

Advanced Engineered Solutions

A Global Leader in



TECHNIC

Specialty Chemicals

Surface Finishing Equipment

Engineered Powders

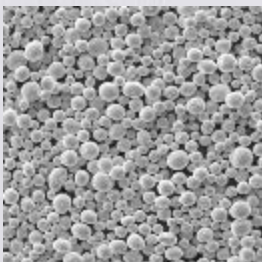
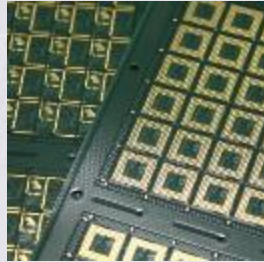
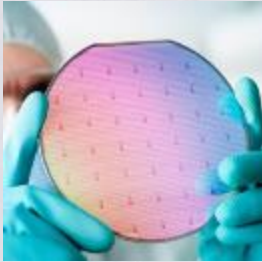
Analytical Controls

About Technic



- Technic is a privately held, global company with a belief in innovation and employee empowerment
- Approximately 900 employees worldwide
- Strong financial resources and stability
- Various ISO 9000 approved facilities
- A strong commitment to new product research & development
- Annual Sales volume in excess of \$400,000,000

About Technic – *Company History*



Technic is a Rhode Island, USA based private company

- Family owned since inception
- Incorporated in 1944
- Original focus of the business was precious metal supply to the decorative / jewelry industry in the Providence, RI area

Expansion into the electronics industry in the 1950s

Technic has grown to be a leading global supplier of;

- Specialty Chemicals
- Surface Finishing Equipment
- Engineered Powders
- Analytical Control Systems

About Technic - *Technic Business Units*



- Corporate Headquarters / Specialty Chemicals / Precious Metals, Cranston, RI, USA
- Equipment Group: Pawtucket, RI; Clearwater, FL; and Singapore
- Engineered Powders: Woonsocket, RI, USA
- Plating Services: Suzhou, China
- Semiconductor Applications Lab: Anaheim, CA USA
- Ultra-Pure Chemicals: Paris and Chalon, France
- Metal Concentrates (SCS): Royersford, PA, USA
- In addition, regional sales & service offices provide representation in all major markets



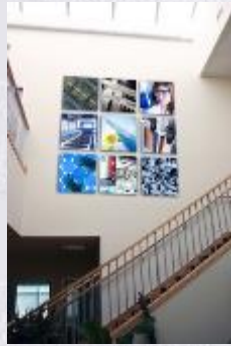
About Technic – Acquisitions *(Partial list)*



- 1984 – 1991 - Kentucky Automatic, Advanced Automation, TNT (Equipment)**
- 1992 – Handy & Harman (Metal Powders & Flakes)**
- 1992 – Am. Chemical & Refining (Silver Salts, Precious Metals)**
- 1996 – Baker Bros., Micro-Plate (Reel-to-Reel, Hoists, Web & Wide Strip)**
- 1997 – Lektrachem Ltd. (Coventry, England, Process Chemistry)**
- 1997 – Sotrachem (St. Denis, France, Process Chemistry & Equipment)**
- 1998 – Italgalvano s.r.l. (Milan, Italy, Process Chemistry & Equipment)**
- 1999 – Engelhard Corp. American Plating Chemicals Group (Process Chemistry)**
- 2008 – Air Liquide Hydrogen Peroxide Division (Semiconductor Chemistry)**
- 2008 – Kushner Electroplating School (Technical Training)**
- 2009 – Metfab (Equipment)**
- 2013 – Kemesys (Semiconductor Chemicals)**

About Technic – Corporate Offices

Cranston, Rhode Island 80,000 ft² (7,432 m²)



- Executive Offices
- Product Managers
- Accounting
- Inside Sales
- Accounts Payable
- Marketing and Communications
- Human Resources
- IT
- Operations
- Client Meeting Rooms
- Video Conferencing
- Training Facilities

About Technic – *R&D, Chemical Manufacturing* Cranston, RI, USA 120,000 ft² (11,148 m²)



- R&D Laboratories
- Applications Engineering Laboratory
- Analytical Lab
- Quality Control
- Chemical Manufacturing
- ISO Certified Facility

Technic supplies proprietary chemicals and precious metals to over 500 customers globally.

