



## **KELTECH'S RESIDENTIAL AND LIGHT COMMERCIAL TANKLESS WATER HEATING SOLUTIONS**

*Precise Temperature Control.*

*Energy Efficient.*

*Reliable Performance.*

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## RESIDENTIAL AND LIGHT COMMERCIAL OVERVIEW

Keltech tankless water heaters can accomplish most residential and light commercial water heating applications.

Our tankless water heating solutions use quality control systems and premium materials to meet your needs. All waterways are constructed from copper or brass for increased heat exchanger life. The heating elements are made of a low watt density Incoloy 800 sheathing.

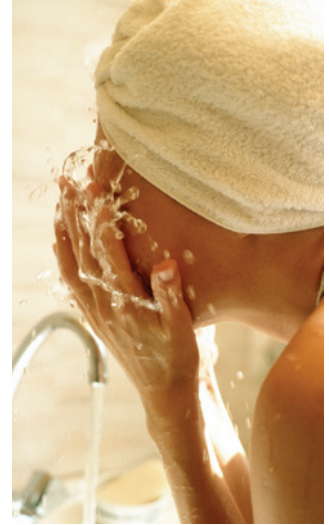
Keltech's residential and light commercial tankless water heaters are a lower capacity version of our high performance large industrial water heaters. Physically smaller, they are still loaded with standard features—just like our large industrial tankless water heaters.

Keltech residential and light commercial water heating solutions generally range in size and capacity from 208 to 480 volts in single phase and three phase options, delivering output from 5kW single phase to 18kW 3-phase.

Not all capacities are available in all voltages, but Keltech is committed to providing a water heating application that meets your specs.

## RESIDENTIAL AND LIGHT COMMERCIAL FEATURES:

- Water flow range from .5 GPM to 4 GPM
- Set point temperature range from 40°F to 160°F analog
- NEMA 1 standard enclosures
- Sheathed Incoloy 800 heating elements are immersible and are individually field replaceable and have been electro-polished and passivated to remove all free ions.
- Easy to install – just add power and water
- Redundant control and safety features
- Energy efficient – performs on-demand



*Keltech's tankless residential water heaters deliver an endless supply of safe, hot water on-demand at a controlled temperature.*



## **BUILT FOR TODAY'S LIFESTYLES**

### **Residential Water Heating**

Whether you need hot water for your bathroom, hot tub, Jacuzzi®, or radiant water heating for your driveway, kitchen or bathroom floor, Keltech can provide an energy efficient residential tankless water heater that delivers precise temperature control at the flow rate you need. Keltech's tankless residential water heaters deliver an endless supply of hot water on-demand at a controlled safe temperature. Constructed of the most durable materials: copper, brass, stainless steel and solid state electronic controls, Keltech tankless water heaters are built to last.

### **Light Commercial Water Heating**

Keltech also builds energy efficient light commercial tankless water heaters. Our light commercial water heaters provide precise temperature control at specified flow rates for sterilization equipment, booster heating for solar powered heating systems, heat pumps, and commercial kitchens.

### **PRECISE TEMPERATURE CONTROL**

Keltech's tankless water heaters provide precise temperature (+/- 2°F) for residential and light commercial water heating applications with an analog control. Designed to exacting specifications and tested to ensure precise temperature delivery and specific flow rates, Keltech tankless water heating solutions perform reliably even in the most demanding environments.



*Hot, scalding water  
is eliminated with  
a thermostatic  
dial that can be  
remotely mounted  
on a wall allowing  
you to safely and  
precisely control the  
water temperature  
range you want.*



## **THE KELTECH RESIDENTIAL/LIGHT COMMERCIAL TANKLESS WATER HEATERS ARE:**

- *Compact* – heaters do not require large floor space and can be wall mounted
- *Easy to Install* – Just add water and power. All you need is access to one electrical connection and a cold water line
- *Safe* – includes redundant control and safety features
- *Built to Last* – all Keltech tankless water heating solutions feature rugged industrial components
- *Energy Efficient* – perform on-demand requiring power and water only when needed
- *Easy to Maintain* – Keltech residential and light commercial water heaters require minimal maintenance

## **THE KELTECH ENERGY ADVANTAGE**

Keltech's on-demand residential and light commercial tankless water heaters typically have two advantages:

### *1. Energy Savings*

Unlike hot water tanks and boilers, Keltech's heaters are tankless and heat water only when it's needed. There's no wasted energy. The energy savings often produces a return on investment within a few months.

