



Solar Solutions

Systems
Fit
for the
Future



watts.com

WATTS[®]

Hourly....

Hourly we take a toll on the planet. Hourly we put 5,500 new gasoline powered automobiles on the road. Hourly we add over 52 tons of solid waste to our landfills. Hourly we burn 97,000 tons of coal in support of our national power grid.

And yet...in one hour more sunlight falls on the earth in the form of available renewable energy than is needed by the entire population all year. And in one second the sun releases more energy than has been used by mankind since the beginning of recorded history.

Today the Clock is Ticking...

We know that today you and organizations like yours are looking for a partner who can provide solar solutions that work and work together...flawlessly. But time is not on your side. Finding someone who understands solar...and who gets the issues confronting a solar OEM (just in time manufacturing...cutting development time to a minimum) are your top of mind.

At Watts we take solar very seriously. We have quietly and systematically built renewable energy solutions for over four decades. We never made a big deal about it. It was just something we knew how to do. The way we knew how to build backflow preventers...and ball valves...and control systems.

Choose

Partner with a company who....

Makes the components they sell...

As a prime manufacturer, we produce the majority of components. The Watts family of companies cover just about every water technology you can name – from safety valves to backflow prevention to filtration and conditioning to electronic control.

The reason we are able to turn out a unique, competitive, quality solar product is Watts depth. Depth of knowledge – depth of design – depth of manufacturing capabilities. The Watts name is synonymous with a disciplined approach to system technology, offering both energy efficiency and maximum safety – overall, a tried and tested recipe for solar system success.





Watts

Partner with a company who....

Knows thermal solar...

Watts provides leadership in the development and production of manifold and control technology for thermal solar systems – especially for projects where monitoring and regulation are needed. This “know-how” has established Watts as a world leader in the manufacture of high quality flow control products that incorporate the most advanced engineering design.

Partner with a company who....

Is global...and global where it matters...

Today, Watts is focused on providing innovative water solutions to our customers wherever they are in the world. We offer them one of the most diverse plumbing and heating and water quality products lines in the world.

Watts has long been strategically acquiring synergistic companies. Our partners in Germany, in France, Sweden and Tunisia are on the cutting edge of solar, in areas of the world where solar technology has made the most inroads in the everyday life of families and communities. These acquisitions demonstrate our commitment to provide the best solar solutions and advanced product knowledge to all of our OEM customers.

Partner with a company who....

Understands you...

The word *Partner* has always had a special meaning for us. Our history as a company reaches back to a time when family businesses were the norm and business was personal. A commitment to deliver was something you stood by.

As the OEM division of Watts we understand the challenges you face, your needs and your issues. And we can tailor our solutions and our approaches to fit your unique requirements. When you specify Watts you get dependable, efficient control and protection. Whether your requirements are small or large, there is a Watts solution to satisfy your thermal solar system demands.



We Build Solar

Systems Fit for the Future

In the Home

Your residential customers have a hundred questions. How much space does the system need? Do the panels have to face south? How long will the system last? Understandable concerns! But whether you're sourcing custom controllers or off-the-shelf solar appropriate components, you don't want to be the one with concerns, asking the questions. You want to purchase with confidence. Our standard products have been used in home heating systems for over a century. With Watts you can trust that the engineering is complete; the manufacturing rock solid.

Residential Applications



FBS 8010 Pump Station

- Contains circulation pump and all valves required for safety and installation
- Pretested, compact package saves hours of installation time



LCD Plus Control

- Ensures maximum energy yield
 - Performs vital safety functions
 - Logs critical system data



SET Series Expansion Tank

- Insurance policy for your solar thermal system
- Absorbs fluid expansion and contraction
- Prevents unwanted relief valve discharge and fluid loss under stagnation



1170 Hot Water Temperature Control Valve

- Mixes down from 200°F under wide range of flow conditions

In the Workplace

Every commercial solar customer is different and each installation has its own requirements and challenges. But in the end your customers all want the same thing – the very best solar components and controls the industry has to offer. Whether it's a large commercial rooftop, a hospital, a solar farm, school, government facility, or airport, Watts puts at your disposal the engineering and the design expertise to create custom solar solutions that you can sell with confidence.

Commercial Applications

Multiplex System Controller

- Wide range of preconfigured systems
- Customization of configurations
- Connects remotely via the internet



FBS 1000 Pump Station

- Modular system
- Handles collector fields up to 4000 square feet
- Key to getting specified on commercial jobs



OneFlow®

Anti-scale System

- Scale drastically reduces efficiency
- Replacement of heat exchanger components is expensive



EMV II Motorized Valve

- Control is key in commercial solar hot water applications
- Designed for steam and hot water applications



FlowGuard Balancing Valve

- Offers precise balancing and flow measurement in one compact unit
- Eliminates need for complex piping to ensure balanced flow



DuoVent

High Capacity Air Vent

- High capacity manual venting during installation
- Automatic venting of air throughout the life of the system



We Build Solar

Custom Solutions

There are times when having a resource you can turn to for a custom pump station, controller, or a designed array of solar components is the right way to go. And when you turn to Watts for that solar solution, because we are a prime manufacturer, we have tremendous flexibility in building a custom package that meets your specific needs, not selling you one that was designed for someone else. The pump stations and the controls that we design are unique, reliable, high quality products. Products you can offer your customers with confidence.

