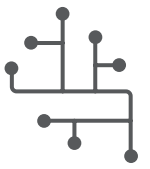


# Electronics

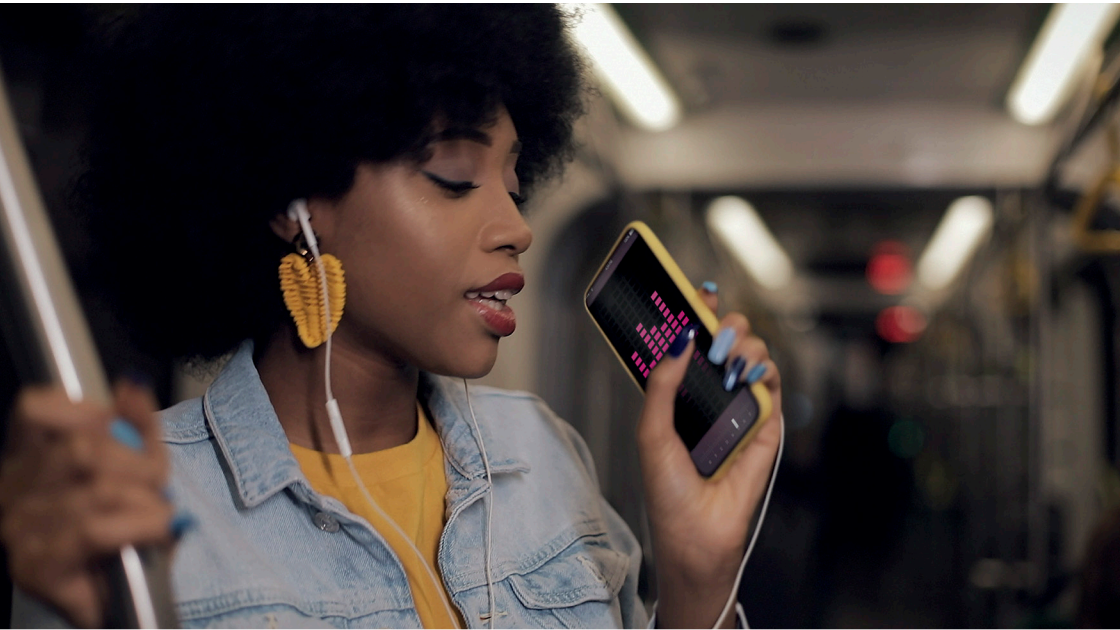
The right wet chemical process and equipment for every requirement



Electronics

Product portfolio

atotech.com



# Electronics at a glance



Global market leader in electroplating, equipment, chemistry and service



A constant investment in R&D helps us and our customers to stay at the forefront of new technologies

48%

of our R&D projects are devoted to sustainable technologies



Smartphone competence – underlined by a unique smartphone industry approach



Presence in more than **40** countries serving more than **1,200** customers worldwide



**11** TechCenters worldwide provide best local service



Our outstanding team of highly qualified plating experts is dedicated to ensuring that our customers achieve their goals



We collaborate heavily with the entire value chain to seek new paths and set benchmarks for the development of innovative processes

1,468

registered active patents underline our technological leadership



# Leading electronics solutions

We are dedicated to supplying the total package of plating chemicals, equipment technology, software solutions and unique services to the PCB, HDI, package substrate and semiconductor industries.

In our world of specialty chemicals and electroplating equipment, we make innovation possible in a wide spectrum of industries from consumer electronics, smartphones and computers, through communication infrastructure and automotive to medical and industrial. For over two decades, we have invested heavily in research and development as well as customer support, carried out at our TechCenters globally. This has helped us build a portfolio of breakthrough, cost-effective and sustainable solutions. Atotech's true strength is our highly qualified and customer centric team of experts. Our goal is to ensure the utmost precision and quality in everything we do. Comprehensive knowledge of our ecosystem, a unique foresight of the changing market demands and our joint development program with leading industry partners help us achieve that.

## **Sustainability is at the heart of our work**

We are a dedicated partner to both our customers and society at large, offering a sustainable product portfolio that uses water, energy and raw materials efficiently. Both our portfolio of chemical solutions and our equipment technology prove that cost-effectiveness and technological advancement can go hand-in-hand with environmental consciousness.