### *2. Volume*

Unlike hot water tank storage systems, Keltech's tankless heaters provide continuous capacity. The flow of hot water can be unlimited.



*Unlike traditional  
hot water heaters,  
Keltech's tankless  
water heaters  
can provide a  
continuous flow  
of hot water.*



## **SAVE ENERGY FROM DAY ONE**

Keltech water heating solutions perform on-demand. Because they are tankless, they only draw electricity and water when needed. Since there are no utilities to pay until the heater is used, utility costs are minimized.

Keltech's residential and light commercial water heaters have an infinitely modulating temperature control allowing for use of only the energy needed to maintain the set point temperature. There is no need to overheat the water and then add cold water to reach the desired temperature. Your heater will heat water to the exact temperature needed when you need it. This eliminates the cost and potential problems associated with mixing valves.

## **ENERGY SAVINGS**

Keltech's tankless residential and light commercial water heaters can provide energy savings up to 50%. With a tankless Keltech system, your energy usage is on demand. You only pay for the energy you use. You will not have to continuously heat a hot water tank to 120°F. In addition, the advanced electronic design constantly modulates the energy required to maintain the hot water temperature. This allows for maximum energy savings. A temperature sensor in the outlet side of the heat exchanger signals the control system to regulate the temperature of the outlet water flow. This device enables the Keltech tankless hot water system to use less energy to heat the water to your desired temperature.



*Radiant floor heating systems provide warm even heat, and reduce the circulation of dust, dirt, pollens and other airborne irritants.*



## **RESIDENTIAL ENERGY STUDY RESULTS PROVE TANKLESS TECHNOLOGY IS ENERGY EFFICIENT**

To determine how energy efficient Keltech tankless water heaters are, we recently commissioned an electrical cooperative to monitor electricity usage for a family of four using a high efficiency 52 gallon electric tank one month, and a Keltech tankless water heating system another month.

During the first month, the family used only the Keltech system. The total kWh usage for water heating was 171.4 kWh. For the whole house, the total energy usage was 827.22 kWh. The Keltech system used 20% of the total household kWh usage for water heating.

The following month, the family used the 52 gallon high efficiency tank exclusively. This tank used 292.5 kWh with a total of 949.08 kWh usage for the whole house. This water heater used 30% of the total household kWh for heating hot water.

The Keltech tankless hot water system reduced energy consumption by 41% (171.4 kWh for the Keltech tankless versus 292.5 kWh for the tank). Here's something else to consider: we competed against a new energy efficient hot water heater. The older your hot water tank is, the more energy savings you will realize when you switch to a Keltech tankless hot water heater.



*The average family  
of four can save  
up to 41% or more  
on water heating  
energy costs using  
a Keltech tankless  
water heater.*



## **NO STORAGE TANK REQUIREMENTS**

The heater is tankless. Storage tanks consume space and energy. Because the heater is tankless, there is no power draw without water demand. Since the heater operates on-demand there are no standby losses and no recovery time is required.

## **ONE SIZE FITS ALL**

### **Space Savings**

A Keltech electric tankless water heater can provide additional space savings due to its compact design. And, if your needs change, Keltech can provide a modular system that can increase or decrease capacities as your water heating needs fluctuate. There's no need to replace an entire system. Your house or light commercial enterprise space can be divided into different zones to provide a hot water heating system that meets your specific needs.

