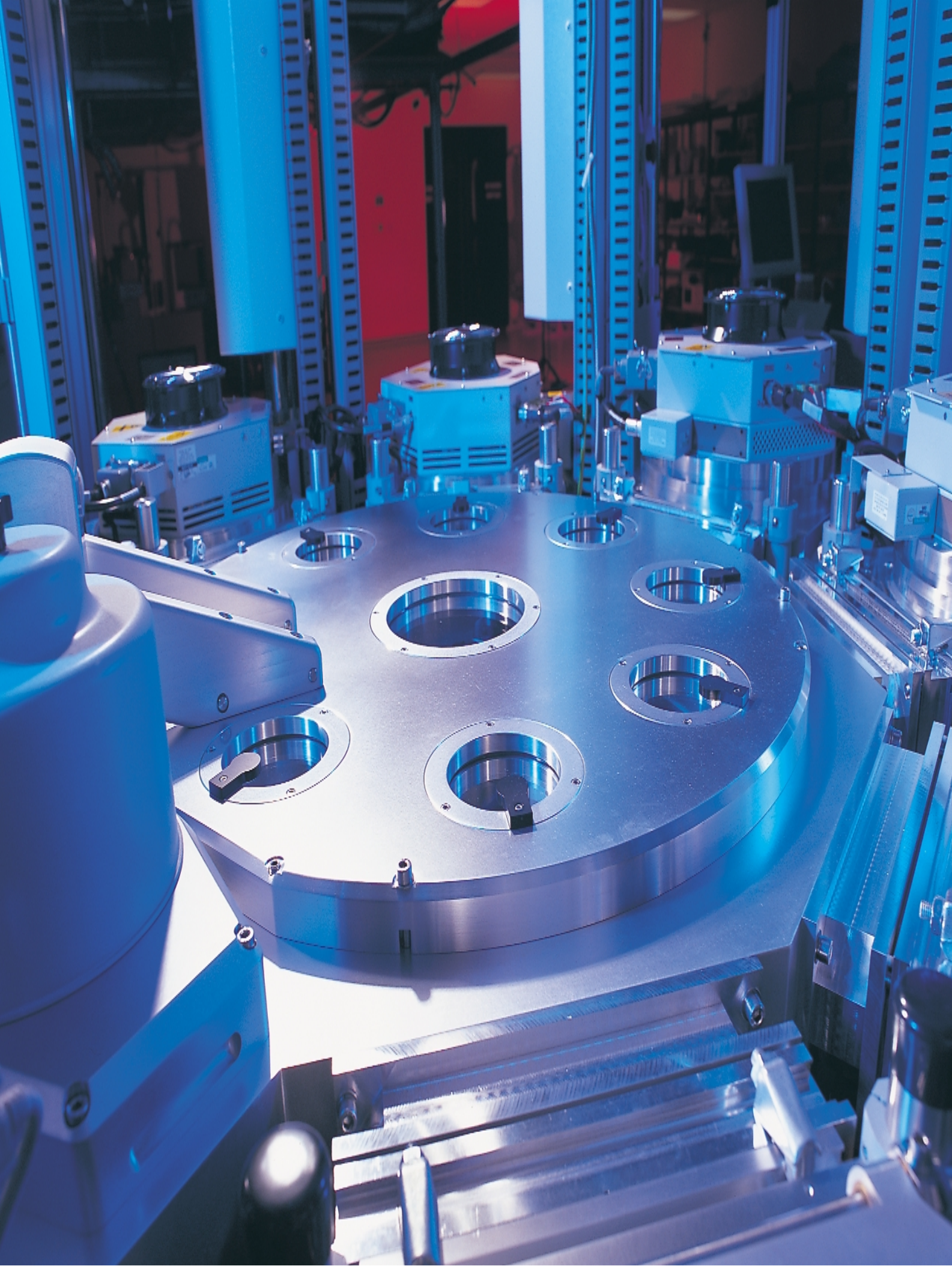




Planar *fxP*[™]

Manufacturing production tools for the semiconductor industry.

TRIKON
TECHNOLOGIES



Enabling Technology.

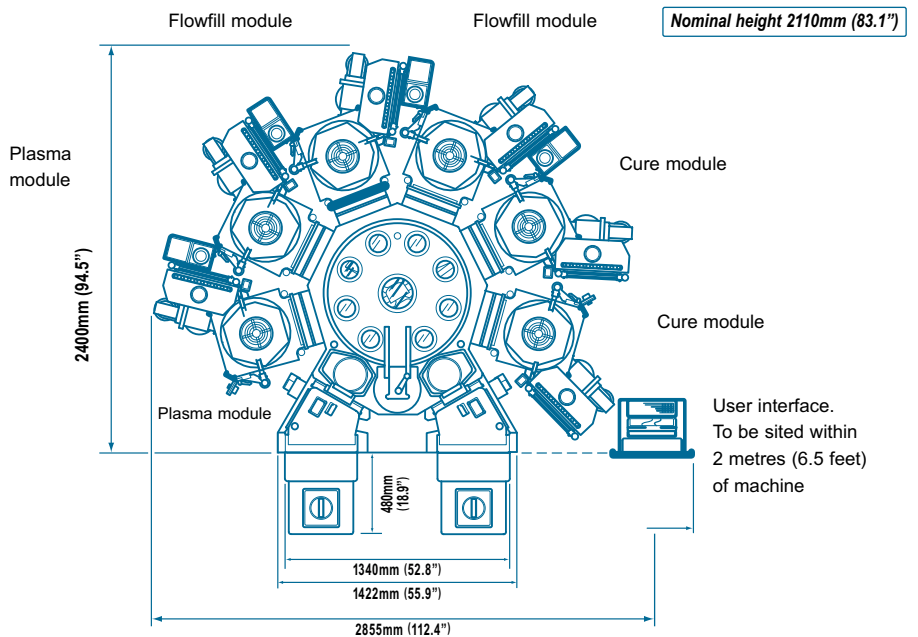
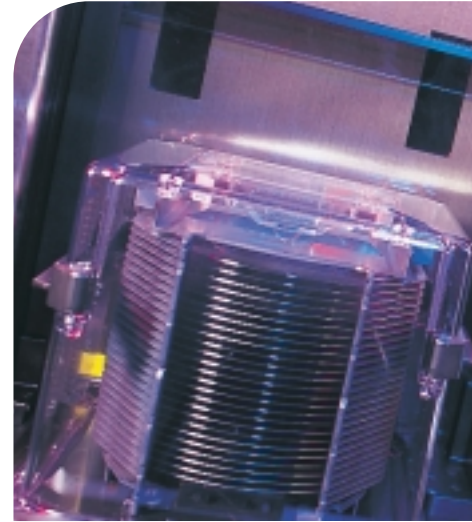
Trikon is the only low κ dielectric vendor to offer production solutions for both gap-fill and copper damascene technologies. Our patented Low κ Flowfill™ technology has been qualified for production use with $\kappa = 2.8$ at the 180 and 130nm nodes with subtractive wiring schemes and is in volume production at 180nm. This unique gap-filling and planarising dielectric also allows compatibility with zero-overlay designs offering significant advantages over spin-on dielectrics (SODs) or FSG.

