Fast validation

Faster cycle times

Fastest finished product

ADVANCED FREEZE DRYING SYSTEMS
THAT ADVANCE
YOUR TIME TO MARKET
The old adage "Time is money" has never been more true than in today's highly competitive pharmaceutical marketplace. When a single delay can cost millions of dollars, waiting for a freeze drying system to perform to expectations is simply not an option. No company in the world understands this better or takes its responsibility more seriously than Hull Company.

That's why everything we do — from the way we've structured the organization and the capital investments we make, to the processes we follow and the professionals we hire — are designed to meet and exceed our clients' expectations with the most advanced, the most cost-efficient, and the most dependable freeze drying systems in the world.

With more than 750 installations worldwide in the pharmaceutical, biotech, chemical, veterinary and food processing industries, Hull is the leading global designer and manufacturer of high performance freeze dryer solutions. Since 1954, Hull has developed more breakthrough technology and holds more patents than any other supplier of lyophilization systems. Many of the technologies conceived at Hull are now standard practices in widespread use today.

Get more product to market faster. Hull lyophilizers are designed for easier validation, shorter cycle times, better throughput and a higher return on investment.
Hull designs a sub-opening within the main door of a freeze dryer to allow safe, easy infeeding and outfeeding to and from each vertically adjustable shelf. Safety systems are provided to prevent closing of the subdoor when any object is in the passageway.
Container Stopping Apparatus with Adjustable Shelves / Patent # 4,736,691

Hull creates an adjustable system of vertically spaced shelves in which a fluid pressure piston-cylinder unit automatically adapts the space between shelves to seal the containers.
At Hull, we do something very unique and unusual: we listen. We make certain we understand all the intricacies of your operation and everything that may impact your freeze drying process. After we listen, we look for ourselves. We conduct a thorough analysis of your facility, often uncovering and solving potential problems before they turn into costly delays.

From the initial meeting through the time your new system is up and running, your Hull Sales Regional Manager works closely with the Project Manager to assure that all of your needs and requirements are addressed. The Regional Sales Manager becomes your voice within Hull, as your project progresses through every stage.

We know that every application is unique, with its own individual challenges. Hull has the commitment and the resources to design and build systems that precisely match each client's individual needs. Whether you have space restrictions that require a special multi-level unit, or need a system that reaches exceptionally low temperatures, Hull has the technology that works for you.

Despite what some manufacturers may tell you, one approach does not fit all! The more a system is customized to your operation, the better it will perform for you — improving efficiency, product yield and your bottom line.

Hull takes customization to a higher level. This improves your product yield and, ultimately, your bottom line.
At Hull, we believe that to get the job done right, we should do it ourselves. That's why all the critical manufacturing processes are performed in our own facility by our own personnel. Hull utilizes a vertical integration process that affords us ultimate control over quality, scheduling and cost.

Everything is tested in process stages and re-tested during factory acceptance testing. We meet all ASME code requirements and, for European installations, we provide European Union (EU) Certification. Many of our standards are even higher than those required to receive validation. Before any freeze drying system leaves our plant, it must pass a battery of tough tests. We work out the "bugs" so you don't have to. We also provide a complete documentation package to meet current industry standards on every unit. But it doesn't stop there. Hull experts are on-hand to supervise installation and provide validation assistance at your facility.

Our no-nonsense approach to quality control has earned Hull international acclaim and ISO 9001 registration. Perhaps more important, it is responsible for Hull having the best validation record in the lyophilization industry. Hull units typically validate much faster than other manufacturers' systems.

Hull's unique quality control process produces systems that validate quicker and get you into production faster.
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Flexible Piston Rod Sleeve for Freeze Dryer Chamber Sterility / Patent # 4,921,273

To assure that the shelf-operating piston rod does not allow contaminants into the freeze dryer chamber, Hull encloses the piston rod in an impervious flexible sleeve that is capable of extending and retracting with the piston rod.
Cyclonic Vapor Flow Condenser / Patent # 5,236,041

Hull designs a system whereby all surfaces of a condenser can be exposed to cleansing fluids from a minimum number of direct spray nozzles. It includes a three-stage cyclonic vapor distributor and a number of cooling surfaces arranged in an optically dense configuration for high sublimation rate performance.
Your Hull freeze drying system will not only be up and running faster, it will also be running longer. It’s not uncommon for our units to last 30 years or longer. We believe that says a lot about our commitment to quality. Intelligent design and attention to even the smallest detail are standard with every Hull lyophilizer.

