



# TECHNIC

## Advanced Engineered Solutions

Specialty Chemicals

Surface Finishing Equipment

Engineered Powders

Analytical Controls



# Corporate Vision & Mission Statement

- Technic will lead our industry in value creation for our customers and stakeholders.
- Our Mission is to constantly strive to make our customers successful by delivering differentiated technical and commercial value and best in class overall customer support.
- We consistently strive to push the limits of what can be accomplished.





# About Technic

- Technic is a privately held, global company with a belief in innovation and employee empowerment.
- Approximately 950 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





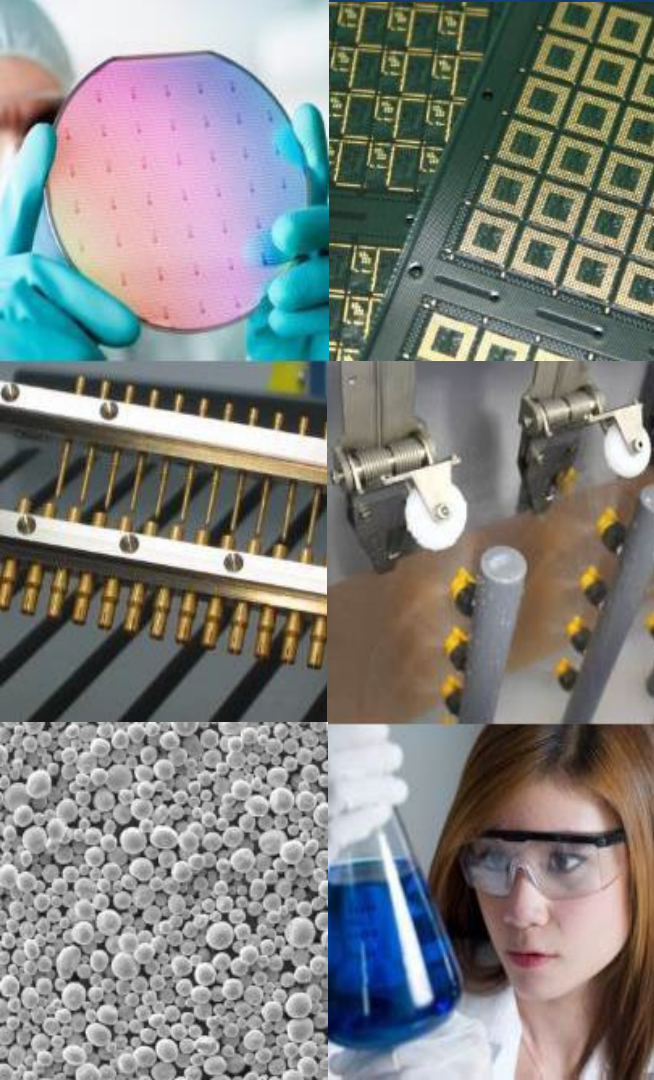
# Technic – *Company History*

Technic is a Rhode Island, USA based private company.

- Family owned since inception
- Incorporated in 1944
- Expansion into the electronics industry in the 1950s
- Continuous expansion by acquisition and organic growth

Technic has grown to be a leading global supplier of:

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



# Technic – *Business Units*

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



# 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)*

**2021 – Premier Lacquers** *(Process Chemistry)*







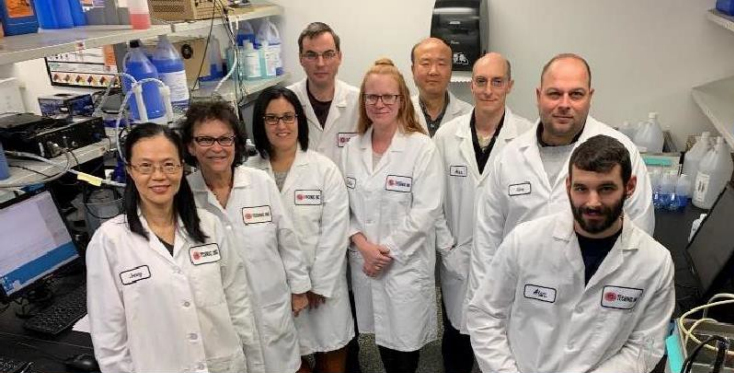
# Technic— Corporate Offices

Cranston, Rhode Island

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



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# Technic – *Research & Manufacturing*

Cranston, RI, USA 120,000 sq. ft. (ISO 9001-2000)

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

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



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# Technic Worldwide Operations

## Corporate Offices

Cranston, RI, USA



# Technic Worldwide Operations

Chemical Manufacturing, R&D, Sales & Service Offices

USA: Rhode Island (3), Illinois, California (2), New York

Canada

Europe: France(4), Germany, Italy, England

Hong Kong

China (3)

