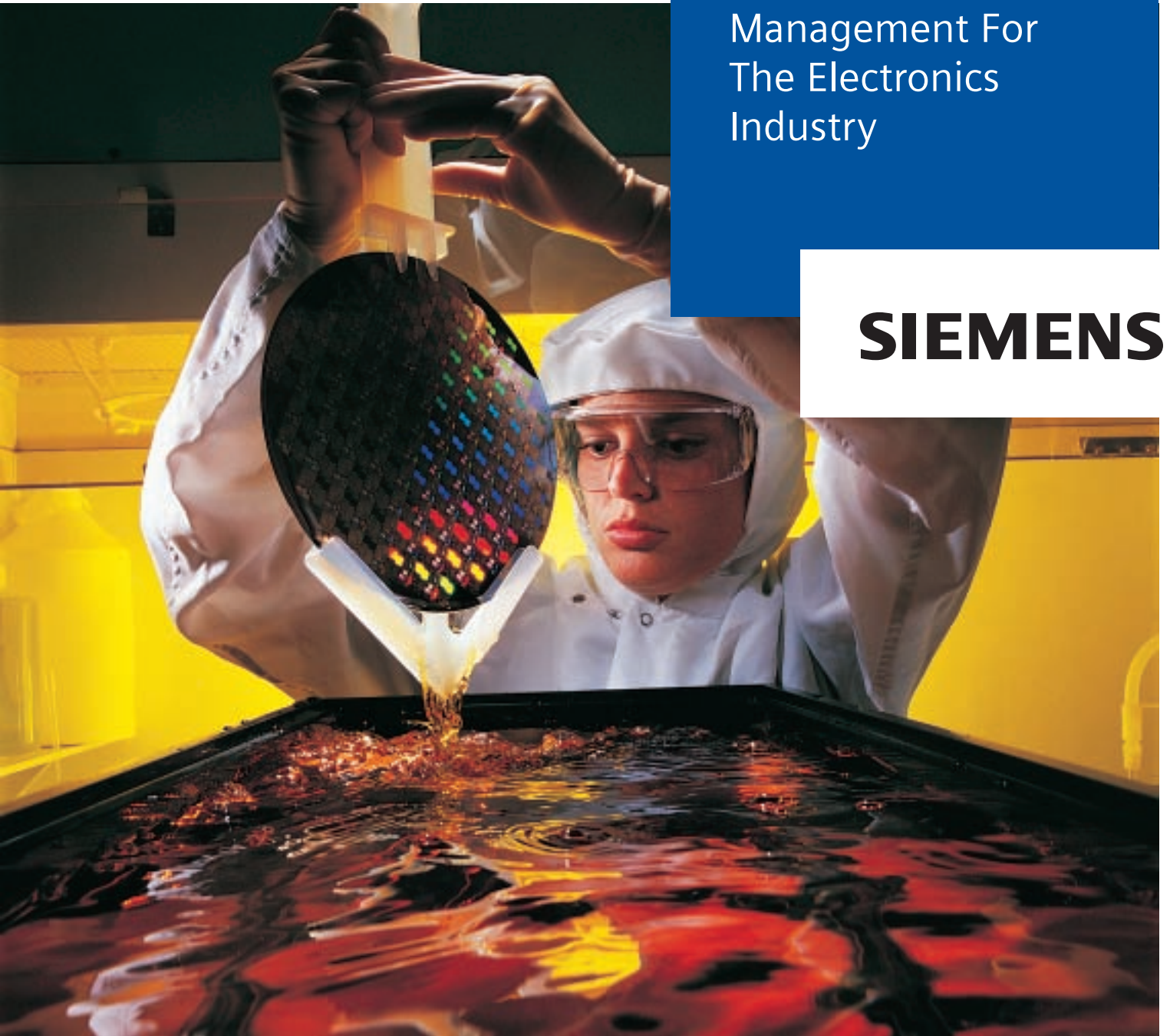


Water Technologies

Total Water Management For The Electronics Industry

SIEMENS



SERVICES

- Outsourced Operations
- Emergency, Short-and Long-term Water Treatment Systems
- Service Contracts

RECLAMATION

- CMP Effluents
- Low TDS/TOC Rinses
- Backside Grind Effluent
- HF Rinses
- Copper Plating Rinses
- Manufacturing Rinse Effluents

