How can you get more out of your equipment?

Applied Global Services
No matter what node or product, today’s semiconductor manufacturing challenges are tough. Your fab has to meet business and production goals—and be able to evolve quickly to meet changing business and technology requirements. Whether you need to quickly ramp a new process, run new technologies or get more out of your installed base, our extensive service capabilities and engineering expertise ensure world-class performance at every stage of your fab’s life cycle.

**New Product Introductions**

Applied Global Service engineers work alongside the equipment product design and development teams to develop service routines, become familiar with process operations, and understand parts, kits and replacement cycles. The Service Readiness Review process improves ramp readiness for new products to enable faster startups and improve tool performance.

**Ramp**

During startup, installation and software expertise is critical. For new fabs or remote locations, it is especially important to build a strong service infrastructure and ensure the right resources are in place.

Shorter ramping cycles are essential in today’s competitive market. These shorter cycles are even more challenging with increasingly complex processes. You can rely on Applied Global Service to provide the necessary engineering expertise to quickly ramp tools and optimize tool performance, including advanced service capabilities to address complex process challenges such as chamber matching and defect reduction.

**High Volume Manufacturing**

During volume production, Applied services can maximize availability and optimize cost of operations (COO) with faster troubleshooting, efficient preventive maintenance (PM) and extended-lifetime parts. Applied’s traditional break-fix services ensure we have the right part and engineer in place. Our advanced services add more value with increased supplier-dependent uptime (SDUT) and improved wafer quality, lowering COO with more wafer outs and improved yields.

**Tool Lifetime Extension**

Our tools are built to perform at high levels for many years. As part of our service agreements, Applied Materials is committed to your equipment for the lifetime of the tool and will invest in reengineering a part or subsystem for better performance, or develop a completely new part to support a more advanced product.

Collaboration between service engineers with the etch Sym3 hardware development team produced a tool with faster ramp times, more precise troubleshooting and more efficient parts management.

A centralized team of certified installation engineers, part of the Applied network of service experts, accelerated fab ramp (versus traditional ramp) with a 15% average reduction in cycle time days.

Using advanced analytics with our field service server during startup reduced troubleshooting time and improved cycle time by 25%.

Optimizing PM procedures and scheduling led to a greater than 4% uptime improvement on an Implant fleet for an additional >150,000 wafer output.

Throughput Health Monitor with our field service server improved output by >10% on 200mm Endura PVD tools.
Unit Process Services get your fab up and running

Whether you are ramping your tools, facing tighter process specifications during a node transition or dealing with yield issues, our unit process services are designed to get your fab up and running as quickly as possible.

Applied Performance Service™ packages offer the widest range of customer options and largest range of tool-specific performance commitments. With access to the Applied network of service experts, BKMs and advanced data analytics for on-wafer improvements, customers choosing Applied Performance Service packages achieve the highest return on their investment.

Output Services increase equipment availability

If your goal is to increase system uptime, Applied Managed Service™ offers priority support for corrective and preventive maintenance with a focus on increasing equipment availability. Optimized maintenance schedules will reduce downtime and help you reduce green-to-green time to get more out of your tools. By employing proprietary advanced data analytics with our field service server, Applied service can increase your fab throughput to meet or exceed factory goals.

Our premium service offerings include access to our FabVantage™ 360 benchmarking team as well as the latest in parts technology and coatings specifically designed for improved lifetimes and customized for your fab needs.

for help when you need it

Applied Standard Service™ provides expert response to equipment downs. With standard service, as with all our comprehensive service packages, our Applied certified field engineers have access to the Applied network of service experts and Applied quality parts.

Preventive Maintenance (PM) service agreements, available as an add-on with Applied Standard Service or during warranty, offer the expertise, efficiency and affordability you need to keep your Applied Materials equipment operating at peak performance. Our PM experts and commitment to First Time Right performance ensures repeatable and predictable results.