Technic Worldwide



Corporate Offices - Cranston RI

Technic Worldwide



Chemical Manufacturing, R&D, Sales & Service Offices

Rhode Island, Illinois, California, Texas, New York, Canada, Hong Kong,
China (2), Taiwan, Singapore, Korea, Japan, Malaysia, Philippines,
France(4), Germany, Italy, England

Technic Worldwide



Equipment Manufacturing
Pawtucket RI, Clearwater FL, Singapore

Technic Worldwide



Engineered Powders Division - Woonsocket RI

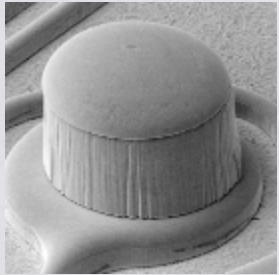
Technic Worldwide



Plating Services Division
Suzhou, China

Semiconductor Materials – Electroplating for Advanced Packaging

Cranston, RI, Paris, FR, Grenoble, FR, Anaheim, CA



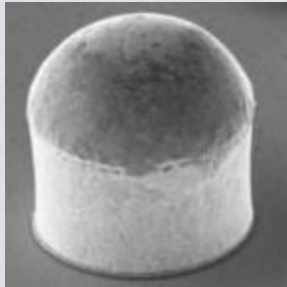
Technic offers a wide range of electroplating products for semiconductor applications, including:

Cu, Ni, Sn, Sn/Ag, Au, Au/Sn

Commercialized under the **Elevate[®]** product family

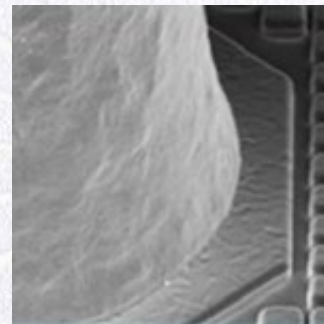
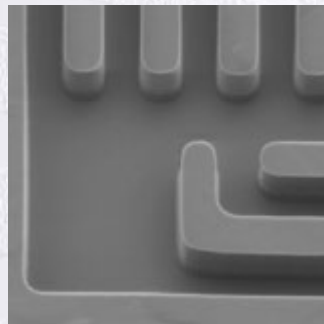
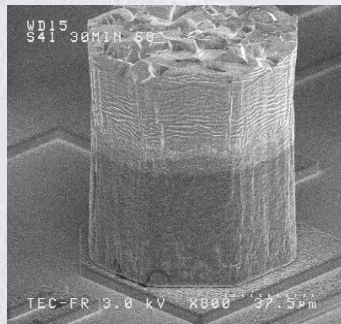
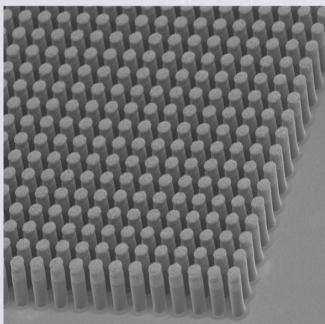
Applications lab for plating demonstrations (Cranston, RI)

Prototype, small run contract plating line (Anaheim, CA)



Semiconductor Materials - Specialty Chemicals-FEOL, BEOL & Advanced Packaging

Cranston, RI, Paris, FR, Grenoble, FR, Anaheim, CA



Specialty chemicals for critical aspects of the semiconductor manufacturing process

- **TechniClean:** PER removers, PCMPC, ink remover, debonding, etc.
- **TechniStrip:** Liquid resist and laminated film strippers
- **TechniEtch:** Selective barrier, seed layer, stack etchants