Taiwan

Singapore

Korea

Japan

Malaysia

Philippines

# Technic Worldwide Operations

## Equipment Manufacturing

Pawtucket RI, USA  
Clearwater, FL, USA  
Singapore





# Technic Worldwide Operations

## Engineered Powders

### Manufacturing

Woonsocket, RI, USA

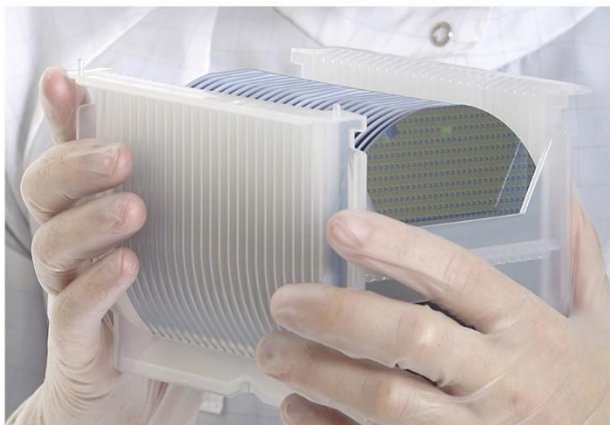
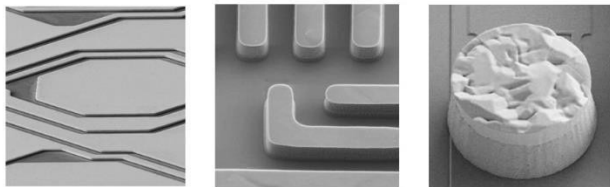


# Technic Worldwide Operations

## Electroplating Services Division

Suzhou and Zhangjiang, China





# Semiconductor Materials

## ECD Products for Advanced Packaging

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

Technic offers a wide range of ECD (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 wafer tools (Anaheim, CA, Taiwan, Singapore, China)





# Semiconductor Materials

## Specialty Chemicals-FEOL, BEOL & FBEOL

Woonsocket, 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



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# 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,  $\text{H}_2\text{O}_2$ , Solvents



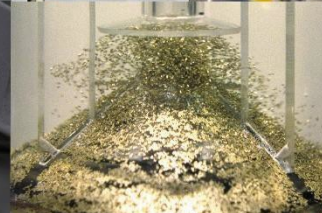
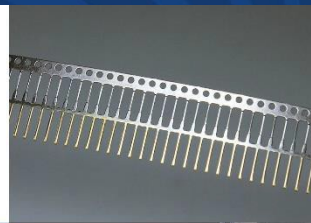
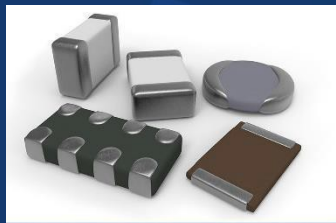




# Technic Advanced Technology Division

Plainview, New York 8,000 sq. ft.

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.



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# 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. Individual sites offer distinct core competences for equipment platforms.



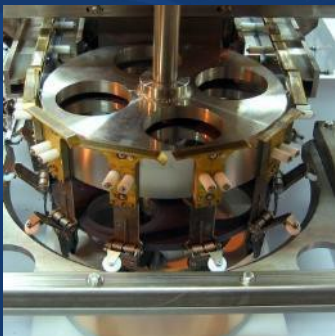
# Technic Equipment Group

Pawtucket, Rhode Island 55,000 sq. ft.



- Automated Hoist Systems (rack and barrel – for all applications)
- Reel-to-Reel Plating Systems
- SBE® Systems (patented) for chip capacitors/resistors, small parts > 110 lines sold
- Medical Device Manufacturing tools – highly automated processing
- Benchtop Plating Systems for Lab or Pilot Production
- Automatic, Semi-Automatic, & Manual Lines

# Surface Finishing Technologies (SFT) – Clearwater, FL 40,000 sq. ft.



- 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 wafer processing
- MP300 Continuous Plating Systems for loose parts plating
- Advanced Material Handling Systems for Ultra-thin Substrates



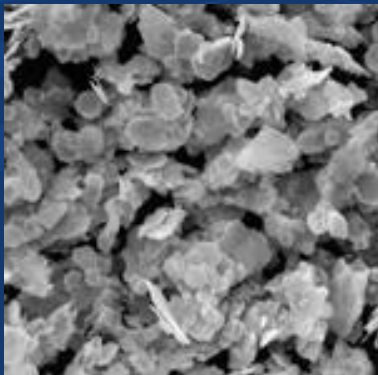
# Technic Future Automation (TFA) – Singapore, 42,000 sq. ft.



