



VAC AERO  
INTERNATIONAL INC.

A World of Innovative Materials Solutions

Furnace Manufacturing

Thermal Processing

Coatings



## A World of Innovative Materials Solutions



*Because So Much Is **Riding On Us!***

Heat treating critical components such as aircraft landing gear involves experience, precision and state-of-the-art heat treating equipment.

Because of VAC AERO's ongoing commitment to excellence recognized by customer approvals from major North American and European aerospace prime contractors, we are proud to be one of the world's largest subcontractors for processing landing gear components for commercial and military aircraft. The basis for that achievement is our commitment to innovation supported by our experienced teams of engineers, technologists and production staff who are keenly devoted to design, build and deliver the highest quality products and services related to special processing.



**Our future depends on our customers' success.**

At VAC AERO we have gained the trust of our customers, partners and stakeholders thanks to our quality workmanship, our outstanding product performance and our peerless dedication to service. As a vacuum heat treating pioneer, our unwavering commitment to the development of new technologies has helped us to secure our role as a leading provider of new and innovative thermal processing equipment systems and solutions.

**We feel strongly linked to our customers' success... Because So Much Is Riding On Us!**

The VAC AERO International group of companies leverages its knowledge and expertise to provide a broad range of heat treating products and metallurgical services to fit the specific requirements of diverse applications in aircraft and engine component manufacturing, overhaul and repair, medical implants and devices, nuclear materials, food processing equipment, tool and die manufacturing and other high-tech industries.

**Our dedicated service personnel provide immediate assistance anywhere in the world.**

To serve and support our North American and global customer base VAC AERO operates three production facilities near Toronto, Ontario, two plants in the Montreal area situated in the heart of Quebec's aerospace community as well as production facilities in Eastern Europe and India. Each business unit is focused on specific products or services but are all connected through common core technologies in **Furnace Manufacturing, Thermal Processing and Coatings.**

VAC AERO offers a wide range of vacuum heat treating and brazing furnaces, from small laboratory models to large vertical furnaces, as well many others for custom applications.

## FURNACE MANUFACTURING

VAC AERO's experience accumulated through decades of outstanding service in aerospace and commercial heat treating has provided us with valuable insight into the changing needs and rigorous demands of our furnace customers. As a result, VAC AERO has developed a profound understanding of the design and performance of high temperature vacuum furnaces to meet our clients' most stringent requirements for reliability, productivity and cost-efficiency.

VAC AERO builds furnaces used for general heat treating applications as well as for other specialized applications, including the following:

### High Pressure Gas Quench Furnaces

With pressure ratings of 6 bar, 10 bar and higher our high pressure gas quench furnace designs are based on extensive research into gas quenching.

### Integral Oil Quench Vacuum Furnaces

For increased versatility our integral oil quench furnaces can also be equipped for gas quenching.

### Custom Vacuum Systems

We offer engineering and equipment system solutions for the most complex vacuum processing applications.

### Vacuum Tempering & Vacuum Drying Ovens

A wide variety of designs and sizes are available.

### Fluoride Ion Cleaning Systems

VAC AERO's Dayton Process® Fluoride Ion Cleaning systems are used by airlines and engine overhaul facilities around the world.

### Atmosphere Furnaces

Various atmosphere furnace designs are available including pit tempering, retort and water quench gantry furnaces.

Furnace system rebuilds incorporate features provided on new VAC AERO furnaces.

From vacuum pumping, quench or electrical system rebuilds to control system and instrumentation retrofits, VAC AERO helps you keep up with the changing demands of your industry with furnace components and sub-systems that meet your growing needs for improved performance, reliability and efficiency.



### Remote-Access, PC-based Controls.

Our fully-automated and reliable control system technology can be customized to suit any special requirements ensuring the most accurate monitoring and processing of every stage in the heat treating cycle even from remote locations.

### Repair or replacement of hot zones for any vacuum furnace brand.

We offer a variety of replacement hot zones designed to meet your specific thermal processing applications and to optimize your furnace energy savings.