Since you’re bound to be using your Hull system for a long time, you’ll be pleased that we’ve designed it with a host of features that make it easy to operate, clean and maintain, and with innovations that deliver years of trouble-free superior performance. For example, our steam-in-place and clean-in-place features use a single piping arrangement to provide completely automated cleaning and sterilization. We designed a unique plate coil condenser that is easier to clean than a traditional tube coil condenser. There are literally hundreds of innovations that make Hull freeze dryers more productive, more practical and more durable.

We design and build our systems to stand the test of time; and, according to our customers, we continually pass the test with flying colors.

Your Hull system is a long-term investment.
In fact, it may still be going strong 30 years from now.
When you purchase a Hull freeze drying system it's the beginning of a long-term relationship. Actually, the relationship begins even before the sale. An experienced, knowledgeable account representative reviews all your requirements, discusses your needs, answers all your questions, and remains in contact with you throughout the entire design, manufacturing, installation and testing process. You always have someone on the inside at Hull who is familiar with your project and happy to discuss any details with you.

Your connection with Hull becomes even stronger after your freeze dryer is delivered. We are with you at every critical juncture, and always available to provide whatever support you may need. Not only is your unit designed to exceed your expectations, we also provide the training and support to ensure optimal performance.

Hull offers a variety of service contracts that, like our freeze drying systems, are customized to meet your needs. From our basic Preventive Maintenance Programs to Share-Care, Block of Time and Maintenance Audit Programs, Hull can deliver the precise degree of service you need.

No matter which of our many flexible service/maintenance contracts you choose, you always have direct access to Hull engineers, you can get quick answers to questions, and we're available to provide training and solve problems for as long as you own the system — and, considering how Hull systems are built, that could be a very long time!

If you have any doubt about the built-in longevity of a Hull freeze drying system, just look at our warranties. They are among the longest and most generous in the industry.

The freeze dryer you choose is only as good as the support that comes with it.
Hull's innovative rotary disc valve eliminates the possibility of particulate matter being generated by the outside diameter of the valve disk scrubbing against the valve liner as it affects a seal. It also does away with the typical maintenance problems associated with butterfly and other valve types.
Hull improves productivity and cost-efficiency with a system for automatically loading and unloading containers into and out of freeze dryers. The system includes a conveyor that brings the containers to the loading station and a vehicle that transports containers between stations and freeze dryers.
Only Hull maintains an extensive Life Cycle Care Program that is uniquely qualified to re-engineer, upgrade and remanufacture freeze dryers, freezers, sterilizers and vacuum and pressure vessels.

Our combination of skilled professionals, technological expertise, extensive facilities and equipment, and ASME Pressure Vessel Certified welders enables us to offer the widest variety of upgrade and refurbishing options. With our Life Cycle Care Program, your Hull system will be given a new lease on life. We can even take units made by other manufacturers and rebuild them with Hull innovations to suit your needs precisely.

Hull also buys used equipment, takes old systems in trade for new or refurbished ones, sells and leases refurbished equipment, and offers generous warranties on rebuilt systems. Many companies on a limited budget find they can save considerably and eliminate waiting time by opting for a unit that’s been refurbished by Hull.

No matter what your budgetary requirements, there is a way for your company to benefit from Hull service, support and equipment.

**Life Cycle Care:** Hull’s rebuilding, upgrading and remanufacturing capabilities can extend the life of your system beyond your expectations.
Since the midpoint of the twentieth century, Hull has been an innovative leader in the advancement and practical application of freeze-drying technology. If you receive a vaccine anywhere in the world, it was probably produced in a Hull freeze dryer.

We hold 16 patents for process and system innovations — more than any other manufacturer. That means your Hull freeze-drying system will contain some features that are simply not available from any other manufacturer. For example:

- **The Hull-Engineered Subdoor**, specially designed for automated access, containment and process events.
- **Unique Rotary Disc Valve** enables airtight sealing with no friction, thus eliminating the possible production of contaminants; allows in-place seal replacement.
- **Completely Automatic, Operator-Free Loading/Unloading Systems** prevent contamination, decrease production costs and ensure product quality.
- **Automated Clean-In-Place/Steam-In-Place Sterilization** facilitates process validation and increases operating efficiency.
- **Smart Cool System** provides a more precise means of adjusting shelf temperature control.
- **AutoLock Door**, an automated locking system that keeps contaminants from entering the chamber and also enhances safety and facilitates maintenance.
- **Cyclonic Vapor Flow Condenser**, a system that allows all surfaces of a condenser to be easily cleaned. Vapor distribution is designed for higher sublimation.

The list of past Hull innovations goes on and on. And, rest assured, we are committed to continuing lyophilization innovation well into the future.

Continuing a proud history of **innovation** into the future.
Hull Flex Autolading/Unloading System

Hull introduces a flexible conveyor autolading/unloading system capable of loading vials at a rate of 300-500 per minute, depending on the size of the vials.