- 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

# Technic Engineered Powders Division

Woonsocket, Rhode Island, 103,000 sq. ft. (ISO 9001-2000)



Technic Engineered Powders manufactures metal powders and flakes for the photovoltaic, electronics, electrical, jewelry, aerospace, and medical industries. The Division's products are sold throughout the U.S., Asia, and Europe.

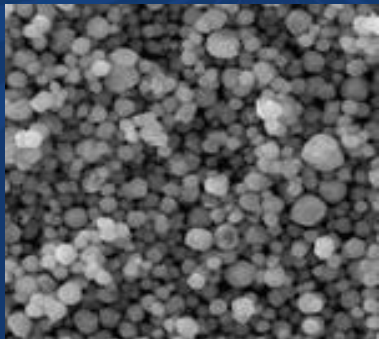
Range of applications:

- PV pastes
- Conductive adhesives
- Shielding inks
- Electrical contacts



# Technic Engineered Powders Division

Woonsocket, Rhode Island, 103,000 sq. ft. (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



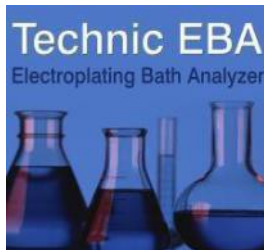


# Analytical Control Systems (EBA and RTA)



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

- Technic RTA  
Fully Automatic On-line Chemical Analysis  
More than 200 units in operation globally
- Technic EBA  
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, and alloys)
  - > 400 gold process customers
  - > 300 silver process customers
- Technic EPD is a leading 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 (>100 units)
  - SEMCON wafer metallization benches (>50 units)
- Automated Bath Analysis - Real Time Analyzer equipment (> 200 units) for semiconductor wafer Cu plating, EBAfor PWB and electronic component markets
- Technistrip, TechniEtch, TechniClean, and Elevate series of semiconductor processes
- Leading edge chemistry for “green” manufacturing, including non-cyanide precious metal processes, non-boric acid Ni, Ni barrier layer replacement, etc.



# Technic Global 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 and Technical Support Infrastructure



## North America

*Customer Service Labs in five locations*

Cranston, RI; Plainview, NY; 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;

Balve, Germany

>15 technical field support personnel

## Asia

*Customer Service Labs in seven locations*

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

China; Donguan, China; Jiangmen, China; Hsinchu, Taiwan; Singapore

>50 technical field support personnel



# Technic 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 electrodeposition and specialty chemistry, equipment design, and related fields
- Technic performs applied R&D and materials process development in eight (8) global locations:
  - Cranston, RI, USA
  - Plainville, NY USA
  - France / 2 Sites (Semiconductor)
  - Hong Kong
  - Taiwan
  - Italy (Industrial / Decorative)
  - Woonsocket, RI USA (Engineered Powders)
- Product availability and support from UK, Italy, France, 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 consolidating



# Technic Technology Overview

- Technic employs a staff of over 100 high level scientists and engineers working in research, product characterization, and materials/equipment engineering.
- A large variety of lab scale and prototype processing equipment for many applications.
- New Applications Engineering Labs in Hong Kong, France, Jiangmen, PRC and Singapore.

## Equipment and Testing Capabilities

AFM  
SEMs w/ EDX  
ICP/MS, ICP/AES  
Ion Chromatography  
UHPLC, HPLC, GC, GC/MS  
AA, ICP, UV/VIS, FTIR, RTA  
EBA, CVS, XRD  
TGA, TMA, DSC,  
Synthesis/reaction vessels  
Surface tension analyzers

Solderability testers  
Reflow ovens  
Wetting balances  
Wear/contact resistance testing  
Ductility/elongation testing  
Viscometers  
Conductivity testers  
Cross sectioning equipment  
Surface profile meters  
and more...



# Technic's Continued Commitment to Innovation



- Internal formulation of advanced metallization, ECD, semiconductor materials (PR strip, metal etch, and PERR clean), imaging materials, engineered powders, and ancillary processes/products.
- Consortia, Licensing or Joint Development Programs
  - UCLA CHIPS – *Semiconductor Packaging Integration*
  - LETI IRT – *Semiconductor FEOL and BEOL materials*
  - ECSEL – *MatQ Project (Quantum Computing)*
  - Technic Italy (Italgilvano) – *Industrial finishing processes*
  - Stapleton Technologies – *Wafer-level packaging tools and chemistry*
- Product development and application-specific equipment development.
- Research university and institute collaboration (MIT, Arizona State, Hong Kong Polytechnic, Harvard, Fraunhofer, AENEAS, others)
- Tool Supplier Collaboration – AMAT, Lam, Class One, Nexx, Veeco, DNS, others
- Integration of plating processes, analytical controls, and equipment for complete solutions to our customers' processing requirements.





# Technic Strengths

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

