



KDF
in line with your process

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The most reliable in-line sputtering tools in the industry are developed and manufactured by KDF. 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.

- **Mainstream silicon**
- **Emerging materials**
- **Flat panel displays**
- **Optical communications**
- **Medical devices**

Across all platforms, KDF's in-line batch sputtering systems are easier to use and maintain than cluster tools. KDF's solutions provide users with increased:

- **Film uniformity**
- **Throughput run to run**
- **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 engineer its tools for increased throughput, ROI or time to market. 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 offering complete parts and service support on a world wide basis.

900i Series:

903i, 943i, 943ix, 954i and 954ix

Designed to meet today's stringent production requirements, the **900i Series** offers process flexibility typically found in R&D systems. The **900i Series** surpasses the criteria for deposition of thin films in application critical devices and other applications requiring the absolute in uniformity.

- **Horizontal cathode and substrate orientation for gentle substrate fixturing and varied substrate sizes**
- **12" x 12" substrate area**
- **Capacity to process dimensional substrates up to 1.5" thick**
- **Optional hardware allows for 2" thick substrates**
- **High-rate DC magnetron sputtering and single/multiple-pass deposition features**
- **Capacity to process up to one 300 mm wafer or multiple smaller wafers at a time**
- **Convenient wafer to pallet loading ability**
- **Optional high vacuum loadlock configuration with quartz heater lamps for efficient degassing of substrates**
- **Optional planetary substrate pallet for unsurpassed film uniformity**
- **Optional integrated RGA for process fault monitoring of gas peaks along with integrated hi vac step**

The **900i Series** systems can be equipped with KDF's exclusive and innovative Enhanced Rotary Planetary Pallet (ERPP™), which provides greatly improved wafer uniformities. In tandem with KDF's cathodes, this pallet option can achieve better than $\pm 1\%$ uniformities across the pallet and better than 0.5% repeatability between runs for dielectrics such as SiO_2 and TiO_2 , compared with traditional pallet uniformities of $\pm 15\text{-}20\%$ for such materials.

For special applications the patented design of the LMM™ Cathode is engineered for efficiency in today's most demanding applications by providing bulletproof high-rate reactive process, full face erosion and low particle generation. Optional gas delivery systems allow for enhanced reactive processes.



900i SERIES

903i

The **903i** is targeted at contact metallurgy processing because of its pure metal target deposition and convenient wafer to pallet loading abilities, for sputter down applications. The base **903i** with its rough pumped load lock allows users to achieve fast production exchange cycles.

943i

The **943i** builds on the 903 base by adding a high vacuum pumped load lock with quartz heat lamps. The **943i** is ideally suited for manufacture of application critical thin films for hybrid circuits for defense, aerospace and space telecommunications applications. These applications normally require repeatable, high-throughput process for producing uniform films.

954i

The **954i** is designed for processing GaAs and other compound semiconductor applications. It is a four-target batch sputtering tool for both front and backside deposition, providing high utilization that increases cost-effectiveness and productivity.

943ix and 954ix

The **943ix** and **954ix** are two of KDF's **x Series™** products. They feature the latest KDF cathode designs, which have been lengthened to 17 inches, offering improved uniformity over the entire pallet. **xSeries™** cathodes are available in both Planar™, Inset™ and RF/DC LMM™ cathode form.

900i Series Vacuum Specifications

- Chamber ultimate $\leq 1 \times 10^{-7}$ torr.
- Chamber leak rate, 20 minutes to 1×10^{-4} torr.
- High vacuum dome ultimate $\leq 1 \times 10^{-7}$ torr.
- High vacuum dome leak rate, 15 minutes to 1×10^{-4} torr.
- Pump down from atmosphere 110 minutes or less to 1×10^{-6} torr or 2×10^{-7} torr overnight.
- Load-lock high vacuum pressures utilizing CTI-8 cryo pump.

SYSTEM CAPACITY							
900i PALLET SIZE 13" x 13"	2" wafers	3" wafers	4" wafers	5" wafers	6" wafers	8" wafers	300mm
	36	16	9	5	4	1	1

900i Series System Hardware Features

- 12kW low stored energy DC power supplies (Advanced Energy). Optional Pinnacle Plus power supplies.
- Integrated throttling SS VAT valve allowing for upstream or downstream pressure control.
- MKS multi component "Smart" 390 and 925 gauges for integrated vacuum measurements.
- Fully automated self locking top plate support system.
- Process gas control with up to four gas controllers; feedback controlled capacitance manometer; master/slave gas select ability; and gas ratio control.
- Stepper motor pallet carrier drive with optical encoder providing accurate programmable pallet carrier positioning, scan velocity profiling available.
- Low pressure hydraulics system for safety and smooth operation.
- Loadlock linear sensor – computer controller positioning system for increased loadlock accuracy and more limited fail-safe.
- 1.25kW/RF solid state power supply (Advanced Energy).
- Complies with NFPA79 guidelines
- Consult factory for an extensive list of standard options.
- Optional Pallet Stacker replaces dual pallet shelf load-lock with 6 shelf hanger that allows for 5 pallet sequential operation.

900i Series Computer Sub-System

- Windows™ 10 based real-time GUI environment, coupled with 24" LCD touchscreen monitor mounted on an umbilicaled mobile HI cart.
- Context sensitive recipe manger running out of Microsoft® SQL database.
- Fully integrated package for real-time data display, data logging fully compatible with Excel™, Lotus™ and other Windows™ applications, report generation, remote interface and printing.
- Optional connectivity to SECS/GEM communication and Windows™ applications through and OPC server interface.
- Distributed Rockwell Control System utilizing Device Net and Ethernet IP field bus technologies.
- Maintenance test suite with full diagnostic and manual process control capability.
- Service friendly fully enclosed electronic cabinet.

900i Series Basic Facility Requirements

- Power: 208 VAC, 3-phase, 100 Amps.
- Water: 6.5 GPM, 70 PSIG min., 10°C - 24°C.
- Compressed Air: 85 - 100 PSIG.
- Process Gas: 25 PSIG 99.999%.
- Pure Gas: Dry N₂

* Contact KDF for details on the many optional features available for **900i** series systems. Specifications subject to change.



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900i SERIES