

ENGINE HEATERS AND SYSTEMS

CUSTOM ENGINEERED

HEAVY DUTY

HEATING SOLUTIONS





Diesel Gen-set Case History

A major diesel gen-set OEM required an engine coolant preheater compliant for use on a UL® 2200 gen-set assembly. Watlow custom engineered and manufactured a UL® 499 compliant preheater solution that allowed the OEM to install the heater without having to submit the gen-set assembly for additional UL® 2200 compliance testing, thus saving valuable engineering and testing time.

WATLOW EXPERIENCE

Since 1922, Watlow has been designing and manufacturing electric heaters, temperature sensors and electronic temperature controllers for a variety of industries. One area of specialty is our custom engineered, heavy duty, tank and circulation style diesel engine heaters. Whether for coolant, engine oil, fuel or hydraulic oil heating, Watlow has developed solutions for applications where the competition's heaters have failed.

Watlow's diesel engine heaters can be found in a variety of applications such as:

- Engine coolant preheaters on stand-by and primary power engine gen-sets
- Circulating coolant heater systems can be found on U.S. Coast Guard cutters
- Immersion and circulation-style engine oil heaters are found on mechanical drive engine applications such as compressors, irrigation pumps and fire pumps

Regardless of the application, Watlow can design a solution for your application requirements.



Engine preheater with ring roll hose connections, thermal fuse and drain circuit protector.

CUSTOM ENGINEERED SOLUTIONS

Watlow specializes in the design, engineering and manufacturing of extremely robust, engine-mounted coolant preheaters and systems. Our success does not come from attempting to fit our stock or standard design products to your application requirements. Rather, we focus on custom-engineered solutions for your exacting application needs.

We have three decades of experience in materials compatibility, watt density loading effects, dry-fire effects and temperature control. Watlow uses this experience to provide the highest quality product possible. Experience provides many advantages such as:

- Recognizing product enhancements as well as product limitations
- Understanding customer needs and market trends
- Product expertise
- Providing value

Watlow's experience also allows us to focus on the problem areas in an application and find design solutions for them. Watlow has a patented control and flow system technology that virtually eliminates the possibility of a dry-fire condition or over heating of the heater elements that could cause element corrosion or coking. Because Watlow uses only welded, steel tank construction, leaks and galvanic corrosion issues are almost non-existent compared to aluminum body tank designs. So if you are looking for a true solution, call Watlow.

PRODUCT ADVANTAGES

Watlow's diesel engine heaters are designed to perform in the rigorous, high-vibration environment associated with diesel engines.

ROBUST HEATER DESIGN

Our products offer several advantages resulting in the most durable, longest-lasting engine heater used. Some advantages include:

- High-grade, Incoloy® sheath minimizes the risk of premature failure in the unlikely event of a dry-fire condition
- Inlet and outlet connections can either be ring roll lipped tubes or threaded connections
- Multi-heater element design provides built-in redundancy ... if one element fails, the others continue to function
- Protective coating can be provided at customer's request.
- 120/240Vac or 240/480Vac, 3-phase capabilities dual voltages make field wiring flexible. Minimizes stocking multiple voltages
- Mounting bracket isolates harmful engine vibration
- All welded, heavy duty carbon steel tank resists corrosion and extends life

CONTROL FEATURES

A patented temperature system ensures optimum temperature control and reduced power consumption due to sloppy control systems. This feature, along with a unique check valve design, also ensures proper thermo siphoning action, which again, keeps power consumption low. Oil pressure switches are optional and are integrally wired with the adjustable thermostat system for a ready to install unit. Watlow also designs

dual and multi-voltage configurations allowing use in a variety of electrical power configurations and countries. A variety of NEMA enclosures can be provided as well as area classifications including custom engineered enclosures and products to meet NFPA 70 (NEC) Articles 500-503 and 505.

MOUNTING AND INSTALLATION

Mounting schemes are custom-engineered, depending on the application. Engine-mounted heaters use a special vibration-dampening bracket that virtually eliminates stress fractures due to vibration and stress. Frame-mounted systems may use a simpler mounting design. Integral insulation can be provided, options ranging from sheet metal wraps with fiberglass insulation to special design vibration-dampening insulation boots.

