



WATLOW®

Powered by Possibility



Welcome to Watlow

A Message From Peter

Watlow was founded in 1922 and was built on the family's passion to "be the best." This dedication created a steady stream of new products, a devoted and capable workforce and steady growth.

Today, almost 100 years later, we continue to strive to "be the best" by following the principles of Lean, an organizational philosophy that promotes continuous improvement. We call it the **Watlow Way**. The **Watlow Way** takes us back to our roots because it is a people-centric strategy that drives us toward stronger technical capabilities and continuous improvement, with the ultimate goal of creating superior thermal solutions for our customers.

We are industry leaders in the field of thermal sciences and engineering. Watlow's talented team members use their strong technical capabilities to build innovative products, and our ultimate goal is to achieve product leadership in targeted areas. For Watlow, no challenge is too big. Today, our important work is changing the world for the better by enriching lives through inspired innovation.



Peter Desloge
Chairman of the Board, Chief Executive Officer and President



1924 Watlow's first factory



1951 Watlow's second factory



1995 Watlow headquarters following two expansions



2016 Watlow's headquarters and Advanced Technology Center following a complete renovation

Watlow's Thermal Solutions

Superior thermal solutions

Watlow provides best-in-class engineering expertise and leading thermal products that enable customers to thrive. Watlow designs and manufactures complete thermal systems, which allows us to recommend, develop and deliver the optimum thermal solution for our customers' equipment.

Watlow, with over \$425 million in annual sales, manufactures thermal systems for a broad range of industries. Our customers receive the highest level of technical expertise combined with exceptional customer service.

Since 1922, Watlow has grown in product capability, market experience and global reach. We hold more than 980 patents and employ 2200 team members worldwide with 14 manufacturing and technology facilities in the United States, Mexico, Europe and Asia. We also have 45 sales offices in 14 countries around the world. Our company has grown at an exponential rate, but our commitment remains the same—to provide our customers with superior products and services that give them a competitive advantage.

Watlow manufactures thermal solutions for the following industries:

- Semiconductor processing
- Energy processes
- Diesel emissions
- Foodservice equipment
- Medical, clinical and analytical equipment
- Aerospace and defense



EZ-ZONE® RMZ
Fiber Optic Temperature
Measurement System



F4T with INTUITION®
Process Controller



FLUENT® In-Line
Heater



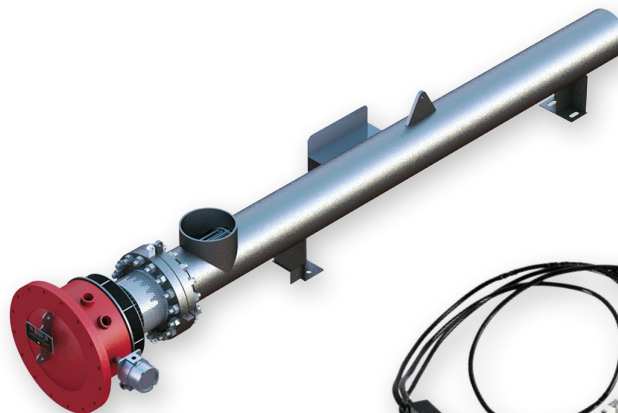
WATCONNECT® Control Panel



ASPYRE® Power Controllers



HYDROSAFE®
Electric Heat
Exchanger



OPTIMAX®
Heat Exchanger



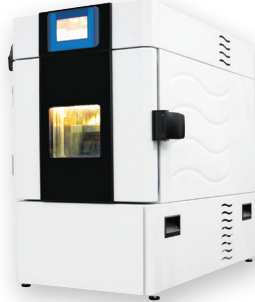
EXACTSENSE®
Temperature Sensor



Watlow Products Make An Impact

ASPYRE® Power Controllers

The ASPYRE® family of power controllers more precisely controls the temperature in ovens used to cure paint on automotive parts. By intelligently controlling the amount of energy delivered to an application, ASPYRE can dramatically improve system performance compared to open loop temperature sensing.



ULTRAMIC® Heaters

Watlow designed an ULTRAMIC® advanced ceramic heater to meet the challenging requirements of a high flow oxygen therapy device. By safely providing warm, moist air, high flows can be delivered comfortably through nasal cannula versus traditional masks.



