TechCenters
From product development to best local service

Electronics
Best local service

atotech.com
What are TechCenters?

To offer best local service and conduct extensive research and development (R&D), we have established a network of TechCenters in all key locations worldwide. Combining unique capabilities, sophisticated equipment and highly proficient teams of experts – TechCenters support our R&D efforts and exemplify our commitment to innovation while providing leading customer service.

From routine analyses to pilot production

From routine analyses to customized examinations of samples – Atotech TechCenters offer a host of unique services to our customers. Our technical specialists collaborate closely with customers and industry partners to undertake sampling, prototyping as well as pilot productions under production-scale conditions. All our analytical and materials science laboratories are fully equipped with cutting-edge equipment and tools.

Benefit from our expertise

The TechCenters support our vision to constantly innovate and build new expertise. This enables us to provide top-notch technical support as well as to develop next generation processes. We share our knowledge with our customers and industry partners through hands-on training in our TechCenters worldwide.

Leading the movement for sustainable technologies

The future of our industry depends on sustainability. Our long-term commitment combined with a clearly defined roadmap and intensive R&D, allows for constant progress towards our sustainability goals. TechCenters help us in developing and promoting new, more environmentally-friendly production solutions that reduce water, energy and chemical consumption while minimizing waste and the use of toxic substances – this reduces costs and protects the environment.
Helping customers remain one step ahead

Working closely with our customers and industry partners helps us anticipate the industry’s future requirements. With the support of our TechCenters we are able to introduce new and relevant technologies to the market faster – offering our customers a strong competitive edge.
Europe – Making core processes accessible to the world

Europe is the heart of our electronics and semiconductor R&D activities. Two competence centers with different core focuses are located in Germany.

Our worldwide head office, including administration, R&D, and a TechCenter, is located in Berlin (Germany). Here, we combine intensive research and development for wet chemical processes with application work for customers and OEMs. In Feucht (Germany), we develop manufacturing systems and auxiliaries to continuously overcome technical equipment challenges.

The TechCenter in Berlin is equipped with production-sized pilot lines for various applications. These vary from printed circuit board to semiconductor technologies to support prototyping, sample plating and product development, as well as production runs for customers and OEMs – all under real production conditions.

We have invested heavily in technology and people in order to provide the industries’ best service to our customers and drive innovations together with OEMs, institutes and universities.
Sample plating equipment

**Berlin, Germany**

**Printed circuit board and package substrate**
- Vertical desmear line, vertical electroless copper line, semi-automated vertical desmear and PTH prototype line, horizontal PTH plating module, horizontal copper plating line (Uniplate® Cu IP2),
- horizontal copper plating line (Uniplate® Cu IP3), vertical hoist type plating line with soluble anodes in DC and pulse mode, 2 vertical conveyorized copper plating tools, copper plating line (MultiPlate®) for panel level substrates up to 510 × 515 mm, NiAu vertical for 250x250 mm² (bond/hard gold and sulphamate nickel), vertical immersion tin line, vertical ENEPIG line, vertical automated ENEPIG line, horizontal tin plating module.

**Semiconductor**
- **Electrochemical plating tools**: double side wafer plating line (MultiPlate®) for Cu plating on 150, 200 and 300 mm wafers, 5 fountain plater cells (Semsasco, high pressure chamber) for Cu on 200 and 300 mm, Semitool Raptor chamber for Cu 300 mm and Rena for Ni, Sn and Cu on 200 mm.
- **Electroless plating**: automatic batch wafer tool with spray pretreatment for Ni, and Pd on 150, 200 and 300 mm (Semsasco Galaxy), manual batch wafer tool for Ni, Pd and Au for 100-300 mm (Ramgraber), Automatic spray batch pretreatment tool for Cu, Al and Al alloys (Semitool).
- **Pretreatment tools**: plasma etch for max 300 mm wafers.

**Feucht, Germany**

**Printed circuit board, package substrate and semiconductor**
- Developing, testing and manufacturing of plating equipment for printed circuit board, package substrate, flat panel display, semiconductor, wafer level packaging and panel level packaging including Uniplate®, MultiPlate®, VisioPlate®; test equipment for different transport test modules (ultra thin material), fluid delivery, flow sensor, dryer unit, and long term testing, 2,000 m² ISO8/ISO7* clean room.