Pump Stations

The pump stations shown here reflect what is readily available as off-the-shelf solutions. All of the options can be customized to meet specific requirements, such as pump capacity and manufacturer, air remover, pressure relief setting, flow gauge etc. Should none of these options meet your needs exactly, **we will work with you to develop completely custom solutions.**

Typical pump stations will include the following components:

- Integrated Watts LCD Solar Controller (ETL – UL and UL 60730-1A approved) with SD Card, USB Adapter and required sensors
- Customized data viewer and configuration software included (with logo), pre-configured to preferred settings
- Pump as specified (Grundfos UPS 15-58 typical for residential units)
- FlowGuard balancing valve for adjustment and measurement of flow (various ranges)
- Integral check valves
- Watts pressure relief valve (specify pressure setting)
- Optional connections are copper pipe, MNPT, compression or Watts Quick-Connect fittings
- Automatic or manual micro-bubble air remover
- Integrated pressure gauge/thermometer
- Fill and purge valve set with garden hose thread connections
- Mounting kit for multiple surfaces
- EPP cover with snap seam also serves as transport protection
- 100% of the stations are submitted to functional electric and hydraulic pressure tests

SPS 100 Series



This US-made unit is suited to most residential applications (up to approximately 150 sq. ft. of collector). It can be easily customized to suit pump, connection detail and flow sensor preferences. Well-suited to lower volume purchases.

FBS 8010NA Series



This compact, Euro-style unit is suited to most residential applications (up to approximately 150 sq. ft. of collector). Options include choice of pump, VFS flow sensor/ FlowGuard range and controller.

Residential



FBS 7000NA Series



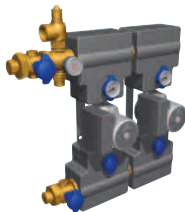
The 7000 series is designed to be adaptable to a range of large residential/commercial applications. Pumps can be selected to handle anywhere from 250 to approximately 1000 sq. ft. of collector. Options include choice of pump, VFS flow sensor/FlowGuard and controller.

SU 8040NA Series



The 8040 series is ideal for larger installations using a standard hot water tank (without internal heat exchanger). Options for customization include pumps, VFS flow sensor, 20 or 30 plate heat exchanger, controllers and diverting valve for stratified loading of the storage tank.

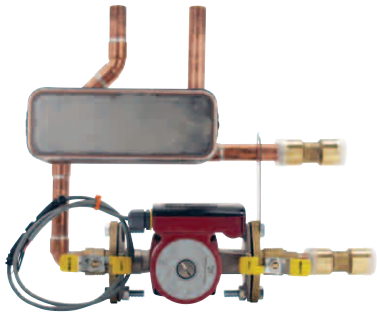
FBS 1000NA Series



This flexible module is designed to be expandable to suit applications from 1000 up to 4000 sq. ft. of collector (1 module per 1000 sq. ft.). Simply add another module to add capacity.

Pump Stations - add on modules

SPS 100 Heat Exchanger Module



This module makes it easy to use a standard water heater, using a compact, efficient brazed plate heat exchanger. Multiple options are available for the heat exchanger, including single and double-wall with various plate counts. Typical components are Grundfos UP 15-29SF pump with quick-connect cable for easy field wiring.

FBS 8010 Heat Exchanger Module



This unit easily adapts the 8010 pump station to work with standard water heaters. Options for single and double-wall heat exchangers are available, as is the FlowGaurd balancing valve. The heat exchanger unit can also be bought separately from the pumping package. Grundfos UPS 15-58 is the standard pump option.

Heat Dump Module with Valve



Preventing stagnation in solar thermal systems is critical in ensuring a long lasting, efficient system. This heat dump interfaces directly with the Watts control, diverting excess heat to a dump zone (radiator, spa, pool etc.) using the primary system pump.



SPS 100 Heat Dump with Pump



This heat dump gives users the option of using a dedicated pump to dump excess heat. Using the Watts control will give users multiple options of control strategy used to dump heat. A Grundfos UPS 15-58FC is typical, with a check valve to prevent reverse flow.

SPS 100 Flow Sensor Module



This module uses Grundfos' proven Vortex Flow Sensor technology. Multiple ranges are available with a choice of connection methods including copper pipe, Watts Quick-Connect fittings or NPT.