Low κ Flowfill is a mature low κ technology that has shown itself to be robust and easily integratable. Low moisture reabsorption combined with high mechanical hardness give low risk integration with etch, strip, W CVD and CMP technologies. Interline capacitance benefits of up to 36% with $\kappa = 2.8$ films have been measured.

In May 2001 Trikon launched its new Orion™ range of CVD ultra low κ (ULK) dielectrics for copper damascene processing at the 90nm technology node and below. A complete family of organosilicate (OSG) materials, Orion is the only film to offer a κ value roadmap to 2.2 and below using low risk, low cost CVD technology. Compared to SOD alternatives Orion is stronger, more robust, easier to integrate and package and lower cost.

Both Low κ Flowfill and Orion are available on the Planar fxP™ platform giving manufacturers complete flexibility to use the world's most advanced CVD low κ technology to migrate to smaller device designs on one tool. Planar fxP has already been chosen by some of the world's leading logic, DRAM and foundry customers to provide trusted low κ CVD production solutions.

Planar fxP can be adopted as the production tool of record for many manufacturing situations and challenges. The excellent gap-filling capability of our standard κ Flowfill® films has been proven in volume manufacture for IMD applications as a low cost alternative to HDP or SOG in logic devices and in pre-metal dielectric (PMD) applications on advanced 1-4Gb DRAM product at 130nm and below. Whatever your need, Trikon can deliver a winning technical solution with competitive CoO.



● A fully populated Planar fxP™.



Efficient Engineering.

Planar fxP utilises a Brooks Automation wafer transport module. This industry proven hardware offers a fast action robot handler which has dual end effectors and gives three axes of movement – r, θ & z. Two vacuum cassette loadlocks provide the interface to the fab and can easily be integrated with SMIF or other automation systems.

A wafer orientation station and cool-down module are included in the transport module to offer complete process control and compatibility with standard plastic cassettes. Six process module positions are available around the transfer area allowing tool configuration to be specified to maximise throughput.

Supplier Strengths.

Developing winning production processes and staying close to our customers is a key Trikon strength that has allowed many of our customers to cut cycle time and be quicker to market. This combined with Trikon's commitment to quality service and support sets us apart as a global supplier who can take a pragmatic approach and deliver world-class solutions.

As device requirements drive design rules to smaller critical dimensions, manufacturers are demanding solutions from their suppliers that enable technical leadership with competitive CoO. The Planar *fxP* from Trikon delivers a world-class roadmap of dielectric solutions on one platform – offering the possibility to migrate to 0.1 μ m and beyond with one tool, protecting initial capital investment.

Complete Flexibility.

Planar *fxP* is a single wafer dielectric deposition cluster tool offering dielectric solutions for IMD and PMD applications including a complete range of low κ dielectrics for aluminum or copper damascene schemes. Versatility makes Planar *fxP* the lowest cost, lowest risk production choice available today.

This allows manufacturers complete flexibility to manage their fabs and adapt to changing market conditions whilst still selecting best of breed technology.

Benefits Summary.

- Production qualified and proven aluminum / Low κ with Low κ Flowfill
 - κ = 3.5 to 2.5
 - Gap-fill to <0.1 μ m
 - 36% interline capacitance reduction
 - Zero-overlay compatible
- New Orion Low κ damascene dielectrics
 - Complete family of CVD damascene dielectrics
 - κ values to below 2.2 (measured by International SEMATECH)
 - Integrated with etch stop & diffusion barrier
 - Roadmap to 70nm technology
- Production proven standard κ Flowfill technology for IMD or PMD
 - Direct replacement for SOG/HDP
 - Low cost (<50% of SOG)
 - Simultaneous gap-fill & planarisation
 - Gap-fill proven to 0.04 μ m

UK Headquarters

Trikon Technologies, Inc.
Ringland Way
Newport
South Wales
NP18 2TA
UK
Tel +44 1633 414 000

Sales & Support Offices

- UK & RoW: Tel +44 1633 414 054
- USA: Tel +1 800 727 5585
- France: Tel +33 476 75 86 62
- Germany: Tel +49 731 937 840
- Japan: Tel +81 3 5808 5641
- Korea: Tel +82 31 704 5454
- Taiwan: Tel +886 3 5783 398