



**TetraTek Products, Inc.**  
We Put It All Together

# TetraTek VacTek Cryogenics

Advanced High Vacuum  
Cryogenic  
Thermal Shrouds and Systems

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## TetraTek VacTek Cryogenics

Advanced Cryogenic Vacuum Systems

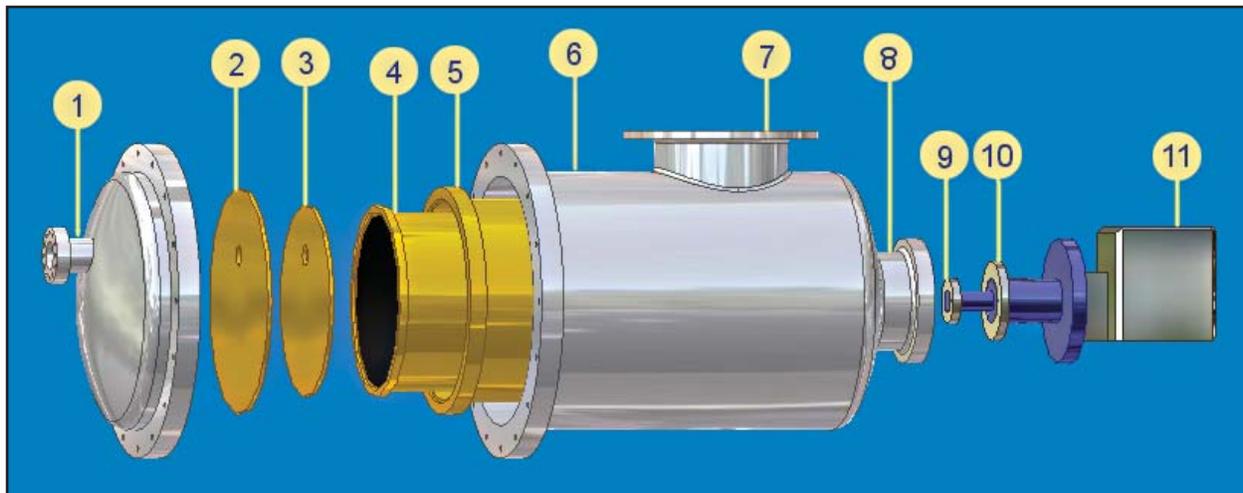
Conductive high vacuum gold plated cryogenic shrouds and systems from TetraTek Products, Inc.

Our unique VacTek shrouds are fabricated from gold plated, oxygen free, rolled, welded, and plated copper. Inside one of our electropolished stainless steel vacuum vessels using some unique techniques developed by TetraTek, and a commercial Helium Cryoengine, we are able to achieve temperatures on the inner shroud surface of approximately 10 Kelvin (10 C above absolute zero) without the use of any expendable cryogenic such as liquid nitrogen.

These systems are sometimes used for research in low temperature cryogenics, space simulation, as an infrared background for liquid helium cooled IR instruments, and for specialized materials research.

A typical system might include:

1. An electropolished stainless steel access door and optical inlet flange.
2. A copper outer shroud door, gold plated on both sides .
3. A copper inner shroud door, gold plated, with black paint inside.
4. A copper inner shroud, gold plated with black paint inside.
5. A copper outer shroud, gold plated both sides.
6. An electropolished stainless outer vacuum pressure vessel.
7. An optional, ASA flanged, stainless steel optical sensor interface port.
8. A cryoengine stainless steel conflat flange attachment port.
9. The cryoengine low temperature connection plate.
10. The cryoengine medium (liquid nitrogen) temperature connection plate.
11. A commercial cryoengine.





# TetraTek VacTek Cryogenics

Optimized to Your Specifications

At part of TetraTek's VacTek Cryogenics services we offer systems that include:

- ❖ Stainless steel or aluminum slide or angle valves.
- ❖ High vacuum electrical and fluid feedthroughs.
- ❖ Liquid nitrogen cooled shrouds and baseplates.
- ❖ Refrigeration cooled and electrically heated baseplates.
- ❖ Helium cooled optical sensing systems.
- ❖ Helium Sterling Cycle Engine cooled shrouds.
- ❖ Vacuum roughing pumps, filters and traps.
- ❖ Cryopumps.
- ❖ Turbomolecular pumps and power supplies.
- ❖ Thermocouple and sensor feedthroughs.
- ❖ Ferrofluidics feedthroughs and external motor drives.
- ❖ Vacuum monitoring and control instrumentation.
- ❖ Vacuum rated product and test handling fixtures.
- ❖ Process control instrumentation and software.
- ❖ Data acquisition systems.
- ❖ Optically dense baffles and cryogenic cold traps.

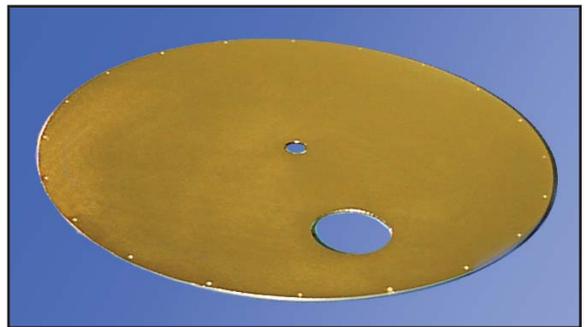
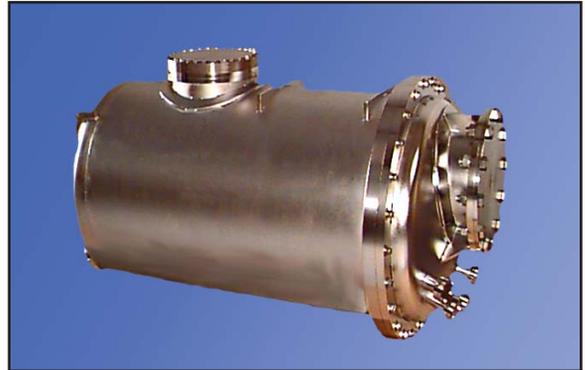
Our equipment is normally used for scientific research, space simulation, thermal vacuum testing, vacuum coating, and electronic production processing.

## Our vacuum vessels feature:

- ❖ 304 or 316 heliarc welded stainless steel construction.
- ❖ Electropolishing on the inside surfaces.
- ❖ Leak testing to  $1 \times 10^{-9}$  std cc/sec.
- ❖ Standard Conflat, KF, ISO, or ASA type flanges.
- ❖ Roughing and/or gauge ports.
- ❖ Sand or bead blasted exterior finish.

## Our unique copper thermal shrouds include:

- ❖ Oxygen free copper rolled and welded construction.
- ❖ High vacuum rated paint on the heat transfer side.
- ❖ 24-K pure gold plating for IR heat transfer resistance.
- ❖ Gold plated and stainless steel machined hardware.
- ❖ Optically dense openings or IR shields.
- ❖ Black anodized aluminum product support structures.
- ❖ Stainless steel hardpoints.



## Information and Quotations from TetraTek:

For additional information, you may wish to review our Industrial Equipment web site <http://www.tetratekproducts.com>.

We are happy to share our expertise with you. Quotations are prepared promptly based upon your specific needs. We also supply budget information for future planning purposes. If you need advice on a current or upcoming project, please contact us. In most cases, there is no charge.