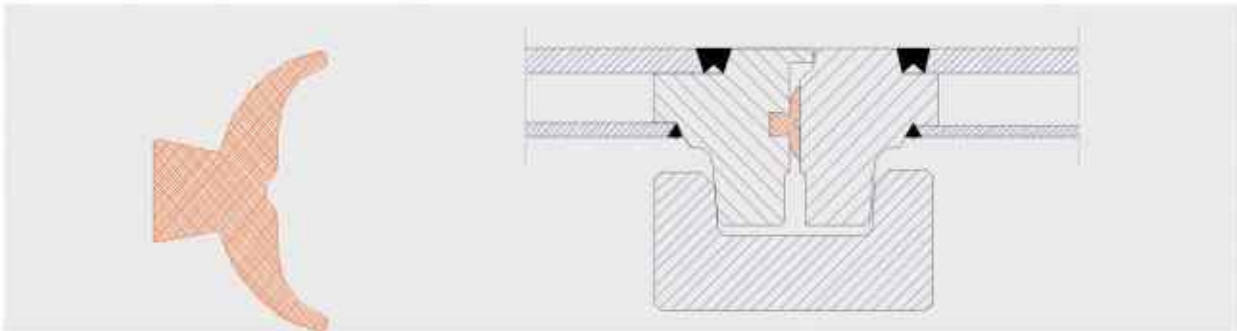
## MODEL TYPES

*FRONT LOADING HORIZONTAL	*FRONT LOADING CONVECTIVE	*VERTICAL TOP OPENING	*VERTICAL BOTTOM OPENING	*PULL OUT TYPE WITH THREE SIDE ACCESS	*LIFTJET WITH WINCH LOADER
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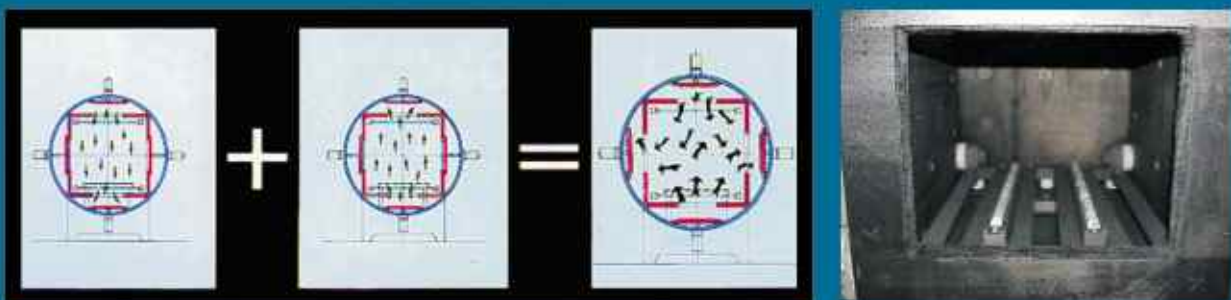
# MAJOR UNIQUE FEATURES OF DYNATECH FURNACES

## PRESSURE - VACUUM LIP SEAL FOR FURNACE DOOR



Since the full range of Dynatech Production Vacuum Furnaces operate under both vacuum and pressure, at different modes of the hardening process, Dynatech has provided one of the most unique door seal which can effectively stand high vacuum upto  $10^{-6}$  torr level, under heating phase and also effectively stand gas pressure of 10 bar (a), during the quenching phase. Unlike most other vacuum furnaces, which use some form of the standard or modified O-ring seal for the door, this unique design ensures perfect sealing of the large door flange under both operations. Besides, the unique lip seal design ensures that the seal holds both high vacuum and high gas pressure, even when the lips seal is cracked or chipped thereby reducing furnace downtime, due to door seal failure, providing enough lead time and early warning signal to replace the door seal.