Polyimide Heater for Electrostatic Chucks

Electrostatic chucks (ESC) are used extensively in the manufacture of integrated circuits to securely support and clamp the silicon substrate during processing. Watlow's polyimide heaters are used in many of the electrostatic chucks to help optimize the thermal performance of the process tools.

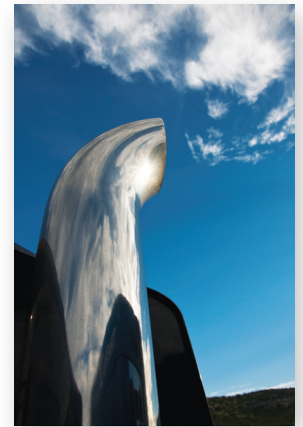


Silicone Rubber Heaters

Military helicopters use Watlow's silicone rubber heaters under the foot pedals in the cockpit to help keep the pilot's feet warm.

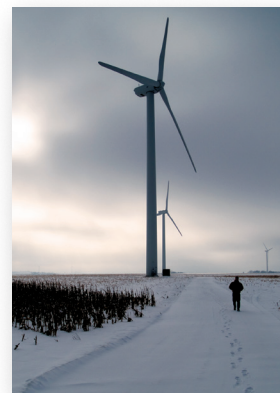
EXACTSENSE® Sensors

Today, it takes a total of 65 trucks to emit the same amount of pollution as one truck did in 1988. Watlow's EXACTSENSE® active thermocouple sensors are used to measure engine temperatures, which are critical to the performance of the emissions aftertreatment systems that reduce pollution.



Polycarbonate Heater, Resistance Temperature Detector (RTD) and Custom Controller

A Watlow thermal system containing a polycarbonate heater, RTD and custom controller heat and maintain the contrast media used in angiograms or CAT scans at body temperature for improved test results and greater patient comfort.



Strip Heaters

Large wind turbines must operate reliably in remote locations and under harsh conditions. Watlow's 375 strip heaters are mounted to the gearbox to keep the lubricants fluid during cold start ups. Watlow's 375 finned strip heaters heat the air in the electronics enclosures to prevent condensation and keep electronics at operating temperature.



Flexible Heaters

Reliable test results to accurately diagnose a patient's illness often require a precise thermal solution in clinical diagnostic equipment. Watlow's wire-wound flexible heaters offer the precision needed to produce consistently accurate test results.

Direct Electric Heat Exchangers

Glycol dehydration units depress the hydrate formation point of natural gas and natural gas liquids through water removal. Watlow's thermal solution including a process heater and control panel vaporize saturated glycol to allow reuse of the desiccant liquid.



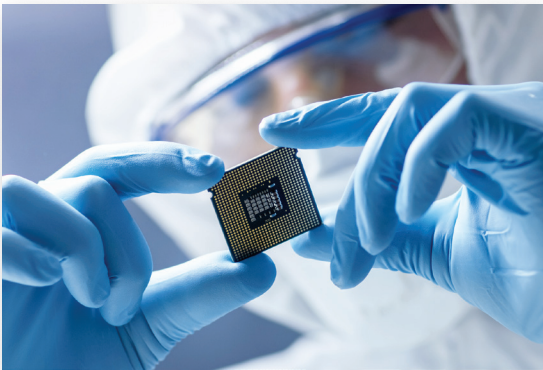
FIREROD® Cartridge and Cable Heaters

Computer chips are made with the help of a parallel cable heater and FIREROD® cartridge heaters. The parallel cable heater helps to maintain a uniform temperature across an aluminum plate, which then supports a wafer in the process of manufacturing computer chips. FIREROD cartridge heaters play a role in this process by defrosting gases in cryogenic vacuum pumps.



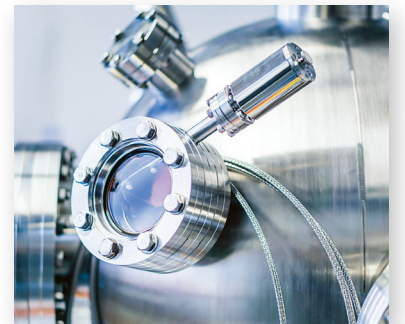
Formed Tubular Heater

Watlow's MULTICELL™ insertion heaters are used in superplastic forming presses, which are used to manufacture aircraft and aerospace components.



F4T Temperature and Process Controller

The F4T with INTUITION® process controller installed in high end vacuum chambers reduces costs by eliminating hardware devices, replacing them with digital switches and math functions that are part of the F4T firmware.