World-Class Supply Chain

Applied’s extensive global parts network provides robust tracking capabilities for on-time delivery assurances as part of our service agreements. Applied Materials maintains one of the industry’s most complete global inventories of high quality spare parts, which allows us to leverage our supply-chain to provide parts support specifically tailored to your operational needs.

Included in service contracts or as a stand-alone spare part product, Applied Total Kit Management™ (TKM) solutions offer turnkey, cost effective chamber kits with Applied-managed logistics. With certified cleaning, advanced coating technology and no wait time for parts, you can count on quality kits with minimal downtime.

A more comprehensive parts support option for customers is Applied Forecast Parts Management (FPM). FPM is based on forward-looking proactive supply-chain management to reduce wait time for parts and optimize on-site inventory levels.

▶️ Over 200 inventory locations
▶️ Robust repair & refurbishment network
▶️ Parts engineering center of excellence

Achieved scrap reduction of >60% on CMP tools by implementing advanced analytics, BKMs and hardware upgrades.

Optimized PM schedules to reduce green-to-green time by an average of 40% on Epi tools under a managed service agreement.

» Over 200 inventory locations
» Robust repair & refurbishment network
» Parts engineering center of excellence

At Applied Materials, we understand every customer has unique challenges, and we provide a comprehensive suite of service capabilities designed to help customers meet their manufacturing goals. From startup to fab expansion, from pilot lines to mass production, we have a service plan to ensure your tools and fab are operating at peak performance.

Network of Service Experts

Increasing the value of 4,000 field engineers

Technical Support Engineers

Process Engineers

Component Engineers

Software Application Engineers

Using HeadSmart™ TKM reduced a customer’s cost per wafer pass by approximately 10x by lowering the overall supply chain costs and improving CMP head lifetimes.
Advanced Analytics

Complex productivity and yield requirements at advanced nodes demand a new and more robust approach to data analytics. Available with our premium service offerings, Applied’s proprietary applications and field service server include algorithms and models tailored to Applied tools and supported by Applied equipment and process experts. By transforming data into actionable analytics, we can reduce equipment start-up cycle time, increase wafer output, reduce wafer scrap and improve yield.

Our solutions ensure your data is protected and include virtual metrology (VM) capabilities to improve within wafer performance, multivariate chamber health index (CHI) to monitor excursions in real time, and equipment health monitoring (EHM) to track sensors that provide a holistic and automated view of hardware activity.

A CHI leveraging multiple priority sensor signals critical to the etch process was developed to trigger preventive maintenance before problems arose.

VM models for Epi chambers were developed to accurately predict the thickness, dopant levels and resistivity during process qualification, enabling the customer to reduce process tuning time by 40%.

Fab-wide Performance Optimization

Applied’s FabVantage consulting group helps customers solve their most challenging problems, whether they involve cost, efficiency or yield. With state-of-the-art modeling and analytical tools, FabVantage consultants work with service teams to benchmark your fab operations to ensure your tools are operating at world-class performance.

A FabVantage 360 assessment uses analytical tools and the resources of Applied’s knowledge base to benchmark against industry best-in-class performance. The team audits tools and recipes, and uses sensor- and on-wafer data to pinpoint key issues. By leveraging best known practices and specific expertise, the team makes recommendations to improve performance.

Applied FabVantage consultants reduced particle adders on PVD TiN hardmask from 16 to 9 per wafer.

Applied Materials chamber matching methodology matched CDs and trench depth to achieve a chamber-to-chamber CD range of <0.5nm on a fleet of etch chambers running 2xnm DRAM production.
We have a passion for understanding and solving your manufacturing challenges. With a flexible supply chain, integrated with our service technology and network of experts, we help you improve yields, increase output and reduce cost.

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<td>serving customers around the globe</td>
<td>tools supported</td>
<td>field engineers at 82 support centers</td>
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Get more out of your equipment.

Applied Global Services—your service technology provider