Semiconductor Materials – Ultra Pure Chemicals-FEOL, BEOL

Paris, Chalon Sur Saone, Rousset, France



Facility and Operation

- Supplier to the semiconductor industry since 1978
- Acquisition of Air Liquide divisions in 2008
- Acquisition of Kemesys in 2013
- Clean room manufacturing from 1 to 1000 liters

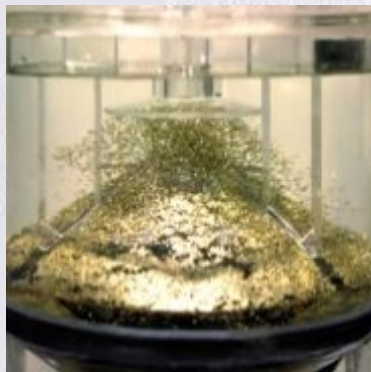
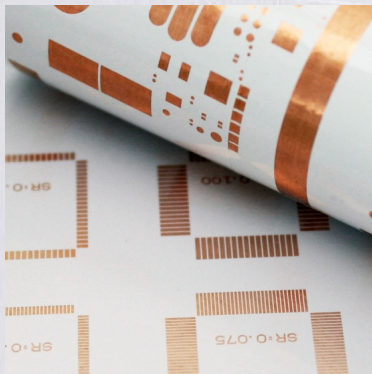
Products

- Chemicals for FEOL and BEOL semiconductor manufacturing : Acids and blends, H₂O₂, Solvents



Technic Advanced Technology Division (ATD)

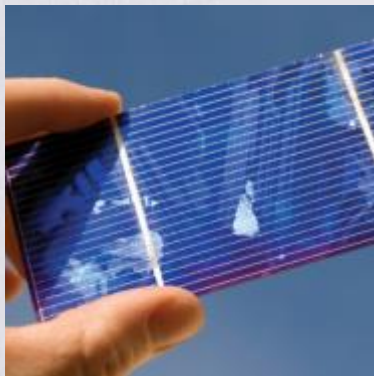
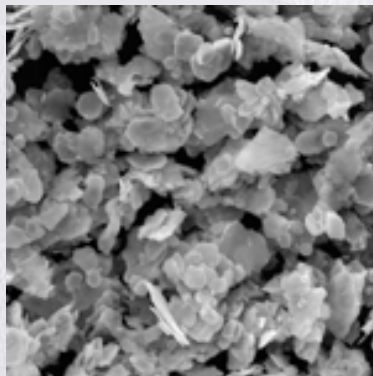
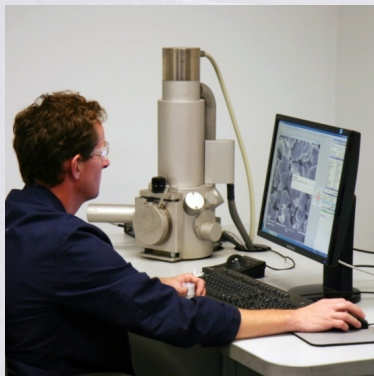
Plainview, New York 8,000 ft² (743 m²)



Technic's Advanced Technology Division (ATD) focuses on R&D, process integration, marketing and application support of Technic's advanced imaging and specialty chemical products.

Technic Engineered Powders Division

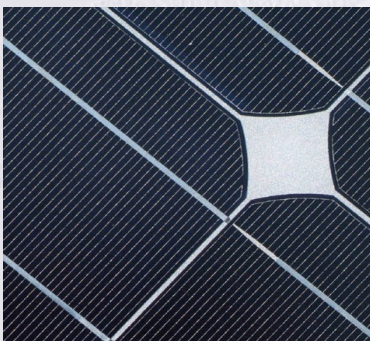
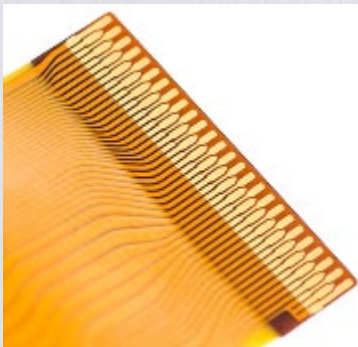
Woonsocket, Rhode Island 103,000 ft² (9,569 m²) ISO 9001-2000



Technic's Engineered Powders Division (EPD) manufactures metal powders and flakes for the photovoltaic, electronics, electrical, jewelry, aerospace, and medical industries. This Division provides powders and flakes for a wide range of applications including PV pastes, conductive adhesives, shielding inks, and electrical contacts. The Division's products are sold and distributed throughout the U.S., Asia, and Europe.