# What we strive for every day



## Best local service

One factor that sets us apart from competitors is our global network. Sales and service in more than 40 countries enable us to provide efficient customer support worldwide. With an exceptional infrastructure, our unique TechCenter network allows us to offer an unmatched spectrum of services. This ranges from pilot production, chemical and materials science investigations, and process qualification to train customers and partners. The TechCenters also strengthen our research and development efforts, helping us develop sustainable solutions for tomorrow.



## Production know-how

Our production systems and know-how guarantee the highest level of quality and efficiency for our customers' manufacturing process. We're constantly upgrading our systems solution and applying the latest HSE standards to ensure the utmost safety for us and our partners. Today, we are the only supplier in the industry that can offer an integrated systems approach, which combines chemistry, equipment, and service, resulting in superior value through higher yield, improved product uniformity, and reduced equipment downtime.





### Leading technologies

True to Atotech's long-standing history, we are determined to develop new ways to address significant challenges facing the plating industry. We collaborate heavily with the entire value chain – suppliers, customers, communities, and government bodies alike – to seek new paths and set benchmarks for the development of innovative plating processes. A constant investment in research and development helps us and our customers stay at the forefront of new technologies for the next generation and sustainable technologies.



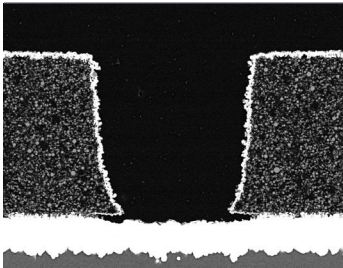
### Sustainable solutions

With our commitment to sustainable solutions, we are making a difference. We strongly believe in serving the world's current demand for technologies and chemicals while contributing to a more sustainable plating industry. We do so by carefully selecting and using less hazardous chemicals whenever possible. We continue to bolster our environmental platform and are well-positioned to support our customers in perfectly fulfilling environmental laws and regulations for their manufacturing processes.



# Our product portfolio

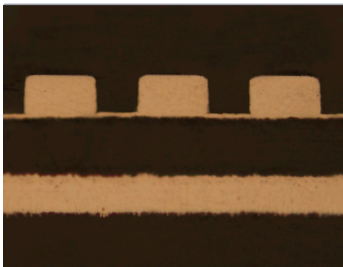
We offer perfectly matched processes for each and every step of the manufacturing of key electronic components from printed circuit boards to semiconductors. As a supplier, we are an invaluable partner for countless industries that expect the right solution for every application.



## Desmear and metallization

Products: Chemical processes for smear removal (desmear), direct plating and electroless copper metallization of through holes, blind micro vias and other small features

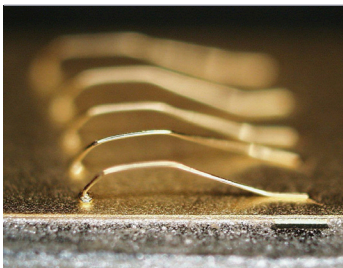
Applications: Traditional PCBs (multi-layer, flex, flex rigid, HDI), package substrates, flat panel displays and touch sensors



## Panel and pattern plating

Products: Chemical processes for electrolytic copper (as well as Ni, Pd, Au, Sn) plating of through holes, blind micro vias and other small features where panel and/or pattern plating is required

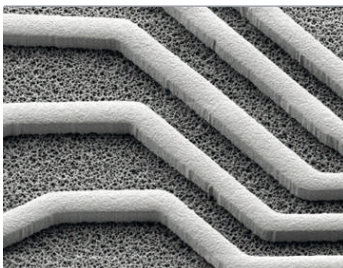
Applications: Traditional PCBs (multi-layer, flex, flex rigid, HDI), package substrates and ceramics



## Final surface finishing

Products: Chemical processes for end finishes of surfaces, fine line key-press, wire bonding, soldering and high-frequency applications, e.g. immersion tin, autocatalytic nickel/immersion gold (ENIG), autocatalytic nickel/autocatalytic palladium/immersion gold (ENEPIG)

Applications: Traditional PCBs (multi-layer, flex, flex rigid, HDI), package substrates, ceramics, and LCDs

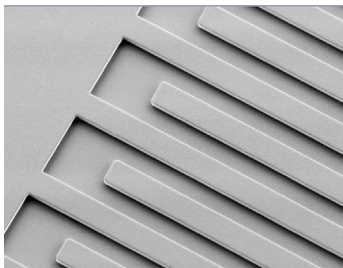


## Surface treatment technology

Products: Chemical processes for treatment, coating and modification of surfaces, e.g. innerlayer bonding, advanced surface pretreatment for photoresist and soldermask, photoresist stripping, metal stripping copper, passivation and cleaners, as well as adhesion promoters

