

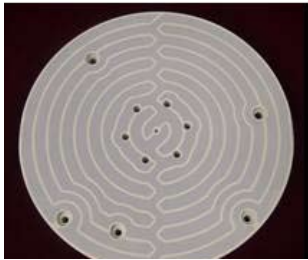


MOMENTIVE

performance materials

Custom Chamber Solutions: Heater and Electrostatic Chuck Assemblies

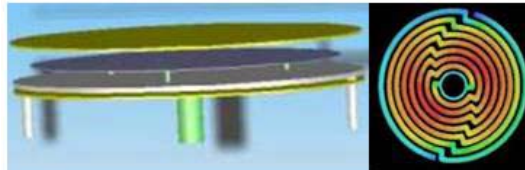
PBN/PG Heaters &
E-Chucks



- Temperatures > 1500°C
- Ramp rates up to 600°C/minute
- Thermal uniformity (< 1%), tunable multiple zones
- JR and coulombic e-chucks

+

Design & Build



- 3D solid modeling
- ANSYS™ and Fluent™ thermal/mechanical modeling
- Global quartz technology leadership
- Close customer engineering relationships for custom solution development

=

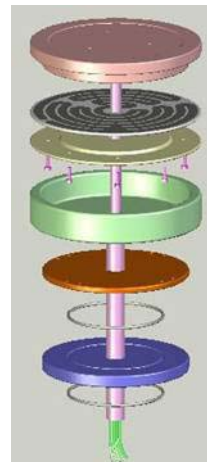
Production Scale
Chamber Solutions



- Clean room ready modules
- Performance validation and testing
- Ongoing production and assembly
- Global support and supply

Custom solutions

With a global staff and an integrated test facility, Momentive's Heater Assemblies Team can provide the custom thermal solutions you need - designed, modeled, built, and tested using Momentive's globally-recognized, Six Sigma process control methodology.

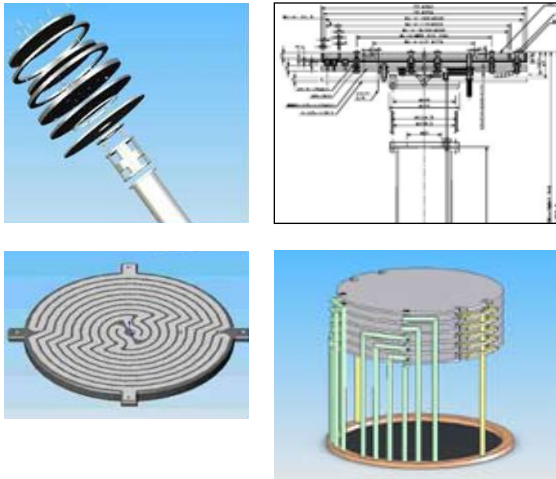


Test capabilities:

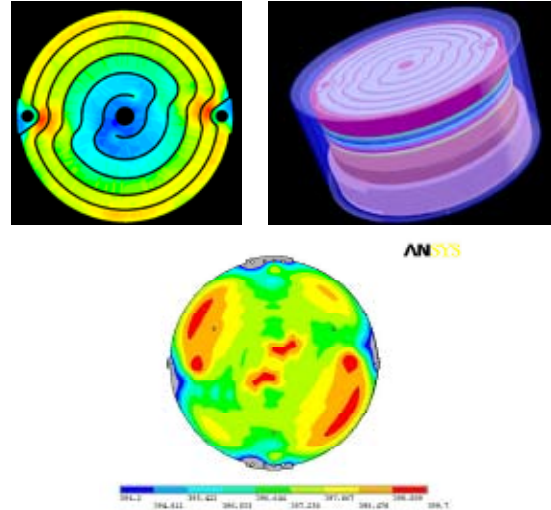
- Class 1000 clean room
- Thermal evaluation
 - SensArray™ wafers
 - IR camera
- Plasma capability
- Chuck force measurement
- Accelerated life testing