ULTRAPURE WATER

- Pretreatment
- Make-up
- Polishing
- Filtration
- Reverse Osmosis
- Electrodeionization
- Degasification
- Deionization
- Advanced Oxidation
- Ultrafiltration

WASTEWATER TREATMENT

- pH Neutralization
- Fluoride Removal
- Ammonia Reduction
- TOC/BOD/LOD Reduction
- Arsenic Removal
- CMP Effluent Treatment (with or without copper)
- Phosphate Reduction
- Suspended Solids Removal
 - Backside Grind
 - Polishing Slurries
 - Lapping Compounds
 - Media/Carbon Filter Backwash
- Copper Removal
- Microfiltration



UNDERSTANDING THE ISSUES

Electronics manufacturing facilities require large volumes of water – as much as 450 cubic meters per hour or 2.8 million gallons per day – to manufacture its products. Continued expansion and development of more advanced technologies has created an even greater burden on limited water resources and local water infrastructure. Environmental regulations impact the cost of water usage, treatment and discharge, while manufacturers work to reduce costs to stay competitive.

MANAGING YOUR WATER RESOURCE

Siemens Water Technologies can help you control costs, meet production water demands and environmental regulations by managing every aspect of your facility's water. We approach water treatment and usage as a single, integrated system – ultrapure water purification, distribution, water reclaim and reuse, and wastewater treatment.

MEETING YOUR GOALS

Siemens Water Technologies understands that in today's evolving high-tech markets, electronics manufacturers must innovate and produce at such great speed and volume to simply survive the technology cycle. As you struggle to increase capacity, reduce costs and meet the demand for more complex products, we are here to help you meet those needs with innovative technologies, products and services.



Ultrapure Water Systems and Treatment

Skilled service team provides on-site monitoring of water treatment systems.



High-purity ultrafiltration system

Whether you are upgrading existing systems to meet the latest nanometer technology or building a new 300 mm facility, we can help manage your most challenging projects. Siemens Water Technologies is there for you from conceptual process engineering design, project execution and commissioning to on-going service and plant operations.

PROCESS CAPABILITIES

We are proud of our long history of process design capabilities for ultrapure water. Siemens Water Technologies has developed solutions for the most challenging situations using proprietary technology, tried-and-true standard equipment and service offerings. We can design to your specification – guaranteed to meet your water quality needs.

EQUIPMENT OFFERING

Siemens can quickly evaluate a UPW system using our proprietary WinCPD® modeling software. This will provide clear performance criteria for pretreatment, make-up, and water polishing loop to maximize system efficiency.

Our system offering includes filtration; chemical dosing; media, membrane and carbon filtration; ion exchange solutions; CDI-VNX™ continuous deionization systems; ultraviolet disinfection/TOC reduction; reverse osmosis; USF™ NR30 UPW polish resin; membrane degasification; ultrafiltration; and analytical measurements. The equipment offering includes a fully integrated control system, data trending and remote monitoring.

SERVICE OFFERING

The ultrapure water service offering from Siemens Water Technologies is unmatched in the industry. We offer preventative maintenance contracts with every piece of equipment we sell. That provides you peace of mind when it comes to ensuring your system is operating efficiently. We also have operations experience with the largest manufacturers in the industry. We can build, own and operate a system or we can operate your existing equipment. A service contract guarantees you have qualified personnel at your location with the experience and focus to maintain this critical component of the manufacturing process.

Wastewater Systems and Treatment

PROCESS CAPABILITIES

Wastewater treatment is just as critical in the electronics industry as the purity of the process water. With water availability and environmental challenges, customers are expected to use water more efficiently and effectively. Siemens Water Technologies is working with customers every day to develop new ways to treat, reuse and reclaim the water. With our process and system know-how, our team applies process options to meet the site-specific demands of the facility. In addition, pilot testing is available for new waste stream treatment feasibility.

EQUIPMENT OFFERING

Siemens Water Technologies offers wastewater treatment options to meet differing challenges from etching and cleaning baths, CMP, copper CMP, heavy metals, plating, rinse baths, backside grinding, hydrofluoric treatment, ammonia treatment, and dicing operations.

Our equipment offering includes precipitation clarification, acid waste neutralization systems, pH adjust systems, Copper Select™ ion exchange systems, membrane filtration, stripper/scrubber units and filter press systems.