## FLEXIBLE GAS QUENCHING FACILITY



As most Dynatech range of Production Vacuum Furnaces are used for tool steel hardening application, the feature of quenching is very critical. Most vacuum furnace designs use a fixed slot type gas quenching system into the hot zone with only variation in gas pressure as a flexibility option. Understanding heat treaters requirements completely, Dynatech range of Production Vacuum Furnaces provide the requisite flexibility that is needed by most heat treaters in varying quenching gas flow patterns, apart from varying gas pressures. Further design features ensure that gas flow paths can be regulated for low volume use of large furnace hot zone to ensure that more effective gas flow is achieved. Dynatech's designs thus provide flexibility in gas pressure, gas flow patterns and direction of gas flow - critical to ensure good, uniform quenchability, lower distortion and increase efficiency! All this is achieved by unique pneumatic flap system, which enables one to choose gas, flow patterns and directions. The pneumatics operates by nitrogen/ argon gas.

# MAJOR UNIQUE FEATURES OF DYNATECH FURNACES

## CFC FACING ON HOT BOX INSULATION



Since the full range of Dynatech Production Vacuum Furnaces operates under high temperature and pressure, at different modes of the hardening process, Dynatech has provided one of the longest lasting FIT & FORGET Hot Zone in Graphite option by using a CFC panel facing on all six sides of the hot insulation Rigid Graphite Board. This provides a long lasting insulation pack both under heating phase and also effectively stand gas pressure of 10 bar (a), during the quenching phase. Unlike most other vacuum furnaces, which use some form of standard graphite foil or coatings, this unique design ensures perfect insulation and long life for the hot zone, reducing both time consuming and expensive maintenance.

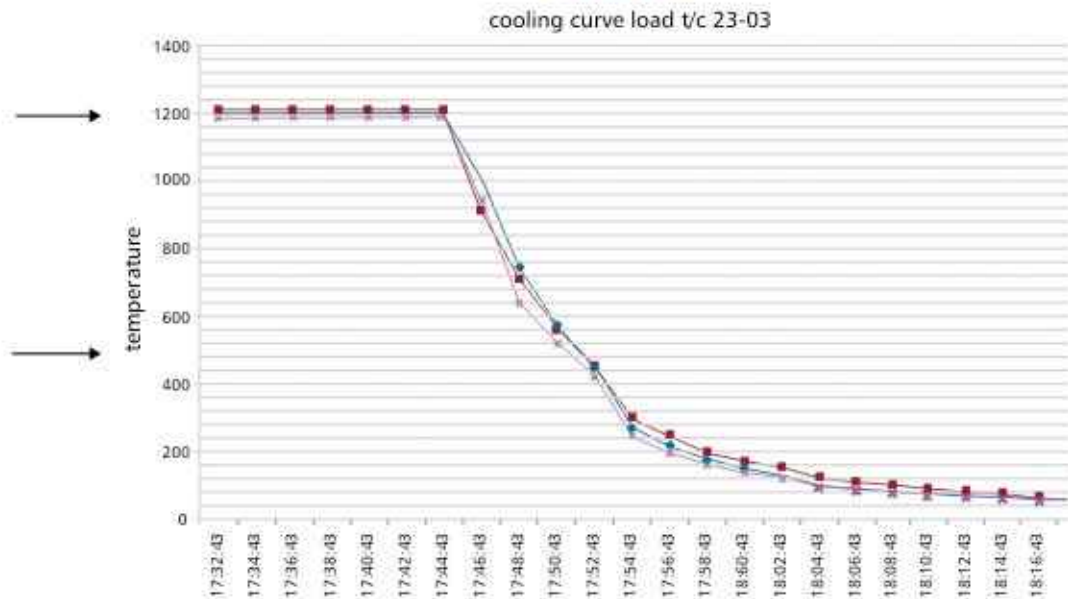
## CLOSED LOOP COOLING WATER SYSTEM



Dynatech Vacuum Furnaces are equipped with a Closed Cooling Water System that ensures that the Heat Exchanger inside the furnace and the Furnace vessel, itself, are prevented from any corrosion and thereby affect the furnace life and also it's thermal cooling efficiency. The Closed Loop Cooling System consists of a Plate Evaporator, Water Storage Buffer Tank, Water Pump Skid Station with stand by pump.