Resistance Temperature Detector (RTD) and FIREROD Heater

A heated transfer line that includes an RTD sensor and FIREROD cartridge heater is used to maintain the temperature of samples gathered by a gas chromatograph and mass spectrometer for analysis. This



transportable equipment is used for testing of chemical spills, refineries and power plants.



FIREBAR® Tubular Heater

Many of the largest fast food restaurants in the world use Watlow's FIREBAR® heaters in their deep fryers to prepare chicken, french fries and other fried foods.

Quality Products that Perform

High quality

At Watlow, quality means producing either a single product, or an entire thermal system, that matches or exceeds customer expectations. Our products are so well made that many of our customers request ship-to-stock without inspecting the incoming products . . . because they know we control our processes through every step.

This confidence is a result of Watlow's strong quality programs:

- Acquiring an extensive list of agency approvals that require quality system auditing throughout our company, worldwide.
- Organizing our company into functional teams and strategic business units for greater creativity and productivity.
- Training team members on company goals and values, participative management and the use of Lean methodologies.
- Empowering those teams to make operating improvements to eliminate waste and improve cycle times.
- Establishing measurements to chart our progress toward our four key operational objectives:
 - Quality
 - Cost
 - Service
 - Innovation
- Developing process standards to assure the production and on-time delivery of high-quality products.



Technical compliance and agency approvals

Safety is embedded into every aspect of our organization, from our team members to our operations to the products and systems we manufacture. Watlow is proud that many of our components, systems and facilities comply with industry regulations ensuring that our products are safe to use and can be incorporated into your application without worry.

We maintain for compliance with the following agencies, and more:



Korea Gas Safety Corporation



Expert Technical and Global Application Support

We ask the right questions

In addition to low-quality materials and poorly controlled processes and standards, products can fail because a supplier does not ask the right questions. It is important to know how applications relate to temperature, watt density requirements, temperature sensing, control systems and the process environment. We provide dedicated technical support throughout the project to optimize performance.

Watlow asks the right questions to understand and solve problems – no matter how complex – correctly, quickly and cost effectively, to meet application and product life cycle needs.

Complete thermal provider

Unlike most suppliers that sell a single thermal product, Watlow's expertise is designing, recommending, building and delivering a complete thermal solution. Choosing a single source supplier allows one-stop access to expert design, products and engineering services for all thermal system needs.

Complete solutions with subassemblies

A subassembly can be as simple as attaching a special connector with a lead wire to developing a complex integration of heaters, sensors and controllers. Watlow partners with customers throughout the process to develop a fully functional, complete thermal subassembly into a modular unit that can be easily integrated with the application or process.

Engineering expertise with scalable models and prototypes

Our engineers can translate a concept into a model of a design using state-of-the-art, 3-D modeling tools. This can eliminate the need to test multiple prototypes that may not fit specific application requirements.

Watlow utilizes the latest computational

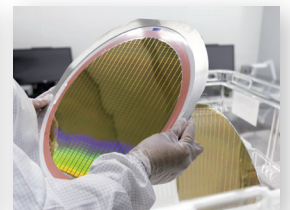


and finite element analysis (FEA) modeling techniques to measure system performance prior to production start up. Design revisions can be easily incorporated into a model, resulting in a significant reduction in the lead time and cost to develop new products.

Product Leadership

Watlow was founded on innovation and we continue this tradition through the work we do every day. Our team members are encouraged to use their strengths to provide break-through products and customized services.

Watlow is a product leadership company that is backed by operational excellence, and we understand that being the best takes intelligence, creativity and responsibility. Partnering with Watlow provides the competitive edge needed to get products to market first. We work with our customers and aggressively develop solutions that far exceed any competitive offerings.



Respect for People

STEM outreach

At Watlow, we are passionate about fostering STEM (science, technology, engineering and mathematics) in our local Watlow families and communities.



We are inspiring future generations of technical talent through our STEM outreach efforts by:

- Encouraging individuals at young ages to consider engineering and technical arts
- Providing support to those in college who are striving to earn their engineering and technical arts degrees
- Attracting technical talent to Watlow

Career fairs, college scholarships, summer camps, co-ops and job shadowing are just a few of the Watlow programs offered to students in the community as we develop a pipeline of future engineers, technicians and vocational talent.

