

FOOD PROCESSING  
APPLIED VACUUM DIVISION

BIO-PHARMA  
CHEMICAL  
NUCLEAR

Anderson Dahlen Inc.  
Shaping bright ideas into brilliant results

Advancing  
the Science  
of Vacuum  
Technology

# Applied Vacuum Division

With 30 years of experience manufacturing custom ultra-high vacuum products, our Applied Vacuum Division has the tools and technology to provide most requirements. We deliver total vacuum solutions including chambers and assemblies, flanges and components, motion, manipulation and transfer devices, as well as custom integrated equipment.

Since 1942, Anderson Dahlen has partnered with Fortune 500 and multinational companies to provide custom metal fabrication and equipment integration services from concept to completion. Our meticulous project support gives customers the confidence to let us manage their projects from start to finish.

## Products for Advanced Research and Manufacturing

Surface Analysis  
and Mass  
Spectrometry

Thin-Film  
Deposition and  
Semiconductor

Vacuum  
Annealing and  
Sintering

Nuclear and  
Particle Physics  
Research

Thermal Test  
and Space  
Simulation

0 1' 2' 3' 4' 5' 6' 7' 8' 9' 10' 11' 12' 13' 14' 15' 16' 17' 18' 19' 20' FEET

# Industrial to Extreme-High Vacuum.

Chambers for World-Class Manufacturers, National Labs, Universities and R&D Groups.

Vacuum Ranges  
of  $1 \times 10^{-3}$  to  
 $1 \times 10^{-13}$  Torr

Up to 20'  
Length and  
14' Diameter

Integrated  
Water  
Cooling

ASME/PED Pressure  
and Cryogenic  
Rated Designs

Stainless Steel,  
Aluminum, Titanium  
and Other Alloys

-0 -1 -2 -3 -4 -5 -6 -7 -8 -9 -10 -11 -12 -13 TORR



# We Can Design It. We Can Build It.

## Chambers of Any Size or Complexity

Our Applied Vacuum Division fabricates custom chambers and assemblies from moderate vacuum for industrial processes to extreme-high vacuum (XHV) for critical scientific study. What's more, we manage a range of production volume from custom design-and-build projects for national labs and universities to repeat production for equipment manufacturers.

## Engineering and Design Support

Our engineering and manufacturing resources will help take your requirements from initial concepts, to fully engineered designs, to completed and tested products ready for use.

We utilize SOLIDWORKS® 3D design and advanced analysis software, enabling expert review of critical tolerances, port alignment, chamber wall deformations, weld stresses and other features.

## Integrated Cooling Options

For vacuum systems involving processes with significant thermal output, we provide integrated cooling options such as welded and hydro-formed channels or double-wall designs.

## Rated for Vacuum, Pressure and Cryogenics

Our engineering group can assist you with design considerations to meet safety and mechanical concerns, including ratings for ASME/PED pressure and cryogenic requirements.

## Critically Cleaned, Tested and Inspected

Throughout the build process, extreme cleanliness and attention to finish quality are paramount. All welded assemblies are 100% helium leak tested. We have Certified Welding Inspectors® (CWI) to review critical weld joints. Final dimensional inspection utilizes our Coordinate Measuring Machine (CMM).

Engineer

Design

Fabricate

Machine

Weld

Assemble

Test

Install

ISO 9001: 2015 Certified, Nuclear NQA-1, ASME, AWS and PED Certified.