# STANDARDS & SPECIFICATIONS

Fully complies and exceeds **NADCA** standards for H-13 Dies



Based On Actual Quench Result in a 10-Bar Vacuum Furnace Using 5-Bar Nitrogen gas as quench medium and using load 5 type thermocouple

Austenizing Temp @ 1,200 C; Time Started at Quench: 17:44 pm  
Time at 500 C: 17:50 pm; Total Temp Drop: 700 C; Time For Temp Drop: 6-minutes;  
Quench Rate: - 113 C/ min. average

## STANDARDS & NORMS COMPLIANCE

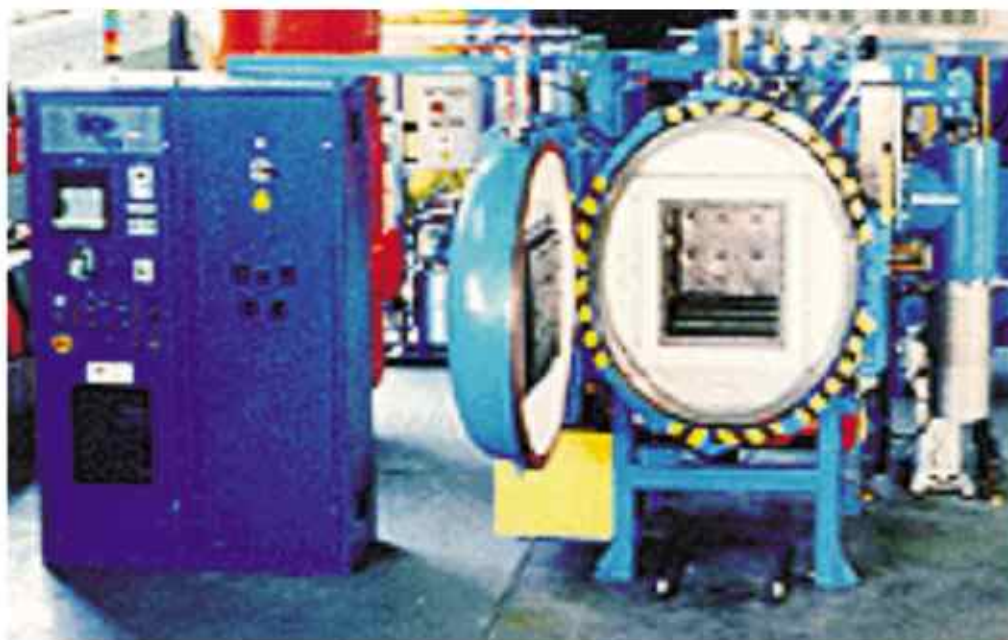
Dynatech Vacuum Furnaces are designed and manufactured to comply with the following AMS & NADCA standards:

1. AMS 2750 D Pyrometry
2. AMS 2675G (Nickel Alloy Filler Metal Brazing)
3. AMS 2759 (Steel Parts Heat Treatment)
4. AMS 2769 (Vacuum Heat Treatment)
5. AMS 2774 (Nickel & Cobalt Alloy Heat Treatment)
6. AMS 2801 (Titanium Parts Heat Treatment)
7. AMS-H-6875 (Process of Steel Heat Treatment)
8. AMS-H-81200 (Titanium & Titanium Alloy Heat Treatment)
9. NADCA Standards (Recommended Procedures for H-13 Tool Steel Vacuum Heat Treatment)

Dynatech Vacuum Furnaces are designed and manufactured to comply with the following Industry standards:

1. GE P10TF1 (Vacuum Heat Treatment & Brazing)
2. SNECMA DMP 11-005 (Qualification Of Thermal Treatments)
3. SNECMA DMP 11-030 (Nickel Alloy Thermal Treatment)
4. FIAT 9.70106/00 ed. 95 (General Prescriptions for Industrial Machines)
5. GM DC-9999-1 Rev #18 (Die Insert Material & Heat Treating Specification)
6. FORD AMTD-DC 2010 Rev L (Die Insert Material & Heat Treatment Performance)
7. ROLLS ROYCE EPS SERIES
8. ROLLS ROYCE RPS 953 PYROMETRY
9. BOEING BAC 5621 (Temperature Control For Materials Processing)
10. BOEING BAC 5904 (Furnace Brazing With Heat Resistant Alloys)
11. BOEING D6-82479 (Quality Management System Requirements)