Diversity

Each day at Watlow we are guided by our value of “Respect Everyone.” Watlow embraces diversity and it is an integral part of who we are as a company, how we operate and how we see our future. As a global and multicultural organization, we work diligently to provide all our team members with equal access to information, resources, personal development, job growth and opportunities. Our diverse work teams deliver high value to our

customers with their rich and varied backgrounds, experiences, talents and ideas. In turn, that diversity of thought and creativity ensures diverse ways of looking at problems and helping each other every day. At Watlow, by respecting individual and cultural differences, we are creating a competitive edge that will ensure Watlow’s long-term health and allow our team members to be their best.



Community

Watlow believes in helping people improve the quality of life in their communities. Each year we partner with a variety of civic organizations, educational institutions and other businesses to help support programs in the communities where we live and work. We try to offer people the tools they will need to make a difference, both today as well as tomorrow.



Watlow also encourages our team members to get involved in community activities. Each year, Watlow team members donate clothes, food, time, labor, skills and money to a wide variety of charitable organizations around the world.



Working At Watlow

The Watlow Way

At Watlow, we are guided by the behaviors, values and principles defined in The Watlow Way, which is our business philosophy that guides us toward the never-ending pursuit of excellence.

We set high standards for our team members at all levels of the organization and strive to consistently meet or exceed our customers' expectations. We aspire for all team members to have an unwavering commitment to honesty and integrity in business operations and strive to achieve the highest level of ethical and moral standards. Watlow's success in the marketplace is a result of the high standards we employ, and we take pride in the solid reputation Watlow enjoys as a result.

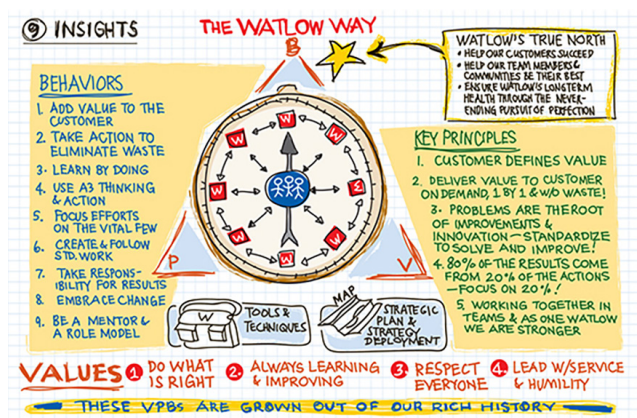
All of us in the Watlow family are expected to "Do What is Right," to use our common sense and best judgment in conducting business and to seek guidance if the best course of action is not clear.

We regularly review our internal systems to ensure that we are always striving to achieve internationally-recognized best practices.

Watlow's advantage

- Industry leader in the field of thermal sciences and engineering
- Privately-owned, financially strong and stable
- Global business focused on long-term strategic growth
- Culture of continuous improvement
- High-quality learning and development programs
- Passion and discipline to be the best

Watlow is an Equal Opportunity Employer, including Individuals with Disabilities and Protected Veterans.



The Watlow Way, established in 2007



PHYLLIS
Production Team Leader

"Watlow is a place where I am making a career for myself. The training and experience I have gained are invaluable. I look forward to my continued growth within the company."



BRITTANY
Reliability Engineer

"The Rotational Program originally drew me to Watlow. The program allows individuals to spend the first two years after graduation in multiple positions, learning all aspects of manufacturing from quoting and designing new products to making and delivering existing parts."



HAMMAD
Global Segment Leader

"Recently, I was invited to Washington University's Olin Business School to present Watlow's global experience to the Professional MBA Program. It is very exciting to see one of the world's leading academic organizations reach out to us for our global business expertise."





Headquarters and Advanced Technology Center

St. Louis, Missouri, USA

Watlow's world headquarters is located in St. Louis, Missouri, co-located with our St. Louis operations and our Advanced Technology Center. Our headquarters' staff has worked at this location since 1961. In addition to the executive team, it includes such corporate functions as accounts payable, finance, information technology, human resources, marketing and sales support.



Technology Centers



San Jose, California

Watlow acquired Semiconductor Tooling Services, Inc. (STS) in 2012. This acquisition provided Watlow with high-precision bonding and cleaning capabilities, which are critical to achieving optimum temperature uniformity in semiconductor processing applications. The San Jose facility houses about 70 team members and provides support to customers headquartered in Silicon Valley.