Applications: Traditional PCBs (multi-layer, flex, flex rigid, HDI) and package substrates





## Semiconductor

Products: Chemical deposition of nickel, palladium and gold for pad and under bump metallization, electrochemical deposition of nickel, gold and copper for RDL, pillar, TSV, and dual damascene copper fill

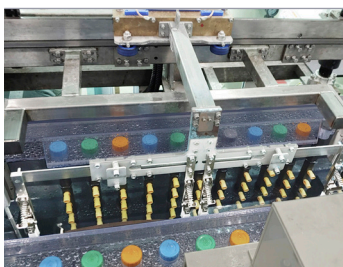
Applications: Flip chips, memory, embedded processors, MEMS, CMOS image sensors, IGBT, power chips



## Functional electronic coatings

Products: Gold/ gold alloys (nickel, iron, cobalt), palladium (-alloys), silver, nickel, copper, pure tin, ruthenium, rhodium, as well as pre- and posttreatments

Applications: IC outer leads, leadframes, connectors, interconnect devices, LED applications, micro waveguides, metal wires



## Systems technology

Products: Uniplate® systems for desmear, direct plating, electroless copper and plating processes, Horizon® systems for surface treatment and final finishing, VisioPlate® for display applications, MultiPlate® for pillar, RDL, and double sided copper plating on wafers, as well as panel, Polygon® a new generation horizontal desmear and electroless copper plating line, and vPlate® a new generation vertical copper plating line



## Software and digital solutions

Our new software and digital products offering is unique in the industry today. We enable the integration of PCB equipment via communication interfaces (OPC and SECS GEM) and provide software solutions that use process and equipment data to generate a true value for our customers, from predictive maintenance to process optimization (increasing yield, quality, equipment run times) to energy and material consumptions.