SERVICE OFFERING

When dealing with waste treatment, you rely on a provider who will make sure the best solutions are applied to the situation. Wastewater ion exchange has been used successfully at many customer sites as a quick, inexpensive way to treat waste streams. The portable ion exchange or carbon tanks are processed at an off-site location for regeneration and metals recovery reducing capital cost, risk and liability for our clients.

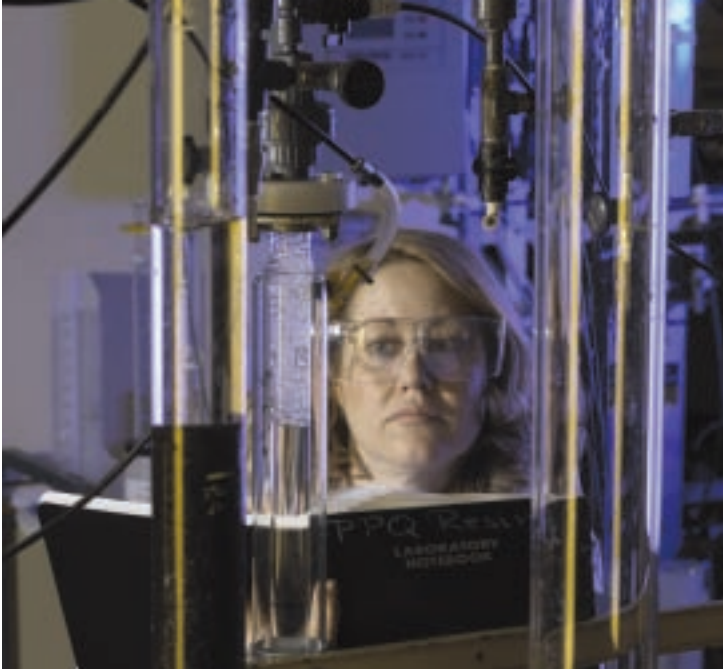
We have experience operating wastewater treatment systems for electronics manufacturers. Again, we provide the best trained staff to manage your waste so you don't have to. We meet or exceed all regulations set by the customer, as well as local environmental regulating agencies.



Pretreatment system

SIMPLE FLOW SCHEMATIC	
Acid/Alkali	Physical/Chemical (Neutralization)
Fluoride/Phosphate	Precipitation/Clarification
COD/BOD	Biological Treatment
Chemical/Mechanical/Polishing (CMP) Slurries	Precipitation/Clarification
Ammonia	Air Stripping/Scrubbing

Operations and Service Contracts



Resin laboratory testing facility

MANUFACTURING

To ensure that our products are built to the quality standard you are accustomed to, we employ best practices and quality improvement programs to make sure our designs, assemblies and finished products will work when installed. We have ISO certified manufacturing facilities in addition to many sub component suppliers. System components are engineered and assembled to meet UL, CE and other regulations as required by the local authority.

No project is too big or small. Siemens Water Technologies has global manufacturing capabilities to build process treatment equipment for you.

OUTSOURCING

Siemens Water Technologies has provided outsourced water treatment services to the electronics industry for well over a decade. We have an excellent record for providing quality, quantity and cost of water. Our safety record speaks for itself. Our trained staff works in tandem with the facility's team to ensure that the water treatment system is meeting the specifications required

for the facility to produce its product. The benefits of outsourced water treatment include full scale operations – 24/7, 365 days per year – by a trained staff, financing options that offset capital investment in the core business, and peace of mind that the system will be operated efficiently and seamlessly with the rest of the facility.



Oxygen removal system

Siemens Water Technologies has the experience with 150-300mm micro chip, flat panel display, photovoltaic, and other electronics manufacturing to meet all your water requirements.

RECLAMATION SOLUTIONS:

- | | |
|---------------------|-----------------------------|
| Process Support | TOC Reduction |
| Inorganic Removal | TDS Reduction |
| Organic Reduction | Particle/Bacteria Reduction |
| SS/Bacteria Removal | Influent Quality Control |
| SS Removal | Integration |
| Organic Reduction | |

A WIDE RANGE OF SUPPORT SERVICES:

- | | |
|----------------------|---------------------------------|
| Treatability Studies | Design/Build/Own/Operate |
| Pilot Testing | Spare Parts and Retrofitting |
| Resin Processing | On-site Service and Maintenance |
| Membrane Cleaning | Service Deionization |

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The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of the contract.

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