# FURNACE MANUFACTURING

## Vacuum Gas Quench Furnaces



### Vertical Bottom-loading Models

| Model    | Diameter     | Height       |
|----------|--------------|--------------|
| VAV 3436 | 34" (865mm)  | 36" (915mm)  |
| VAV 3636 | 36" (915mm)  | 36" (915mm)  |
| VAV 4848 | 48" (1220mm) | 48" (1220mm) |
| VAV 4854 | 48" (1220mm) | 54" (1370mm) |
| VAV 4860 | 48" (1220mm) | 60" (1525mm) |
| VAV 5448 | 54" (1370mm) | 48" (1220mm) |
| VAV 6060 | 60" (1525mm) | 60" (1525mm) |
| VAV 6072 | 60" (1525mm) | 72" (1830mm) |
| VAV 6098 | 60" (1525mm) | 98" (2490mm) |
| VAV 6660 | 66" (1675mm) | 60" (1525mm) |
| VAV 7260 | 72" (1830mm) | 60" (1525mm) |
| VAV 7272 | 72" (1830mm) | 72" (1830mm) |
| VAV 8484 | 84" (2135mm) | 84" (2135mm) |

### Horizontal Front-loading Models

| Model    | Width        | Height       | Length       |
|----------|--------------|--------------|--------------|
| VAH 1212 | 8" (205mm)   | 9" (230mm)   | 12" (305mm)  |
| VAH 1220 | 8" (205mm)   | 9" (230mm)   | 20" (510mm)  |
| VAH 2024 | 16" (405mm)  | 12" (305mm)  | 24" (610mm)  |
| VAH 2224 | 18" (460mm)  | 14" (355mm)  | 24" (610mm)  |
| VAH 2636 | 23" (585mm)  | 18" (460mm)  | 36" (915mm)  |
| VAH 3436 | 24" (610mm)  | 24" (610mm)  | 36" (915mm)  |
| VAH 3448 | 24" (610mm)  | 24" (610mm)  | 48" (1220mm) |
| VAH 4848 | 36" (915mm)  | 30" (760mm)  | 48" (1220mm) |
| VAH 4860 | 36" (915mm)  | 30" (760mm)  | 60" (1525mm) |
| VAH 4872 | 36" (915mm)  | 30" (760mm)  | 72" (1830mm) |
| VAH 5050 | 36" (915mm)  | 36" (915mm)  | 50" (1270mm) |
| VAH 5872 | 40" (1015mm) | 36" (915mm)  | 72" (1830mm) |
| VAH 6648 | 48" (1220mm) | 48" (1220mm) | 48" (1220mm) |
| VAH 6660 | 48" (1220mm) | 48" (1220mm) | 60" (1525mm) |
| VAH 6672 | 48" (1220mm) | 48" (1220mm) | 72" (1830mm) |
| VAH 7672 | 54" (1370mm) | 54" (1370mm) | 72" (1830mm) |

Customer service to clients around the world is the backbone of our reputation.

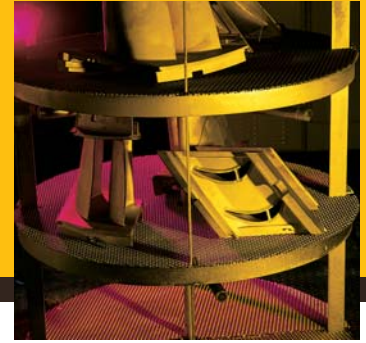
From installation and start-up supervision to rapid response emergency services, our field and technical support teams combine experience and know-how with prompt expert service to minimize expensive downtime and get your furnace operating as soon as possible.

When we build a furnace we also build a long-term partnership with our clients.

VAC AERO offers technology transfers for special processes, quality certifications and a comprehensive training program for new or experienced staff looking to advance their understanding of vacuum furnace operations, servicing and preventative maintenance.

# METALLURGICAL SERVICES

## *Thermal Processing & Coatings*



## THERMAL PROCESSING

### *Heat Treating and Brazing*

**A wide array of capabilities to meet your challenging requirements.**

Specializing in vacuum heat treating and brazing of advanced materials, VAC AERO's Thermal Processing divisions hold numerous customer and quality system approvals from prime manufacturers in aerospace and other high-tech industries.

VAC AERO has the equipment and expertise to process a wide variety of materials including steels, superalloys, aluminum and titanium for such diverse applications as aircraft landing gear and structural parts, aero and land-based turbine engine components, nuclear components and a host of other applications.