AGENCY APPROVAL

Watlow will custom engineer an engine heater or system to meet your specification requirements; including: UL® 2200 Stationary Engine Generator Assembly, UL® 674 Generator for Hazardous (Classified) Locations, CAN/CSA-C22.2 No. 191 Engine Heaters and Battery Warmers, NFPA 20 Centrifugal Fire Pumps and NFPA 110 Emergency and Standby Power Systems.

TECHNICAL SUPPORT

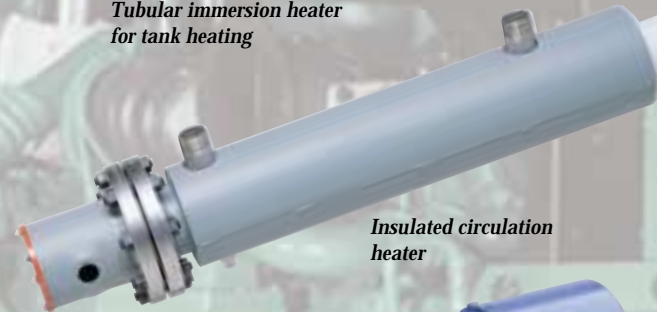
The dedicated engine heater support team is ready to field your requests and support your design, engineering and development projects. Call Watlow's Hannibal facility at 1-573-221-2816 or 1-800-4-WATLOW and ask to speak with our technical support personnel.



Circulating engine preheater system including heater, pump, sensors and control box.