# FRONT LOADING HORIZONTAL TYPE STANDARD DFHP PRODUCTION VACUUM FURNACES



The best way to bright **anneal**,  
**harden** and **braze!**

**\*\*Graphite Hot Zone with Composite Panel\*\***

## **STANDARD DUALJET SERIES MODEL DETAILS**

- All furnaces are designed for use upto 1,320 C
- Furnaces are available in 2 bar, 6 bar and 10 bar versions
- Furnaces are available in medium and high vacuum options
- Furnaces are available with all accessories needed for operation

DFHP 100	100 kg. Load	40 kW Power	350mm. W	250 mm. H	450 mm. D
DFHP 200	200 kg. Load	80 kW Power	450mm. W	350 mm. H	700 mm. D
DFHP 400	400 kg. Load	120 kW Power	550mm. W	450 mm. H	1000 mm. D
DFHP 600	600 kg. Load	150 kW Power	600mm. W	600 mm. H	1200 mm. D
DFHP 800	800 kg. Load	200 kW Power	800mm. W	800 mm. H	1200 mm. D
DFHP 1000	1000 kg. Load	250 kW Power	800mm. W	800 mm. H	1500 mm. D
DFHP 1200	1200 kg. Load	275 kW Power	800mm. W	800 mm. H	2000 mm. D
DFHP 1500	1500 kg. Load	385 kW Power	1000mm. W	1200mm. H	1200 mm. D

VESSEL IS U CODE STAMPED AS PER ASME SEC VIII DIV 1

# FRONT LOADING HORIZONTAL TYPE CONVECTIVE DCHP PRODUCTION VACUUM FURNACES



WITH  
AUXILLARY FORCED CONVECTION HEATING BY PRESSURIZED GAS AND  
CFC MATERIAL FRONT FAN IN HOT ZONE

## UNIQUE FEATURES

- Faster cycles
- Low distortion
- Scale free components
- Clean and brilliant parts
- Dence charge loading
- Homogenous & uniform heating

## OPTIONS AVAILABLE

- Four model hot zone sizes
- Isothermal gas quenching
- High and medium vacuum
- Heating gas of 1.5 bar
- Touchscreen control
- Quench gas of 6 bar and 10 bar

## STANDARD MODEL DETAILS (UPTO 1,320 C)

MODEL NO.	WIDTH	HEIGHT	DEPTH	HEATER POWER	GROSS LOAD
DCHP 30-30-60	400 mm.	400 mm.	600 mm.	120 kW	300 kg.
DCHP 60-60-90	600 mm.	600 mm.	900 mm.	220 kW	600 kg.
DCHP 80-80-100	800 mm.	800 mm.	1000 mm.	300 kW	800 kg.
DCHP 90-90-120	900 mm.	900 mm.	1200 mm.	410 kW	1200 kg.

# BOTTOM LOADER VERTICAL DVBP PRODUCTION VACUUM FURNACES



THE IDEAL WAY TO  
**PROCESS  
LINEAR LOADS  
VERTICALLY**  
WITH EASE IN  
**LOADING AND  
UNLOADING**

## Features

- GRAPHITE HOT ZONE
- TEMPERATURE UPTO 1,320 C
- 6 SIDE HEATING CONFIGURATION
- INTEGRAL HEAT EXCHANGER & FAN
- 6 BAR GAS PRESSURE QUENCH FACILITY
- VESSEL IS AS PER ASME SEC VIII DIV 1 U CODE STAMPED

## Options

- ISOTHERMAL QUENCHING FACILITY
- 10 BAR GAS PRESSURE QUENCH FEATURE

## Model Details

MODEL NO.	HOT ZONE D	HOT ZONE H	LOAD	HEATER POWER
DVBPH 60/90	600 mm	900 mm	400 kg.	170 kW
DVBPH 90/90	900 mm	900 mm	900 kg.	230 kW
DVBPH 120/120	1200 mm	1200 mm	1200 kg.	350 kW
DVBPH 150/150	1500 mm	1500 mm	1500 kg.	490 kW
DVBPH 180/180	1800 mm	1800 mm	1800 kg.	660 kW
DVBPH 200/250	2000 mm	2500 mm	2500 kg.	700 kW