**VAC AERO has steadily grown and expanded by continually investing in leading-edge technology.**

At VAC AERO we have gained an international reputation for our technical expertise, highly-skilled personnel and dedication to continuous improvement to provide our customers with the very best in heat treating services and the highest level of performance with every part we process.

**Equipped to address your diverse processing needs.**

VAC AERO operates more than forty vacuum, controlled atmosphere and air-circulating furnaces capable of heat treating parts up to 70" diameter and 156" long.

**Achieving consistent results in a wide range of heat treating and brazing applications, including:**

- High Temperature Vacuum Heat Treating & Brazing
- Vacuum Oil Quenching
- High Pressure Inert Gas Quenching
- Interrupted (Ausbay) Quenching
- Controlled Atmosphere Heat Treating
- Water Quenching of Aluminum & Titanium Alloys
- Gas Nitriding
- Hydrogen Annealing
- High-Temperature Retort Atmosphere Brazing

## COATINGS

### *Thermal Spray, Pack, Inorganic*

VAC AERO's Coating Services Division offers a variety of coating processes for protection and restoration of both new and service-exposed components. Our coating capabilities include air plasma, HVOF, pack aluminide coating and inorganic corrosion resistant paint coatings.

**We can help you select the right coatings for your specific application.**

High quality coating solutions require a commitment to ongoing research and investment in state-of-the-art equipment. That commitment has been central to the growth of VAC AERO's coating operations since we first started offering these services to the aerospace and commercial sectors in 1968.

Complex problems like oxidation and corrosion protection for components that are exposed to harsh service environments demand solutions that use the right combination of coating material and application technique. VAC AERO's thermal spray coatings are applied using robotically controlled manipulators for maximum coating integrity, product performance and durability.

**A wide range of coating and surface engineering solutions for your design challenges:**

- Air-Plasma Spray
- High Velocity Oxygen Fuel (HVOF)
- Inorganic Paint Coatings
- Flame Spray
- Pack Aluminide Coatings
- Shot Peening
- Grinding



VAC AERO offers a broad range of protective coatings used in the manufacture and repair of aero-engine components and other critical aerospace and industrial parts.



## QUALITY ASSURANCE

Our qualified metallurgists and mechanical engineers will assist you with all your metallurgical service needs.

VAC AERO's passion for excellence and dedication to quality is reflected in the comprehensive quality systems we maintain in all of our metallurgical service facilities. Our heat treating and brazing operations are Nadcap and AS 9100 / ISO 9001:2000 accredited. Our TIG welding operations are also Nadcap approved.

VAC AERO conforms to the highest level of standards employed by the industry.

Our production facilities operate metallurgical laboratories that are fully equipped for metallographic examination, standard and micro-hardness testing, decarburization and high temperature oxidation inspection, tensile testing and complete dimensional inspection. Our qualified metallurgists, lab technicians and inspection personnel prepare and adhere to documented procedures to ensure compliance with applicable standards strengthened through internal, external and technical audits.

### Following is a partial list of our Quality System Approvals:

- Bell Helicopter
- Boeing Aircraft Company
- Bombardier Aerospace
- GE Aircraft Engines
- Goodrich Landing Gear
- Honeywell
- Lockheed Martin
- Messier-Dowty
- Parker-Hannifin
- Pratt & Whitney
- Rolls Royce
- Siemens Westinghouse

### VAC AERO INTERNATIONAL INC.

#### CORPORATE HEAD OFFICE

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#### CANADIAN OPERATIONS

##### **Ontario Thermal Processing Division**

##### **Heat Treating, Brazing & Engineering Services**

1371 Speers Rd., Oakville, Ontario - Canada L6L 2X5  
Tel: 905-827-4171 / Fax: 905-825-8303  
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##### **Ontario Furnace Manufacturing Division**

##### **Furnace Equipment Manufacturing, Maintenance & Rebuild Services**

1339 Speers Rd., Oakville, Ontario - Canada L6L 2X5  
Tel: 905-827-4171 / Fax: 905-827-8217  
Service and Spare Parts: [spareparts@vacaero.com](mailto:spareparts@vacaero.com)

##### **Quebec Coatings Division**

##### **Thermal Spray, Inorganic & Pack Coatings**

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##### **Quebec Thermal Processing Division**

##### **Heat Treating & Brazing Services**

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