Tubular immersion heater for tank heating



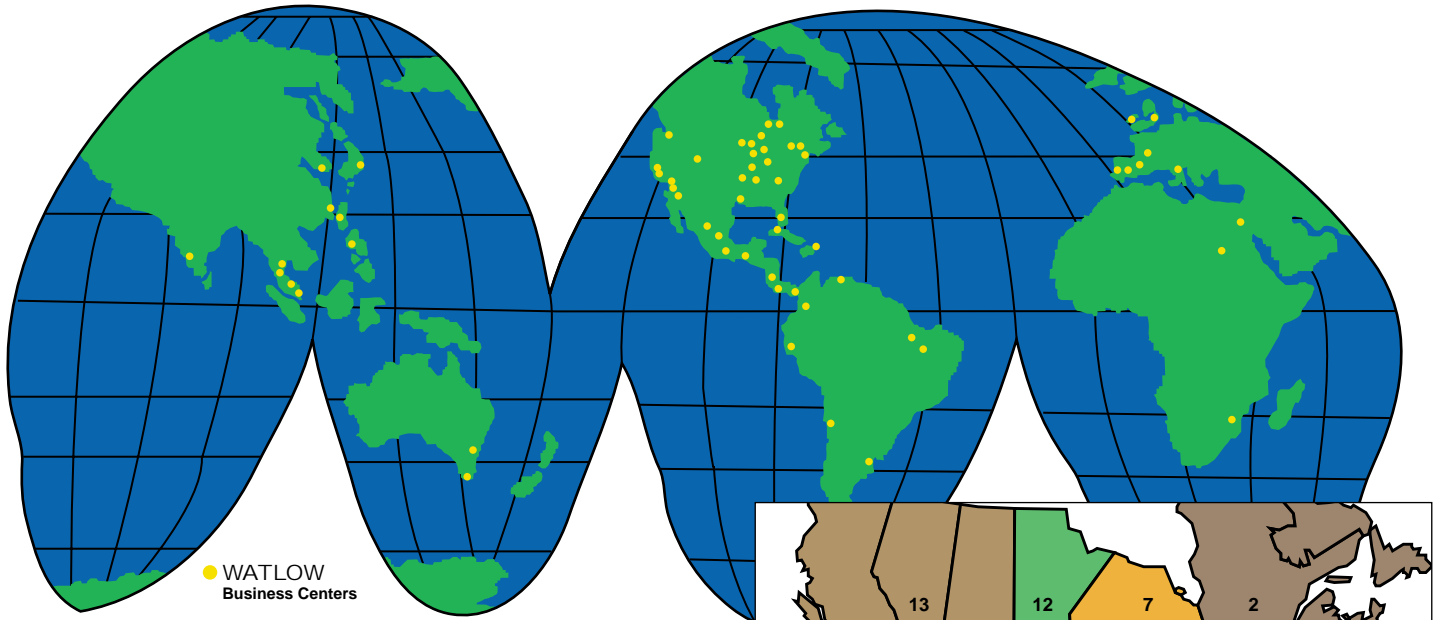
Insulated circulation heater



Engine coolant heater with threaded inlet and outlet

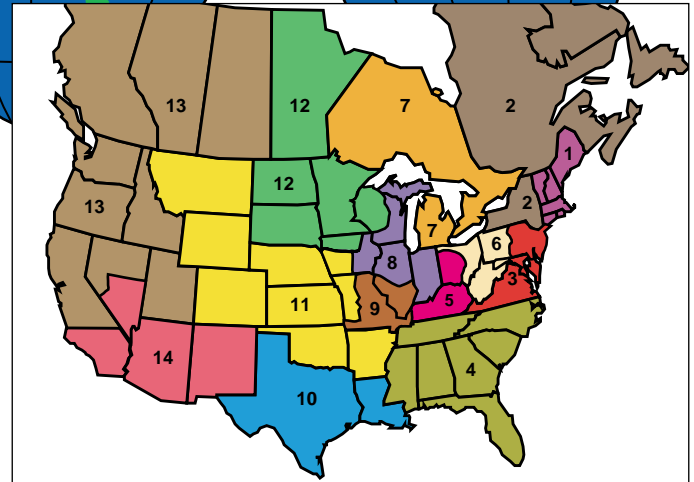
Applications for Watlow engine heaters

- Stationary stand-by and primary power systems
- Mobile power systems
- Construction equipment
- Marine diesel engines
- Off-road equipment and vehicles
- Mechanical drive applications such as compressors, irrigation and fire pump systems



● WATLOW Business Centers

Your Authorized Watlow Distributor is:



Watlow Products and Technical Support Delivered Worldwide

North American Sales Offices

Region 1	
New England	603-882-1330
Region 2	
New York, Upstate	716-438-0454
Eastern Canada	450-433-1309
Region 3	
Maryland/Virginia	410-840-8034
New York, New Jersey,	
Philadelphia	215-345-8130
Region 4	
Atlanta	770-972-4948
Birmingham	205-678-2358
Charlotte	704-541-3896
Nashville	615-264-6148
Orlando	407-351-0737
Raleigh/Greensboro	336-766-9659
Tampa/St. Petersburg	407-647-9052

Region 5	
Cincinnati	513-398-5500
Region 6	
Cleveland	330-467-1423
Pittsburgh	412-322-5004
Region 7	
Detroit	248-651-0500
Ontario	716-626-6788
Region 8	
Chicago	847-458-1500
Indianapolis	317-575-8932
Wisconsin, North	920-993-2161
Wisconsin, South	262-723-5990
Region 9	
St. Louis	314-878-4600
Region 10	
Austin	512-249-1900
Dallas	972-620-6030
Houston	281-440-3074
Louisiana	318-864-2864

Region 11	
Denver	303-798-7778
Kansas City	913-897-3973
Tulsa	918-496-2826
Region 12	
Minneapolis, Manitoba	952-431-5700
Region 13	
Portland	503-245-9037
Sacramento	707-425-1155
San Francisco	408-980-9355
Seattle	425-222-4090
Western Canada	604-444-4881
Region 14	
Los Angeles	714-935-2999
Phoenix	602-298-6960
San Diego	714-935-2999

Asian Sales Offices

Australia	+61 (3) 9335-6449
China	+86 (21) 6229-8917
Japan	+81 (03) 5403-4688
Korea	+82 (02) 575-9804
Malaysia	+60 (4) 641-5977
Singapore	+65 777-9488
Taiwan	+886 (0) 7-288-5168

European Sales Offices

France	+33 (01) 3073-2425
Germany	+49 (0) 7253-9400-0
Italy	+39 (02) 458-8841
United Kingdom	+44 (0) 115-964-0777

Latin American Sales Office

Mexico	+52 (442) 217-62-35
--------	---------------------