# LARGE CAPACITY PULL OUT DFHP PRODUCTION VACUUM FURNACES



THE IDEAL WAY TO PROCESS LARGE LOADS WITH EASE IN LOADING AND UNLOADING

## Features

- GRAPHITE HOT ZONE
- TEMPERATURE UPTO 1,320 C
- 6 SIDE HEATING CONFIGURATION
- INTEGRAL HEAT EXCHANGER & FAN
- 6 BAR GAS PRESSURE QUENCH FACILITY
- VESSEL IS AS PER ASME SEC VIII DIV 1 U CODE STAMPED

## Options

- TOUCHSCREEN CONROL
- ISOTHERMAL QUENCHING FACILITY
- 10 BAR GAS PRESSURE QUENCH FEATURE

## Model Details

MODEL NO.	HOT ZONE WIDTH	HOT ZONE HEIGHT	HOT ZONE DEPTH	GROSS LOAD	HEATER POWER
DFHP 1000	1000 mm.	1000 mm.	1000 mm.	1000 kg.	264 kW
DFHP 1200	1200 mm.	1200 mm.	1200 mm.	1250 kg.	354 kW
DFHP 1500	1500 mm.	1500 mm.	1500 mm.	1500 kg.	420 kW
DFHP 2000	2000 mm.	2000 mm.	2000 mm.	2000 kg.	550 kW

# SOME TYPICAL CUSTOMER REFERENCE LIST

## DOMESTIC MARKET

- BOSCH INDIA, Bangalore (2 units)
- BOSCH INDIA, Jaipur
- DELPHI TVS, Chennai (3 units)
- ADDISON & CO., Chennai
- GE BHEL, Hyderabad
- F.C.I., Kochi
- GOLDEN ENGINEERS, Navi Mumbai
- BODYCOTE, Pune
- BODYCOTE, Gurgaon
- BHAT METAL RESEARCH, Bangalore
- ASSAB SRIPAD, Chennai
- ASSAB SRIPAD, Panvel
- ENGINETECH, Pune
- ENDURANCE TECH., Aurangabad

## OVERSEAS MARKET

- CIRCLE CITY H T, Indianapolis, US (3 units)
- EXACTATHERM, Mississauga, Canada
- G&S TITANIUM, Wooster, OH, USA
- ROCK ISLAND ARSENAL, IL, USA
- PORTER PUNCHES, Cincinatti, OH, USA
- BECKER CERAMICS, Munchen, Germany
- GE, Abu Dhabi, UAE
- ALSTOM POWER, Jebel Ali, UAE
- MOTOR SICH, Ukraine (2 units)
- HICO FZE, Dubai
- ASIA CASPIAN ENGG, Dubai



## COMPANY

Dynatech Furnaces is a professional, specialist & focused furnace-manufacturing company, based at Mumbai, India, with over two decades of furnace manufacturing experience since 1985. Dynatech Furnaces has been concentrating in areas of VACUUM & WALKING BEAM FURNACES and offers a full range of furnaces for all types of heat treatment applications like hardening and brazing & sintering applications and today has the largest base in India of Production Vacuum Furnaces and now exported to USA, Canada, UAE, Ukraine, Germany, Japan, Thailand etc.

## TEAM

A team of two promoters - directors (IIT & IIM Alumni) run Dynatech Furnaces with professional technical and managerial background and experience and a well-trained and motivated team of over a score of partner engineers, designers, technicians & commercial staff.

## DESIGN & OFFICE FACILITIES

Dynatech Furnaces has its own Design and Engineering center with sophisticated computer and CAD facilities. Its office is fully computer networked for ease in flexibility, adaptability to customer needs and high productivity outputs. Dynatech Furnaces uses SCADA computer software for process control & record.

## CUSTOMER SERVICE

A fully equipped and trained service team is available within 48/ 72 hours at any site in the world. Dynatech Furnaces offers a level of service even other furnace companies' talk about and envy! Check us out or better still check out with our blue chip customers!

## MANUFACTURING & TESTING FACILITIES

Dynatech Furnaces has a fully equipped and staffed assembling facility in the outskirts on Mumbai, India, with sophisticated, assembling and testing equipment with state of the art infrastructure where furnaces can be fully assembled & tested.

## FURNACE ACCEPTANCE PATTERN

Each furnace of Dynatech Furnaces is assembled, tested and proven to the customer before it leaves the plant and is erected and commissioned in the shortest time at site.



**DYNATECH FURNACES (BOMBAY) PVT. LTD.**

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