## **PERFECT FOR COMPACT SPACES**

Keltech residential and light commercial water heater solutions are also perfect for situations where space is limited. Wall mountable units can be placed in compact spaces where conventional heaters with comparable output cannot.

### **Mounting Options**

Keltech tankless water heaters can be mounted in the vertical or horizontal position. Horizontal mounting must be done with the hot water outlet above the cold water inlet for proper bleed-off of any trapped air in the heat exchanger.



*Incoloy sheathed  
elements extend  
the life of the  
heater and  
completely isolate  
the water from  
the current  
carrying electrode  
of the element.*



## **DETERMINING YOUR SIZING REQUIREMENTS**

Sizing your tankless water heater is a critical part of the purchasing process. Two factors that require careful consideration for the accurate sizing of your system are:

1. Flow rate (GPM)
2. Temperature rise ( $\Delta T$  °F)

To determine the size and kilowatt rating you need, apply this formula:  $KW = (GPM) (\Delta T \text{ °F}) (.1465)$

The Keltech tankless water heater must be properly sized to provide an endless supply of hot water. For example, the highest water flow rates in the home generally exceed 2 GPM in the bathtub, Jacuzzi® tub or washing machine.

To maintain hotter temperatures in these functions, a slight adjustment in water flow may be necessary. By slightly reducing the flow, tankless water heaters are able to exchange more heat energy into the water as it moves through the unit. This can be achieved by reducing flow at the faucet or by adding a restrictor valve prior to the heater. While only necessary in higher flow uses, this technique will allow more than adequate output temperatures in any application.

### **IMPORTANT INFORMATION: ELECTRICAL REQUIREMENTS**

Electrical requirements will likely need to be upgraded to power your Keltech tankless water heater. In most cases, you will need to add new wire and a new circuit breaker. To function properly, sufficient power must be supplied to the tankless heater. Please refer to the spec sheets for more information.



*A properly sized  
Keltech tankless  
water heater  
provides an  
endless supply  
of hot water for  
beauty salons  
and other light  
commercial  
applications.*



**SAFETY FIRST:  
REDUNDANT SAFETY FEATURES**

Keltech's residential and light commercial tankless water heaters include multiple features guaranteed to ensure your safety and years of reliable service.

**High Temperature Cut-Off**

Every heater that Keltech engineers includes a separate set of circuits that monitor over temperature conditions. Should overheating occur, each sector of the heat exchanger has a dedicated thermal switch that breaks power. Normal operation cannot be resumed until the safety switch is manually reset.



*Redundant safety features ensure your safety and protect your investment in a Keltech tankless water heater.*

### 1. *Incoloy 800 Sheathed Heating Elements*

Low watt density Incoloy 800 sheathed heating element passages extend the life of the metal components by minimizing chemical (water or other liquids that may be heated) interaction. The heating elements are individually field replaceable.

### 2. *Precise Temperature Range and Flow Rate*

The electronic power modulation system can control outlet water temperature to within  $\pm 1^{\circ}\text{F}$  ( $.56^{\circ}\text{C}$ ) over a wide range of flow rates. Keltech incorporates a control system to allow the user to select the desired output temperature from  $40^{\circ}\text{F}$  to  $160^{\circ}\text{F}$  (within the limits of the flow chart). Precision temperature control makes Keltech tankless water heaters the preferred choice for tankless water heating applications or an alternative to energy inefficient boiler use.

### 3. *Flow Activation*

To activate the flow switch, water must be set flow at a rate of 0.5 gpm with a minimum pressure of 5 PSI.

### 4. *Remote Temperature Control*

A thermostatic dial, graduated in degrees Fahrenheit, can be remotely mounted on the wall up to 25 feet away from the heater. This allows you to precisely control the water temperature you want. There's no need to heat your water to  $120^{\circ}\text{F}$  and then blend it with cold water to cool it down to a comfortable temperature before using it (the average water temperature used in the home is  $105^{\circ}\text{F}$ ).



