8671i SERIES

8671i Series:

The KDF ***8671i*** system is a 3 or 4 target sequential RF and DC sputtering system. The base system comes with three, eight inch RF diode cathode assemblies along with RF etch and RF bias. The ***8671i*** is a manually loaded batch tool that is excellent for both R&D and small production lots.

System Description:

The main chamber is 28 inches in diameter and is 10 inches deep, the all stainless steel design chamber, base plate and top plate provide the basics for a robust tool. The main chamber has three spare V4 ports on it along with a four-inch front viewing window, with inside sacrificial window. The upper top plate houses three eight inch RF diode cathodes and also provides the main feed thru for the etch/bias platform. The platform indexes and rotates as needed.

The three cathodes are mounted at 90 degrees apart from one another; a two-shutter design provides isolation of the substrates and unused targets during sputtering or etching operations. The ***8671i*** is a sputter down system that is extremely versatile for a variety of applications; the adjustable anode to cathode distance allows flexibility of substrate geometries (1.75” - 3.25” anode to cathode distance). An air/hydraulic cylinder raises and lowers the top plate to allow loading and unloading of substrates.

The system utilizes a CTI Cryo 8 pump coupled with an air-cooled 8200 series compressor via 10ft helium lines. An Alcatel 27 cfm mechanical pump and bakeable trap are standard. A stainless steel eight inch gate VAT valve provides isolation in the pumping stack along with upstream pressure control for precision process gas control. Chamber rough and regen rough valves are SS in a SS pumping line. MKS mass flow controller and MKS pressure manometer are used for control and measuring the process gas. Typically a 200 sccm MFC is used in conjunction with a .1 torr manometer, thus allowing for a wide range and precise pressure control.

In line with your process

The ***8000i Series*** systems offer customer application diversification at very low cost. All of KDF’s systems are engineered to meet versatility and high throughput demands across a number of markets at the industry’s lowest cost of ownership.

- **Research and development**
- **Emerging materials**
- **Flat panel displays**
- **Optical communications**
- **Medical devices**

Across all platforms, KDF’s batch sputtering systems are easier to use, maintain and offer a high degree of versatility. KDF’s solutions provide users with increased:

- **Film uniformity**
- **Versatility**
- **Process stability**
- **ROI**
- **Automation**
- **Tool uptime**
- **Reliability**
- **Environmental health and safety benefits**

KDF meets the needs of its customers by quickly developing tailored solutions and building on its core competencies. KDF can specifically modify its tools to increase throughput, ROI or time to market to configure the in-line sputtering system that you need. All existing KDF equipment is supported with upgrades and retrofits. In addition, as the OEM for MRC batch systems, KDF sustains all MRC batch products.

The upper RF matching network provides fully automatic control for all modes of sputtering and etching, along with biasing of all cathodes.

The operating system consists of a distributed Rockwell Control System utilizing DeviceNet and Ethernet IP field bus technologies and maintenance test suite with full diagnostic and manual process control capability. The software allows for fully functioning auto pump down, vent and auto cryo regeneration sequences. Software is designed utilizing user-friendly graphics visually indicating the status of discreet components. The process screen allows for user selectable variables such as power, gas flow and process time, and gives the operator the ability to run automated steps. Process variables are monitored for out of tolerance conditions and the system will abort for such.

8671i Vacuum Specifications

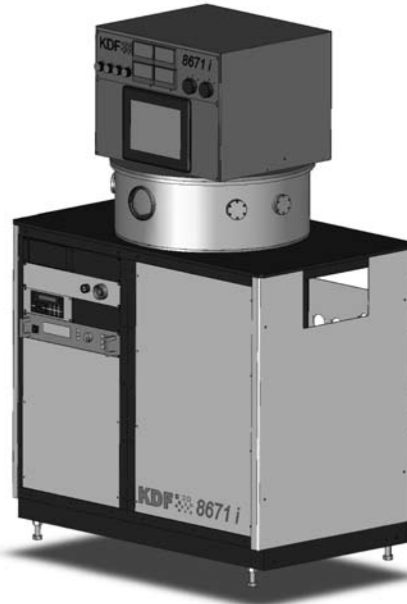
- Chamber ultimate $\leq 1 \times 10^{-7}$ torr.
- Chamber leak rate, 10 minutes to 1×10^{-4} torr.
- Pump down from atmosphere 30 minutes or less to 1×10^{-6} torr.

8671i System Hardware

- 1200W/RF solid state power supply (Advanced Energy Dressler series).
- 8” VAT throttling gate valve.
- Granville Phillips integrated comprehensive gauge control package, including manometer, ion gauge and convectron tubes for high and low pressure monitoring.
- Process gas capability using ultra clean no bend SS welded lines with MKS flow controller.
- Automated water cooled switching network for cathode sputtering, biasing and etching.
- CTI 8 Cryo pump and 8200 series compressor.
- Fully automatic shutdown control.
- Stepper motor driven anode rotatinon for precise speed control and position indexing. Variable speed from 0-10 rpm.

8671i Computer Sub-System

- Rockwell control system.
- 12” touch screen controls
- Rockwell next generation I/O and process control modules.
- Full diagnostic test capability via multiple I/O screens.
- Can be run in automatic or manual mode.



8671i Basic Facility Requirements

- Power: 208 VAC, 3-phase, 60 Amps.
- Water: 4 GPM, 60 PSIG min., 10°C - 24°C.
- Compressed Air: 85 - 100 PSIG.
- Process Gas: 25 PSIG 99.999%.
- Pure Gas: Dry N_2.

8671i Options

- 3.0kW/RF solid state power supply for increased power levels.
- Indirect heat station for pre or post heating of substrate. Heating capability of pallet to 600° C radiant.
- Water cooled compressor and/or 20ft helium lines.
- Extra process gas expandability via additional flow controllers.
- 18” quick view touch screen.
- Ferro fluidic feed-thru for anode and shutters.
- 8” magnetron cathodes for additional uniformity improvements.
- Adapter kits for 3”, 4” or 5” diode targets.
- 3kW AE Pinnacle DC power supply for magnetron sputtering or AE Pinnacle Plus DC power supply for reaction sputtering.
- 4th target position.
- 14” tall chamber for larger substates

* Contact KDF for details on the many optional features available for ***8671i*** systems. Specifications subject to change.

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