# Critical Components.

## Custom and Standard Components, Flanges and Fittings

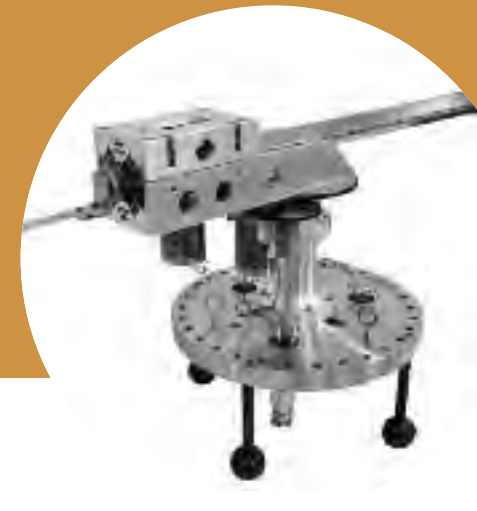
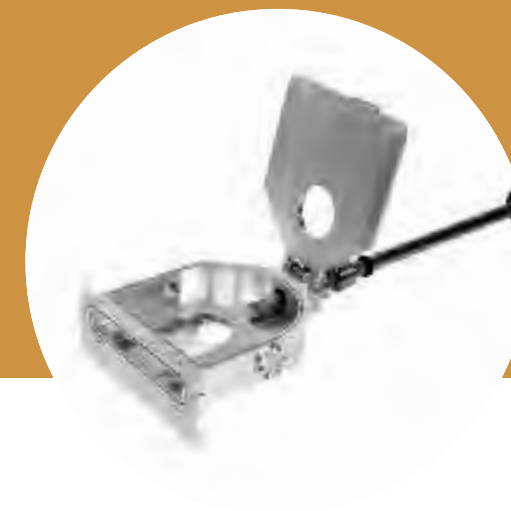
Our Applied Vacuum Division offers a complete line of CF, ISO and KF style products. We can add custom features or fabricate turnkey items from 300 series Stainless Steels (including 316LN ESR); specialty alloys such as Nitronic®, Inconel® and Hastelloy®, as well as OFHC Copper, Titanium, Aluminum, Niobium and Molybdenum.

Most vacuum systems include uniquely designed components such as base plates, hinged doors, domed lids and frames. We design and manufacture all of these and more, as separate items or as part of an integrated package.

## Motion, Manipulation and Transfer Systems

Anderson Dahlen vacuum chambers can include basic to complex sample motion, manipulation and transfer systems that ensure precision, alignment, accuracy and repeatability. Our integrated solutions range from simply adding a linear or rotary motion device to a custom chamber up to full-scale vacuum equipment with sample transfer, staging and heating/cooling.

- Linear and Linear/Rotary Magnetic Motion Manipulators
- Rotary Motion Manipulators
- Manual and Motorized Sample Transfer Systems
- Integrated Sample Transfer and Motion Manipulator Assemblies



# Custom Integrated Equipment Solutions.

Anderson Dahlen engineering and manufacturing take your requirements from initial concept to fully engineered designs and products, tested and ready for use. Our project managers combine chamber and component manufacturing with instrumentation and controls to deliver three types of custom integrated vacuum equipment.



# 1

## ■ Basic

Chamber, frame, pumps and plumbing with solenoid actuated valve options, assembled and ready for use.

# 2

## ■ Intermediate

All basic elements plus controls and pressure gauging. Options include manual switch panels or touch panel HMI systems.

# 3

## ■ Complex

A fully integrated system including pumps, power supplies, sources, instrumentation and controls with PC-based interface for recipe-driven process control, data logging and reporting. Options include heaters, chillers, deposition sources and in situ measurement.

# Large-scale project expertise

Anderson Dahlen Applied Vacuum Division specializes in engineering and fabricating large-scale projects from one-time builds of custom equipment to repeat manufacture and delivery of process modules and systems. We fabricate vacuum chambers, weldments and related components of virtually any size or complexity using the latest engineering and design software, advanced modeling and analytical tools. And we accomplish it at the lowest cost and in the shortest lead-time.

To get started on your project, call 763-852-4700  
or visit us at [AndersonDahlen.com](http://AndersonDahlen.com).

PRESSURE RANGE	TORR	PA	ATMOSPHERE
Positive pressure	760 to 1.6x10 <sup>+5</sup>	1x10 <sup>+5</sup> to 2.1x10 <sup>+7</sup>	1 to 204
Low vacuum	760 to 25	1x10 <sup>+5</sup> to 3x10 <sup>+3</sup>	1 to 3x10 <sup>-2</sup>
Medium vacuum	25 to 1x10 <sup>-3</sup>	3x10 <sup>+3</sup> to 1x10 <sup>-1</sup>	3x10 <sup>-2</sup> to 1x10 <sup>-6</sup>
High vacuum	1x10 <sup>-3</sup> to 1x10 <sup>-9</sup>	1x10 <sup>-1</sup> to 1x10 <sup>-7</sup>	1x10 <sup>-6</sup> to 1x10 <sup>-12</sup>
Ultra-high vacuum	1x10 <sup>-9</sup> to 1x10 <sup>-12</sup>	1x10 <sup>-7</sup> to 1x10 <sup>-10</sup>	1x10 <sup>-12</sup> to 1x10 <sup>-15</sup>
Extreme-high vacuum	<1x10 <sup>-12</sup>	<1x10 <sup>-10</sup>	<1x10 <sup>-15</sup>



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