*ISO7 optional

**Workforce**
- Plating specialists work in tight cooperation with scientists to develop outstanding products.

**Services**
- From R&D, routine analyses to sampling, prototyping and pilot productions.
With an eye firmly on the future, we invest heavily in one of the world’s fastest-growing economies. We are committed to providing high-quality products and the best local service in the industry to our partners across Asia. In 2000, we inaugurated the first Asian TechCenter at our regional head office in Yokohama (Japan).

Our facilities are equipped with various vertical and horizontal pilot lines for oxide/oxide alternatives, desmear and electroless copper/direct plating, as well as acid copper and final finishing for printed circuit board and package substrate manufacturing.

In addition, we provide semiconductor equipment for advanced wafer metallization, from the chip interconnects to wafer level packaging technologies.

Our network consists of six TechCenters across Asia, located in Yokohama (Japan), Guangzhou and Shanghai (China), Guanyin (Taiwan), Jangan (South Korea), and Bangalore (India).
## Sample plating equipment

### Yokohama, Japan

| Printed circuit board and package substrate | Vertical desmear line, vertical direct plating line, vertical electroless copper line, advanced horizontal through hole filling line (Uniplate® Cu IP2 Advanced), horizontal pattern plating line (Uniplate® Cu IP2 Pattern), vertical hoist type plating line with soluble anodes in DC and pulse mode, vertical conveyorized copper plating simulation tool (full panel), MultiPlate® for high advanced PKG (ultra fine line RDL, line and space less than 3µm), through hole filling and double side plating, non-etching adhesion line, adhesion promotion on glass substrate, spray module for improved adhesion of electroless copper to smooth substrates, vertical NiAu and NiPdAu plating line, vertical immersion tin plating line |

| Semiconductor | Vertical electrochemical copper for wafer bumping of 200 mm wafers |

### Jangan, South Korea

| Printed circuit board and package substrate | Vertical desmear line, vertical electroless copper line, horizontal SAP/mSAP line (Uniplate® P-UTSxs / LB-UTSs), horizontal flat panel display line (VisioPlate® FPD), vertical conveyorized copper plating line, tin plating line, horizontal line for resist stripping / non-etching adhesion promotion / tin stripping / palladium stripping |

### Guangzhou, China

| Printed circuit board and package substrate | Vertical desmear line, vertical electroless copper line, vertical hoist type plating line with soluble anodes in DC and pulse mode, vertical conveyorized copper plating line, horizontal photoresist stripping line, bonding enhancement line, soldermask pretreatment line, pumice pretreatment line, development line, vertical NovaBond® IT line, Secure HFz line, regeneration unit, vertical immersion tin plating line, vertical NiAu and NiPdAu plating line (Horizon® Stannatech), horizontal immersion tin plating line, horizontal final cleaning and drying |

| Semiconductor | Pretreatment, electroless NiPdAu pretreatment-free wet bench |

### Shanghai, China

| Printed circuit board and package substrate | Vertical desmear line, vertical direct plating line, vertical electroless copper line, vertical hoist type plating line with soluble anodes in DC and pulse mode, vertical panel and pattern plating in direct current and reverse pulse mode, vertical conveyorized copper plating line, bonding enhancement line, soldermask pretreatment line, vertical NiAu and NiPdAu plating line |

| Semiconductor | Aluminum pretreatment, MultiPlate® to Cu pillar plating, through hole filling (THF), redistribution layer plating (RDL) and double sided plating (DSP) |

### Guanyin, Taiwan

| Printed circuit board and package substrate | Vertical desmear line, vertical electroless SAP copper plating line, horizontal copper plating line (Uniplate® Cu IP2), vertical hoist type plating simulation tool (full panel) with soluble anodes in DC and pulse mode, vertical conveyorized copper plating line, vertical Cu plating on glass line, horizontal and vertical bonding enhancement line, horizontal solder mask/dry film pretreatment line, horizontal super etching line, direct metal deposition on molding resin, vertical NiAu and NiPdAu plating line, horizontal final cleaning and drying |

| Semiconductor | Vertical desmear simulation tool, vertical direct plating simulation tool, vertical electroless copper plating simulation tool, vertical hoist type plating simulation tool (DC and reverse pulse), vertical conveyorized plating (VCP) simulation tool, vertical NiAu and NiPdAu plating line |

### Bangalore, India

| Printed circuit board and package substrate | Vertical desmear simulation tool, vertical direct plating simulation tool, vertical electroless copper plating simulation tool, vertical hoist type plating simulation tool (DC and reverse pulse), vertical conveyorized plating (VCP) simulation tool, vertical NiAu and NiPdAu plating line |
The Americas are home to some of the largest automotive, communication electronics and semiconductor companies in the world. Our network of TechCenters in both North and South America cater to these industries.

