

On-Board® IS 250FE and On-Board IS 320FE Cryopumps

Highest Pumping Speed

Specifically Designed for Ion Implant Applications

Optimized for Tool Throughput

- 55% Improvement in Hydrogen Pumping Speed
- Meets Existing Safety Guidelines

Intelligent “Self Adjusting” Technology

- Automatic Cryogenic Heat Load Compensation
- Variable Speed Motor and Control System with Reduced Vibration

Lower Cost of Ownership

- More Pumps per Compressor
- Energy Savings with No Compromise in Productivity
- Variable Speed Motor Maximizes Pump Operational Life

Increased Up-Time

- IntelliPurge Power Failure Pump Management
- Integrated Helix GoldLink® Connection

The harsh environment of Ion Implant processes requires consistent vacuum pumping that maximizes throughput, availability and product yield.

Hydrogen gas is one of the principle by-products of the ion implantation process and can cause detrimental effects on both product yield and tool throughput. The On-Board IS 250FE and On-Board IS 320FE cryopump system is designed to deliver the highest hydrogen vacuum pumping speed possible, thus combating the possible impact on tool throughput. Breakthrough technology utilizing Helix's extensive cryogenic pump design capability enables these cryopumps to outperform all other comparably sized pumps and still meet our stringent safety guidelines.

Helix Technology's On-Board IS 250FE and On-Board IS 320FE cryopump systems utilize intelligent system controls to deliver better process quality, vacuum consistency and up-time. Intelligent system controls allow for 'real time' system knowledge for managing motor speed and cryogenic temperature. The On-Board IS system automatically adjusts for changing heat/gas loading conditions resulting in enhanced vacuum consistency and improved inter-wafer recovery time. In addition, On-Board IS cryopumps adjust for accumulation of process-related coatings with no compromise in reliability and productivity.

The On-Board IS system ensures full use of system level helium resources for any operational condition. This results in a substantial reduction in cost of ownership due to continuous optimization of helium allocation per pump, thus increasing the pump-to-compressor ratio. With On-Board IS cryopump systems lower power and cooling water consumption can be achieved.

On-Board IS cryopumps for Implant include proprietary regeneration sequences that optimize regeneration time and allow longer run times between regeneration. The very nature of this regeneration program considerably reduces the impact of ion implant residuals in the pump, providing longer pump life. The “IntelliPurge” power management routine reduces unexpected pump regeneration due to a short-term power failure, while ensuring safety should power remain off for an extended period of time.

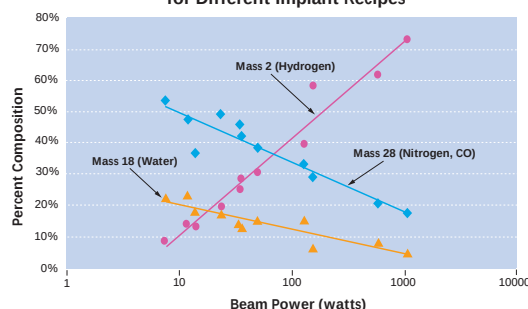
To reduce system cost and increase simplicity, the On-Board IS cryopump system includes an integrated TC gauge and controller for a gate valve, eliminating the need for additional controllers. In addition, integrated rough, purge, vent valves and controls are included, increasing serviceability and system reliability.



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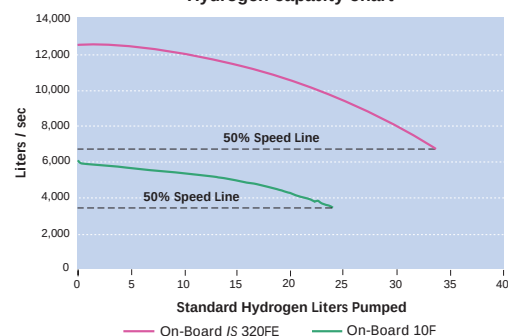
On-Board IS 250FE and On-Board IS 320FE Performance

Percent Composition of Photoresist Outgassing for Different Implant Recipes



This data clearly shows that hydrogen outgassing is significant at higher beam power.

On-Board IS 320FE Cryopump Hydrogen Capacity Chart



The On-Board IS 320FE cryopump has very high hydrogen pumping speed to combat hydrogen gas during ion implantation.

	On-Board IS 250FE	On-Board IS 320FE
Gas Pumping Speeds		
Water	6,500 L/Sec	11,000 L/Sec
Air	2,200 L/Sec	3,600 L/Sec
Hydrogen	7,000 L/Sec	12,500 L/Sec
Argon	1,800 L/Sec	3,000 L/Sec
Gas Capacities		
Hydrogen	24 L	30 L
Crossover	150 Torr-L	300 Torr-L
Typical Regeneration Times (includes 20 min. extended purge time)		
Full (First and Second Stage)	115 Minutes	150 Minutes
FastRegen™ (Second Stage Only)	50 Minutes	75 Minutes
Vacuum Flange Inner Diameter	10 inches (250 mm)	12.6 inches (320 mm)

Physical Features

Features for On-Board IS 250FE and On-Board IS 320FE

Integrated Controls

- Pump-mounted, Field-replaceable Module
- Motor Drive Electronics
- Host Computer Interface (RS-232C, DB-9 Connector)
- First Stage Temperature Control
- Helium Management
- Service Communications Port
- Remote Display Option (USB connector)
- Support for Helix Inter-component Network

Integrated Accessories

- First and Second Stage Temperature Sensors
- First and Second Stage Heaters
- Purge Valve
- Roughing Valve
- Vacuum (T_c) Gauge
- Pressure Relief Valve
- Exhaust Purge Valve
- IntelliPurge System

Pump Motor	Variable Speed (low vibration, 3-Phase)
Power Source	Direct 208 VAC (1φ @ 5A) power connection to On-Board IS Cryopump
Compatible Compressors	On-Board IS 1000

Helix Global Customer Support

All CTI-Cryogenics products are supported by a panel of services which includes:

GUTS® (Guaranteed Uptime Support), our rapid response network delivers fast, competent action whenever you need a part, a pump or service. You deal directly with a vacuum expert from our worldwide technical support team. GUTS works for you 24 hours a day, 365 days a year. Call 1-800-FOR-GUTS (800-367-4887).

e-JIT powered by GOLDLink®, our Global On-Line Remote Diagnostics Tool, enables predictive maintenance-based Repair Scheduling.

Performance Upgrades provides tailored system upgrades to maximize efficiency and performance.

TrueBlueSM Service Agreements, custom-tailored to your company's requirements, help you maximize efficiency enterprise-wide, reducing your total cost of ownership while optimizing return on investment.

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