Technic Engineered Powders Division

Woonsocket, Rhode Island 103,000 ft² (9,569 m²) ISO 9001-2000



Applications

- Solar Cells
- LED Lighting
- Touch Screen Display
- Hybrid Electronics
- Electrical Contacts
- Conductive Elastomers
- Antiseptic Products
- EMI/RFI Shielding / Gasket Materials
- Diamond Grinding Wheels
- Conductive Inks, Pastes and Adhesives
- Conductive / Reflective Coatings

Technic Equipment Group - Pawtucket RI, Clearwater FL, Singapore



Technic operates three equipment manufacturing facilities worldwide;

- Technic Equipment Division (TED)
- Surface Finishing Technologies (SFT)
- Technic Future Automation (TFA)

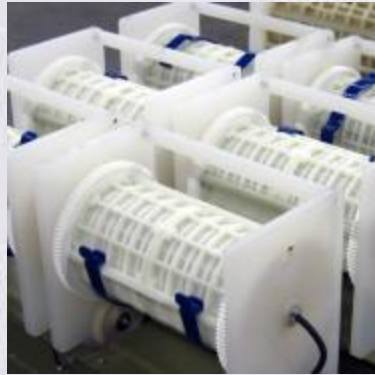
Processes supported include;

- Electroplating
- Anodizing
- Cleaning
- Electropolishing

Each location offers engineering, fabrication, assembly and service departments. Each group shares core competences, while each takes a lead role in specific equipment configurations.

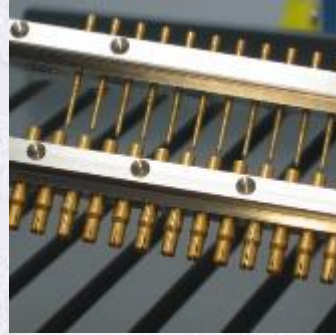


Technic Equipment Group – Pawtucket, Rhode Island 55,000 ft² (5,109 m²)



- Automated Hoist Systems (rack and barrel – for all applications)
- Reel-to-Reel Plating Systems
- SBE™ Systems (patented) for chip capacitors/resistors, small parts > 80 lines sold
- Medical Device Manufacturing tools – highly automated processing
- Miniature Plating Systems for Lab or Pilot Production
- Semi-Automatic and Manual Lines

Surface Finishing Technologies (SFT) – Clearwater, FL 40,000 ft² (3,716 m²)