Queretaro, Mexico

A variety of electric heaters, including cartridge, silicone rubber, etc., as well as a variety of temperature sensors are manufactured in Queretaro, Mexico. Watlow first began manufacturing in Mexico in 1996 and this region continues to play an important role in our global manufacturing strategy.



Kuchl, Austria

Watlow acquired thermal spray heater technology in 2004 and moved into the current Kuchl, Austria facility in late 2010. This facility is focused on new product development of layered heaters and also serves as an advanced technology center. Current applications span a range of markets such as semiconductor and medical devices.



Singapore

In 1991, Watlow opened a sales office and manufacturing facility in Singapore. Currently, the Singapore facility manufactures cartridge heaters, silicone rubber heaters, thermocouples and some controller assemblies. Watlow's facility in Singapore also has an engineering design department to help solve tough customer application problems and it is also the regional headquarters for Asia.



Manufacturing Facilities



Shanghai, China

The Shanghai facility was opened in 2006 to support some of Watlow's current customers in Asia. Watlow's facility in China completes assembly functions on FIREBAR® tubular, screw plug and flange heaters.



Austin, Texas

Watlow acquired Yarbrough Solutions Worldwide in August 2018. Yarbrough is a premier semiconductor equipment solutions provider that services end-user customers globally. Adding Yarbrough's expertise to Watlow's suite of capabilities enhances our ability to serve customers through the entire semiconductor fabrication process to ensure thermal optimization of the complete system.



Watlow Manufacturing and Technology Centers



Watlow's New Advanced Technology Center in St. Louis, Missouri U.S.A



Columbia, Missouri

The facility in Columbia was opened in 1979 to manufacture ceramic fiber and flexible heater products. Currently silicone rubber, polyimide and ceramic fiber heaters are manufactured in Columbia. These products are used in a variety of industries.



Richmond, Illinois

In 1985, Watlow acquired the Claud S. Gordon Company of Richmond, Illinois (founded 1914), the nation's leading manufacturer of temperature measurement devices. The Richmond facility manufactures a variety of thermocouples, thermistors and resistance temperature detectors (RTDs); plus cable and wire products. Many of these sensors are integrated into heaters manufactured at other Watlow facilities.



Hannibal, Missouri

The Hannibal facility opened in 1972 to manufacture tubular heaters and currently manufactures WATROD™ and FIREBAR® tubular heaters, MULTICELL™ heaters and thick film heaters. Those products support customers in foodservice equipment, energy processes and semiconductor.



St. Louis, Missouri

The original St. Louis facility was built in 1961, renovated into our Advanced Technology Center (ATC) in 2016 and houses both the St. Louis business unit and headquarters. Products such as FIREROD® cartridge, mineral insulated (MI) band and strip, various coil/cable and ULTRAMIC® heaters are manufactured at the ATC.



Houston, Texas

In 2016 Watlow opened its Houston, TX facility to manufacture control panels. WATCONNECT® control panels, featuring Watlow temperature and power controllers, are engineered, designed, manufactured and delivered within two weeks.



Winona, Minnesota

Watlow purchased Waynco, Inc. of Winona, Minnesota, a manufacturer of electronic controllers, in 1976. This acquisition gave Watlow the ability to design and manufacture electronic controllers. Currently, the Winona facility manufactures several types of single and multi-loop temperature controllers, the F4T with INTUITION® temperature process controller, the EZ-ZONE® family of integrated controllers, safety limits and custom-board controllers.





Find out more about Watlow and how we can provide thermal solutions for your company:

Phone: 1-800-WATLOW2 (1-800-928-5692)

Email: inquiry@watlow.com

Website: www.watlow.com

Powered by Possibility



Watlow Products and Technical Support Delivered Worldwide

North American Technical Support & Sales Offices

United States & Canada 1-800-WATLOW2
(1-800-928-5692)

Asian Technical Support & Sales Offices

China +86 21 3532 8532
India +91 40 6661 2700
Japan +81 3 3518 6630
Korea +82 2 2169 2600
Singapore +65 6773 9488
Taiwan +886 7 288 5168

European Technical Support & Sales Offices

Austria +43 6244 20129 0
France +33 1 41 32 79 70
Germany +49 7253 9400 0
Italy +39 02 458 8841
Spain +34 91 675 1292
United Kingdom +44 115 964 0777

Latin American Technical Support & Sales Office

Mexico +52 442 256 2200

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