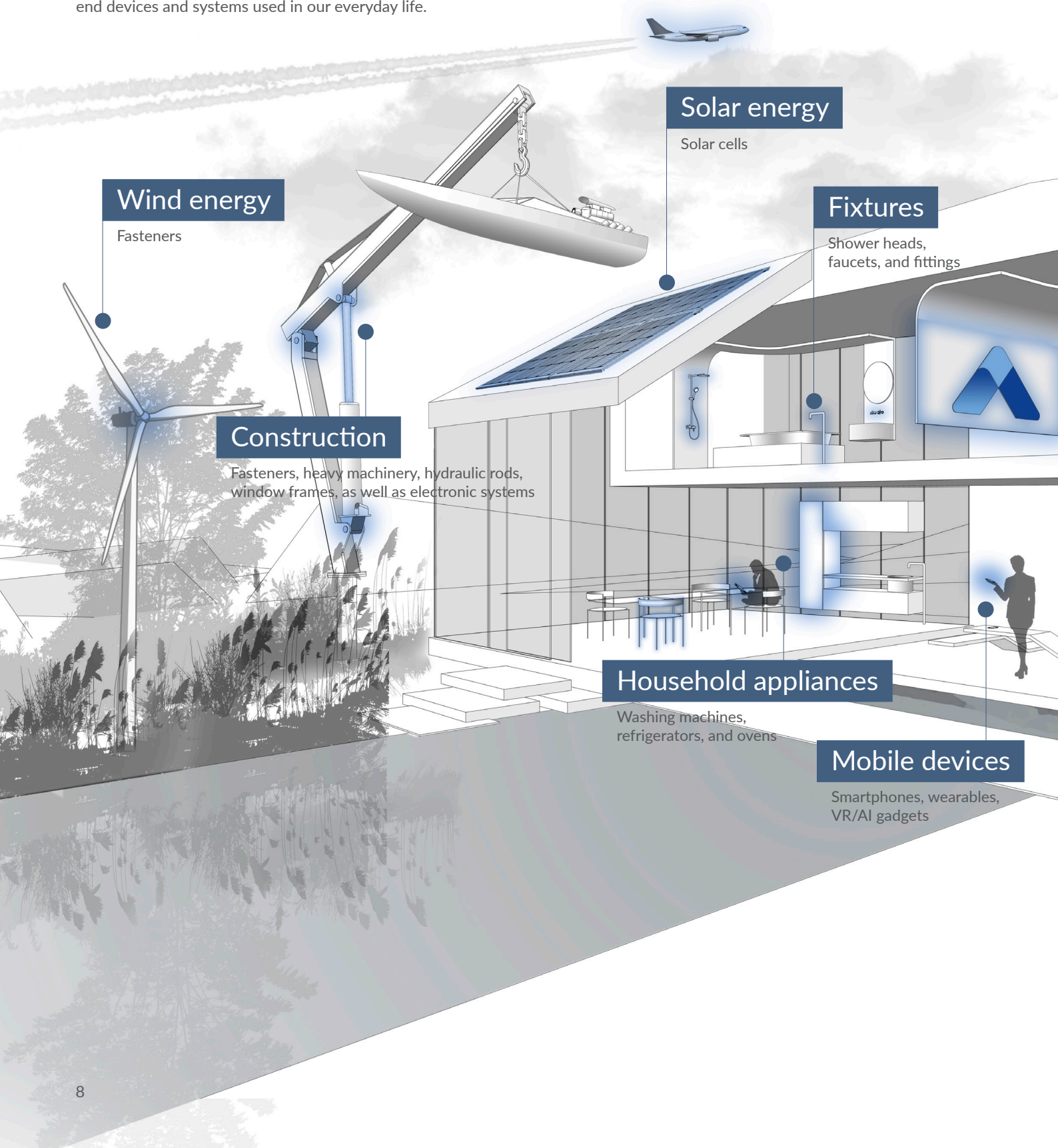
## Auxiliary equipment and spare parts

Oxamat® – Recycling permanganate for Uniplate® P – desmear line; Redumat® – Cu replenishment for Uniplate® Cu plating line; Crystallizer® – Cu removal for ultimate process control in immersion Sn; ConStannic® – Lifetime extension through Sn4+ reduction in immersion Sn; EcoFlash® – Recovery unit for differential etching; Online analytic systems – for automation and process optimization

In addition, we offer original parts for every crucial component of our equipment product brands, for Uniplate®, Horizon®, MultiPlate®, VisioPlate, Polygon® and vPlate®.

# We are at the core of technology

From microprocessors to chip carriers and printed circuit boards, our surface preparation, plating, and finishing solutions enable the electrical conductivity, performance, reliability and therefore functionality, users demand from electronics end devices and systems used in our everyday life.



## Wind energy

Fasteners

## Construction

Fasteners, heavy machinery, hydraulic rods, window frames, as well as electronic systems

## Solar energy

Solar cells

## Fixtures

Shower heads, faucets, and fittings

## Household appliances

Washing machines, refrigerators, and ovens

## Mobile devices

Smartphones, wearables, VR/AR gadgets



## Consumer electronics

TVs, smart home systems,  
audio/visual entertainment

## Furniture

Chairs, table legs,  
and lamps

## Communication infrastructure

Servers, data centers, 5G base stations,  
cloud computing, big data applications

## Computing

Laptops, PCs, tablets,  
displays, game consoles

## Automotive electronics

Engine control unit, ICE powertrain,  
info/entertainment, assisted driving (ADAS),  
electronic powertrain