*Keltech tankless  
water heating  
solutions perform  
reliably even in the  
most demanding  
light commercial  
environments.*

## *Standard Features (continued)*

### 5. *Premium Materials*

All waterways consist of high quality copper and brass construction tested to 600 PSI. Copper and brass construction extend the life of the heat exchanger.

### 6. *Reliable Performance with Minimal Maintenance*

The heater series maintenance schedule falls within the normal facilities maintenance program requirements. The best feature of Keltech's tankless water heating system is never having to remove the cover. High quality copper and brass construction extend the life of the heat exchanger.

### 7. *Easy to Install*

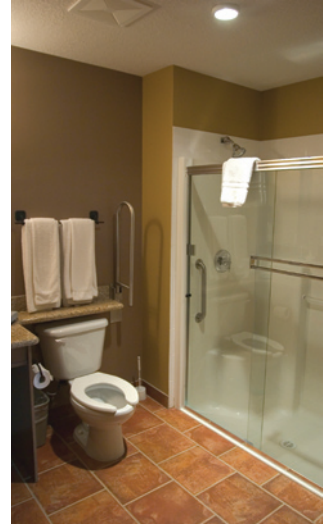
Keltech tankless water heaters can be mounted almost anywhere. Its compact design allows for wall mounting or freestanding rack mounting. Just add water and power. All you need is access to one electrical connection and a cold water line.

### 8. *Minimal Pressure Drop*

Keltech tankless water heaters feature large internal passageways (Standard series minimum 1/2" inlet/outlet diameter; H-Series minimum 3/4" inlet/outlet diameter) that minimize pressure drop.

### 9. *Activation Requirements*

On-demand heaters require a minimum flow rate for activation. Water heaters come standard with 0.5 GPM activation set point. Minimum flow requirements provide maximum efficiency.



*High quality  
copper and brass  
construction  
extend the life  
of the heat  
exchanger.*

## DRAIN KIT

The drain kit is available for seasonal usage or storage in non-heated areas. It provides an easy way to drain the pipes into a container or drain via means of two valves that can be easily opened.

## INTERNAL TEMPERATURE CALIBRATION

Internal temperature calibration is a safety feature that will set the heater to a specified temperature to avoid either scalding or damaging equipment from high temperatures. This is used for public lavatories and showers or for equipment that requires water to be set to a specified temperature. With this option, no one can change the temperature without factory instruction.



*Our light commercial water heaters provide precise temperature control at specified flow rates for commercial kitchens.*

## HYDRONIC HEATING SYSTEMS

Hydronic heating systems have many advantages to consider. A radiant floor heating system provides a warm even heat, eliminating hot air drafts and greatly reducing the circulation of dust, dirt, pollens and other airborne substances.

Because this heat is radiated evenly through the room, the water temperature in a radiant heating system is at a lower level, approximately 120°F. In a system like this, the approximate temperature rise required is 20°F.

Keltech's fully modulating controller is energy efficient, enabling the heating system to operate at just the kW rating required to provide the proper temperature.

Keltech water heating systems have been used in many re-circulation applications, such as:

- Snowmelt for heating driveways
- Hydronic heating of basements, bathrooms or whole house
- Backup to solar systems and heat pumps
- Hydronic baseboard heating
- Hot water recirculation in conjunction with an air handler

Keltech hydronic fluid heating systems have a minimum flow of 0.75 GPM with an inlet/outlet of 3/4". The pressure drop through the heater is 6 PSI at a flow rate of 5 GPM. The maximum flow rate through the heater is 8 GPM at 60 PSI.

### Sizing for Hydronic Systems

When sizing for a hydronic application, you will need to determine the BTU/H requirement for the area that is being heated.

Keltech tankless hot water heating systems can also be configured as a modular heating system. This means that all hydronic models can be combined in modules to increase BTU ratings. For example, 2 model H180's can be combined to provide a BTU rating of 122,000 BTU/H of total heating capacity.

It is important to make sure the pump is sized properly to include the pressure drop of the entire system. If the pump is not large enough, it will not activate the heater.