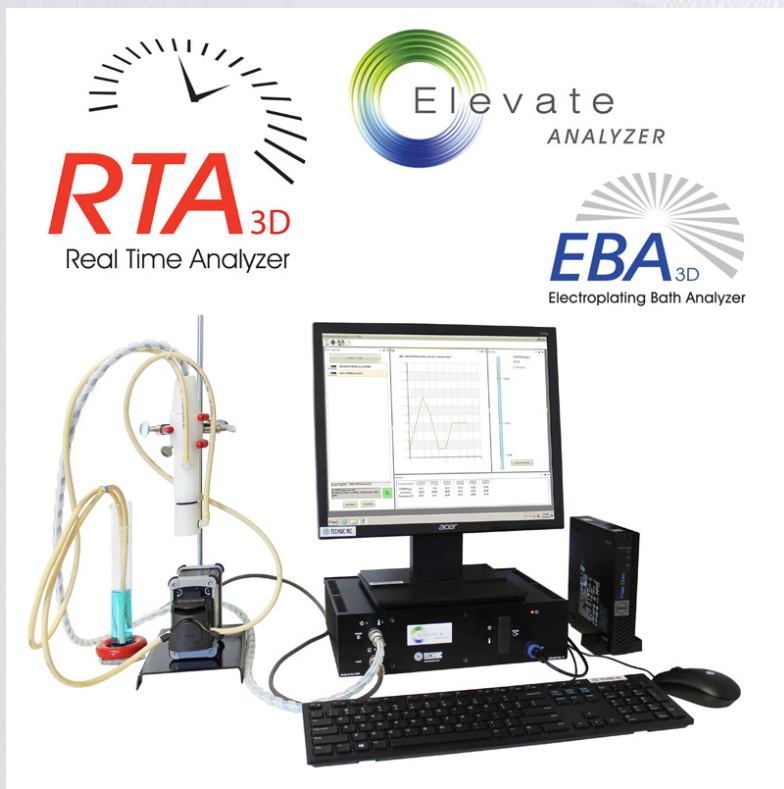
- MP200 Roll-to-Roll Plating Systems for flexible circuits
- CDP2000 Selective Plating Systems
- MP100 Vertical Continuous Plating Systems for PCB's
- SEMCON Plating Equipment for silicon wafers
- MP300 Continuous Plating Systems for loose parts plating
- TechniSol Solar Cell Plating Equipment
- Custom roll handling and automated loading equipment design
- Plating clip, rack, and fixture design

Technic Future Automation (TFA) – Singapore, 42,000 ft² (3,902 m²)



- Leading Asian producer of cut strip surface finishing equipment for the semiconductor packaging market
- Plating (Sn, Ni/Pd/Au) / Mold adhesion enhancement / Deflashing application > 300 lines sold globally
- Cleaning system for Semiconductor & Solar Industry
- Current focus is surface finishing tools for the advanced packaging market in Asia
- Recent expansion in capabilities for high speed (> 10 ASD) Vertical Cu Electrodeposition System

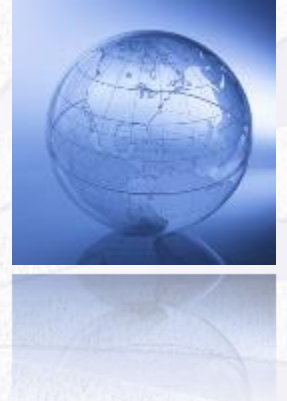
Analytical Control Systems (EBA and RTA3D)



Technic offers a full line of electroplating bath analyzers, from a fully automated, in-tank system (RTA3D – Real Time Analyzer) to a bench-top (EBA - Electroplating Bath Analyzer) unit. Technic monitoring systems combine the power of AC and DC voltammetry with the state of the art chemometric approach.

- Technic RTA3D
Fully Automatic On-line Chemical Analysis
More than 200 units in operations globally
- Technic EBA3D and Elevate Analyzer
Manual Bench-top Analytical Equipment

Technic's Industry Leadership



- Currently Technic is the #1 supplier of precious metal plating processes in North America (Silver, Gold, Palladium, Platinum, Rhodium, Ruthenium)
 - > 400 gold process customers
 - > 300 silver process customers
- Technic EPD is the world's largest supplier of Ag powder for PV applications
- Leading edge surface finishing equipment design
 - First high-speed cut strip "magazine-to-magazine" plater (>300 units)
 - MP-100/200 reel-to-reel flex circuit board plater (>100 units)
 - Spouted Bed Electrode (SBE) plater for MLCC (> 80 units)
 - SEMCON wafer metallization benches
- Automated Bath Analysis - Real Time Analyzer equipment (> 200 units) for semiconductor wafer Cu plating, EBA for PWB and electronic component markets
- Leading edge chemistry for "green" manufacturing, including non-cyanide precious metal processes
- Technistrip, TechniEtch, Elevate series of semiconductor processes