Heater assemblies: from concept through production reality

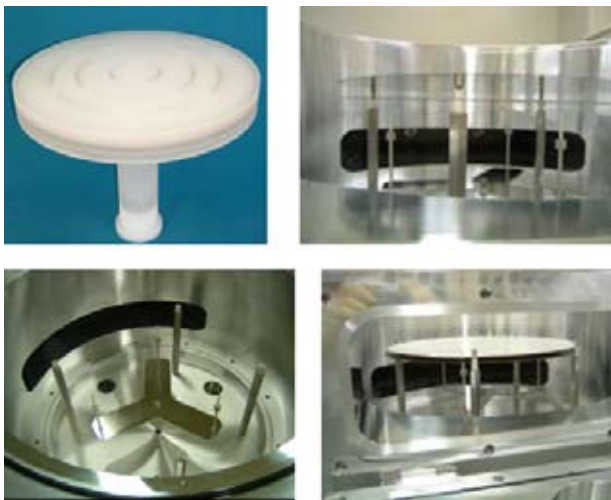
Design



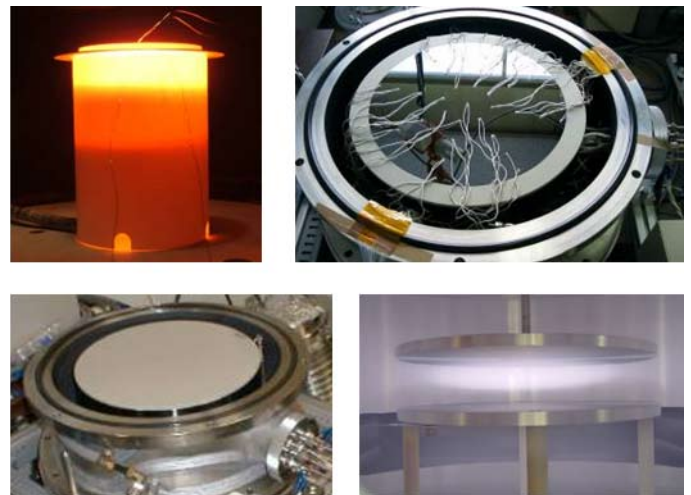
Model



Build



Test



Applications

PVD Ion Implant MOCVD CVD ALD RTP PE-CVD

www.momentive.com

SALES OFFICES	USA	GERMANY	JAPAN	CHINA
	T: 440.878.5700	T: 49.4152.9380	T: 81.3.5114.3774	T: 86.21.6288.1088
	F: 440.878.5928	F: 49.4152.938.136	F: 81.3.5114.3779	F: 86.21.6289.0681
	E: cs-na.ceramics@momentive.com	E: cs-eur.ceramics@momentive.com	E: cs-jp.ceramics@momentive.com	E: cs-asia.ceramics@momentive.com

DISCLAIMER: THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC., MOMENTIVE PERFORMANCE MATERIALS USA INC., MOMENTIVE PERFORMANCE MATERIALS ASIA PACIFIC PTE. LTD., MOMENTIVE PERFORMANCE MATERIALS WORLDWIDE INC., MOMENTIVE PERFORMANCE MATERIALS GmbH & Co. KG, MOMENTIVE PERFORMANCE MATERIALS SUISSE Sarl, THEIR SUBSIDIARIES AND AFFILIATES DOING BUSINESS IN LOCAL JURISDICTIONS (collectively "SUPPLIERS"), ARE SOLD BY THE RESPECTIVE LEGAL ENTITY OF THE SUPPLIER SUBJECT TO SUPPLIERS' STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIERS MAKE NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING SUPPLIERS' PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. AFOREMENTIONED EXCLUSIONS OR LIMITATION OF LIABILITY ARE NOT APPLICABLE TO THE EXTENT THAT THE END-USE CONDITIONS AND/OR INCORPORATION CONDITIONS CORRESPOND TO THE RECOMMENDED CONDITIONS OF USE AND/OR OF INCORPORATION AS DESCRIBED BY SUPPLIER IN ITS PRODUCT DATA SHEET AND/OR PRODUCT SPECIFICATIONS. EXCEPT AS PROVIDED IN SUPPLIERS' STANDARD CONDITIONS OF SALE, SUPPLIERS AND THEIR REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN.

Each user bears full responsibility for making its own determination as to the suitability of Suppliers' materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Suppliers' products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Suppliers' Standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Suppliers. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Suppliers or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.