The TechCenter in Rock Hill (USA) is equipped with pilot lines for various applications, as well as analytical and materials science service labs that provide tailored on-site customer support, especially to the North American markets. Customers can benefit from our special expertise to conduct high-aspect ratio sample plating work for electroless copper processes and acid copper pulse plating. Apart from excellent technical support capabilities, our site in RockHill is also our regional head office for administration and R&D.

In Albany (USA), along with the College of Nanoscale Science and Engineering (CNSE) our primary focus is on process and chemistry development for damascene plating technologies. Our partnership with CNSE allows our R&D team access to their state-of-the-art wafer processing facility.

Another TechCenter in São Paulo (Brazil) is dedicated entirely to the South American printed circuit board industry.
Sample plating equipment

<table>
<thead>
<tr>
<th>Location</th>
<th>Industry</th>
<th>Equipment and Technology Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock Hill, USA</td>
<td>Printed circuit board and package substrate</td>
<td>Vertical electrolytic nickel / copper / tin line in clean room, vertical hoist type plating simulation tool (full panel) with soluble anodes</td>
</tr>
<tr>
<td>Albany, USA</td>
<td>Semiconductor</td>
<td>Complete 300 mm wafer pilot line, Lam Research Sabre Extreme and Applied Materials Raider ECD systems, TEL/NeXX Stratus 300 vertical ECD copper system, fully automated plating system for rapid coupon scale additive screening and BKM development, fully equipped electrochemistry laboratory, best in class metrology lab with an FEI Helios 450 FIB/SEM, Olympus confocal microscope, and access to advanced metrology equipment such as the FEI Titan and JEOL 2010F TEMs, ToF-SIMS, AES, XRD/XRR and many others</td>
</tr>
<tr>
<td>São Paulo, Brazil</td>
<td>Printed circuit board and package substrate</td>
<td>Vertical desmear simulation tool, vertical direct plating simulation tool, vertical electroless copper plating simulation tool, vertical hoist type plating simulation tool</td>
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**Workforce**
Local plating specialists and scientists focus on the needs for the American market

**Damascene competence center**
State-of-the-art processing facility for complete wafer production process
Indispensable supporting services

Our analytical and materials science laboratories support customers with cutting-edge scientific tools and highly skilled professionals. We run everything from routine analyses to sophisticated, customized examinations of samples. Our laboratories handle a broad range of product quality and reliability testing, including performance tests for e.g. soldering, bonding, corrosion resistance and torque tension measurements – all carried out in accordance with international standards and OEM specifications.

Our analytical and materials science laboratories play a crucial role in our R&D efforts. Latest equipment support us in developing customer-oriented innovations and solutions.
Unrivaled expertise

Analytical services

Process control with regular analysis of the bath
Analyze samples, electrolytes and wastewater using state-of-the-art measurement equipment
Determine elements with spectroscopic methods (F-AAS, ICP-OES) and ion chromatography
Determine organic additives with chromatography (HPLC, LC-MS, GPC, GC) and electrochemical methods (CVS, POL)
Training in analytical methods according to the technical data sheets (TDS)
Troubleshooting support with analytical investigations and process-specific practical tests

Materials science services

Inspecting solid samples with highly sophisticated microscopes such as AFM, SEM and FIB
Determine layer thickness and crystal structures
Analyze elemental composition with spectroscopic methods such as XRF and EDX
Determine surface roughness by various optical and tactile methods
Investigate mechanical properties like hardness, peel strength, ductility and CoF
Perform corrosion testing according to a variety of standards (e.g. NSS, AASS, CASS)

73,599 measurements run by analytical services in TechCenter Berlin (2017)
All over the world and right around the corner

With our global TechCenter network, customer support is always close at hand. Our expert teams provide first-class support and consultation for every technical requirement.

We run 11 TechCenters in the electronics (EL) business unit to support printed circuit board, package substrate, and semiconductor manufacturers. These are located in Germany, Japan, China, Taiwan, South Korea, India, the USA and Brazil.