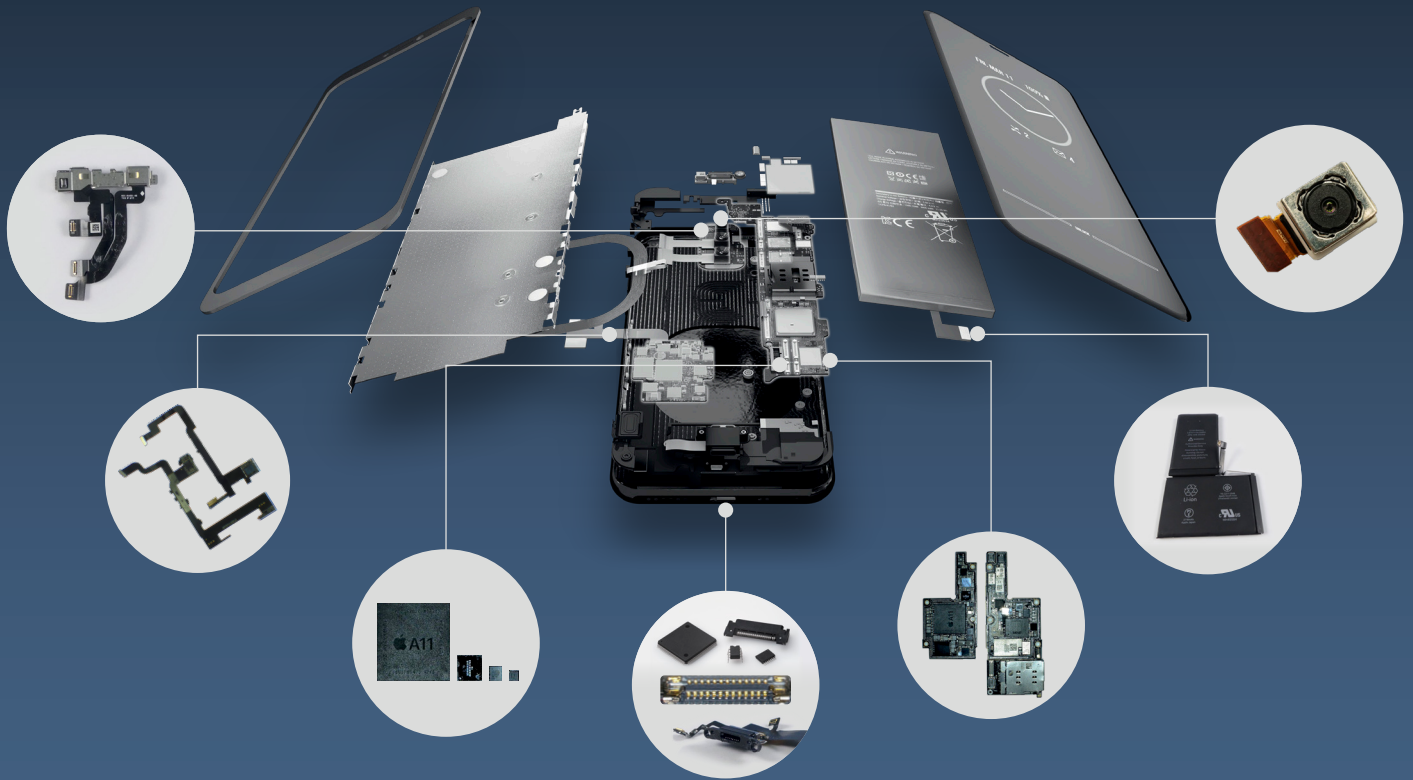
## Batteries

EV and electronics batteries,  
energy storage

## Automotive surface finishing

Front grills, door handles, emblems, decorative  
trim components, brake calipers, fasteners,  
shock absorber rods, valve systems

# Leading solutions for microprocessors, chip carriers and printed circuit boards



## Broad understanding of the ecosystem

From advanced mobile phones, computers and automobiles, to communication infrastructure, industrial and medical diagnosis devices – our technology solutions support every requirement. Globally, leading manufacturers in the fields of PCB, HDI, package substrate and semiconductors rely on our expertise, products and consultation. We also collaborate directly with OEMs giving us strategic insights into market trends and future product requirements. This strengthens our ability to invest in the right direction to meet the growing demand – faster.

## Expertise in smartphones and computers

Atotech has been part of the smartphone ecosystem since the very beginning. Our solutions are designed to meet the demands of an increasingly digital lifestyle. In a constantly evolving landscape, we help our customers stay ahead of the competition through our portfolio of cost-effective, cutting-edge and environmentally conscious products and to build the next generation mobile devices. For decades, leading PCB, IC and Semiconductor manufacturers are choosing our wet chemical processes and equipment solutions to develop their next generation products.





### Vast automotive capabilities

The “connected car” is no longer a thing of the future, as drivers expect complete connectivity anytime, anywhere. High-end electronics now play a huge role in the advancement of automotive technology. A large portion of innovation is dedicated to meet the emissions, safety, and rich info and entertainment requirements. To support the advanced functionalities, our electronics capabilities are deployed in a variety of printed circuit board, HDI, packaging and semiconductor technologies used for various automotive electronic components. We work with automotive component suppliers to make cars safer, greener, and more intelligent than ever before.

# End markets and industries we serve



Smartphone



Automotive electronics



Computing



Big data infrastructure



Consumer electronics



Communication infrastructure

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Global head office



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