Field Service and Support



- Substantial global assets in support of complex manufacturing initiatives
- Troubleshooting of chemical, electrical, mechanical or control problems
- No-charge analytical and metallurgical analysis*
- Available service personnel 24 hrs./day, 7 days/week – through our worldwide service network
- Proactive customer service program
 - Process / line audits before installation
 - Startup review with engineering & mfg. departments
 - Technical personnel training in chemistry / equipment
 - Ongoing preventive maintenance programs
- Regular system performance audits and adjustments
- Ongoing commitment to on site customer support

*To qualified customers

Service & Technical Support Infrastructure



North America

Customer Service Labs in six locations

Cranston, RI; Plainview, NY; Dallas, TX; Chicago, IL;

Anaheim, CA; Toronto, Canada

>20 technical field support personnel



Europe

Customer Service Labs in five locations

Coventry, UK; Paris, France; Grenoble, France; Milan, Italy;

Solingen, Germany

>15 technical field support personnel



Asia

Customer Service Labs in seven locations

Yokohama, Japan; Seoul, Korea; Hong Kong, China; Suzhou,

China; Donguan, China; Taipei, Taiwan; Singapore

>50 technical field support personnel

Technology Overview



- Development of innovative technology is and always has been the heart of Technic
- Technic holds a significant IP position (US and overseas patents and proprietary formulations/designs) in electroplating chemistry, equipment design, and related fields
- Technic performs fundamental R&D and materials process development in six (6) global locations:
 - Cranston, RI, USA
 - France / 2 Sites (Semiconductor)
 - Plainview, NY, USA
 - Woonsocket, RI USA (Engineered Powders)
 - Hong Kong (Applications Engineering / R&D)
- Product availability and support from UK, Italy, and joint development partners
- Technic has prepared for the future by investing heavily in R&D infrastructure, technology development, and support capability, while competitors are downsizing

or distribute

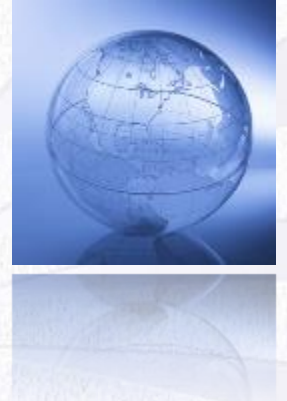


Technology Overview



- Technic employs a staff of over 90 high level scientists and engineers working in research, product characterization, and materials/equipment engineering
- Equipment List includes:
 - AFM, SEMs, EDX, ICP/MS, ICP/AES, Ion Chromatography, UHPLC, HPLC, GC, GC/MS, AA, ICP, UV/VIS, FTIR, RTA, EBA, CVS, XRD (outside service), TGA, TMA, DSC, chemical synthesis and reaction vessels, surface tension analyzers, solderability testers, reflow ovens, wetting balances, wear and contact resistance testers, ductility and elongation test equipment, viscometers, conductivity testers, cross sectioning equipment, surface profilometers, etc.
- Large variety of lab scale and prototype process application equipment for many applications
- Applications Engineering Lab in Hong Kong

Technic's Continued Commitment to Innovation



- Internal formulation of advanced metallization, electroplating, imaging, engineered powders, photoresist stripping, and ancillary processes/products.
- Licensing or joint development programs
 - **Stapleton Technologies** – *Wafer level packaging tools and chemistry*
 - **Technic Italy (Italgalvano)** – *Industrial finishing processes*
 - **Arizona State University** – *solar LIP tools and processes*
- Product development and application specific equipment development.
- Collaboration with leading research universities (MIT, Arizona State, Hong Kong Polytechnic, Harvard, Fraunhofer, others)
- Technical support on a global basis.
- Integration of plating processes, analytical controls, and equipment for complete solutions to our customers' processing requirements.

Technic's Strengths



- Advanced Engineered Systems
- Technology Innovation
- Superior Technical Support
- Global Infrastructure
- Flexibility
- Global Manufacturing Capabilities
- Leading Edge Process Performance



Thank you



TECHNIC