OneFlow® Anti-Scale System



Scale can be a solar thermal system's worst nightmare, with just minor build-up drastically affecting heat transfer efficiency. The OneFlow® Anti-Scale System provides protection from scale formation on internal and external plumbing surfaces. The system requires very little maintenance, no backwashing, no salt and no electricity.

Controls

LCD Plus Controller with SD kit



The LCD Plus is one of the most versatile and feature-rich controllers on the market, with unique features designed to reduce installation time and ensure safe and highly efficient system operation. Key features include:

- System set-up/configuration option using SD card pre-loaded with preferred settings
- Record and view up to a year's worth of system data (Energy, pump operation etc.) with SD card software
- 8 system configurations with several extra functions (anti-stagnation, back-up heat etc.)
- 5 Temperature sensors (PT1000 type)
- 2 Pump outputs (Standard or variable speed – triac and PWM)
- 2 Analog Grundfos sensor inputs (Flow and Pressure)
- 1 Impulse flow meter input (for energy measurement)
- 1 Extra output (to control back-up heat, heat dump...)
- Collector protection (Freeze and anti-stagnation)
- UL 60730-1A listed through ETL

LCD Basic



The LCD Basic is a very cost-effective, slimmed-down version of the LCD plus. Great for basic users looking for safe, reliable operation. Key features include:

- 7 system configurations with several extra functions (back-up heat, re-cooling)
- 4 Temperature sensors (2 PT 1000 and 2 NTC)
- 2 Relay outputs for pump control
- 1 dry contact for extra function control
- Collector protection (Freeze and anti-stagnation)

Multiplex Module



This module greatly expands the capabilities of the LCD Plus system to include multiple solar circuits as well as radiant heating systems. Key features include:

- 18 system configurations for 1 to 4 tanks with multiple, customizable extra options
- 16 inputs and 10 outputs – 4 variable speed outputs (Triac or PWM), 6 standard relays, 4 Grundfos sensor inputs.
- System set-up/configuration option using SD card pre-loaded with preferred settings
- Record and view up to a year's worth of system data (Energy, pump operation etc.) with SD card software
- Two weather-compensating heating circuits with domestic hot water priority circuit



Internet Module



This add-on module is compatible with all versions of the Watts controls, giving users the ability to not only monitor, but also control their system remotely via the internet. An on-board HTML server means that users will never have to pay an external service to get access to their data.

Sensors

Collector and tank sensors are available. Collector sensors are silicon jacketed and rated up to 356°F, tank sensors are polyurethane jacketed and are rated up to 221°F.



Standard Products

We understand that you take great pride in the systems you produce and provide to your customers. We know it because we take great pride in putting the Watts name on our products. We have a wide range of existing products – standard solar appropriate accessories – that you can order every day. Products that can be sourced globally from Watts, but supported locally where you and your customers make use of them.

Accessories

Series SET Solar Expansion Tanks



Sizes: 2, 5 and 9 gal.

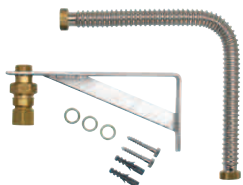
- High temperature butyl diaphragm
- High expansion volume factor
- Patented stainless steel 3/4" NPT connection
- Two part polyurethane, epoxy primed paint finish
- Leak free o-ring sealed air valve cap
- Comprehensive testing
- No maintenance

Maximum fluid temperature: 240F° (115.5°C)

Maximum working pressure: 150psi (10.3 bar).

For additional information, request literature ES-SET.

Series ECK Expansion Tank Connection Kit



- Heavy duty, reinforced steel mounting bracket
- Flexible corrugated stainless steel hose (18.7")
- Integral two-way check valve for easy service and installation of the expansion tank
- Transition adapter from check valve to US expansion tank (1/2" and 3/4" female NPT available)
- Works with all sizes of SET
- Includes wall mounting kit

For additional information, request literature ES-ECK.



Series 1170 Hot Water Temperature Control Valves



Sizes: 1/2" – 1" (15-20mm)

- Mixes hot and cold water in domestic hot water systems to reduce temperature of the hot water supply
- Double throttling design combines control of hot and cold water to provide sensitive response to changes in water temperature passing through mixing chamber
- ASSE 1017 listed, CSA B-125 Certified

For additional information, request literature ES-1170/L1170.

Series DuoVent High Capacity Air Vent



Sizes: 1/8" and 1/4" (3 and 8mm)

Provides automatic air venting for hot or cold water distribution systems. Once the air is displaced and the system pressure is sustained, the valve plug seals and prevents any water from escaping the system.

- Body and cover are brass construction
- Float is high temperature resistant polyethylene
- Suitable for use with glycol systems

For additional information, request literature ES-DuoVent.

Series FV-4M1 Automatic Vent Valve



Sizes: 1/8" – 1" (3-25mm)

Provides automatic air venting for hot or cold water distribution systems. Once the air is displaced and the system pressure is sustained, the valve plug seals and prevents any water from escaping the system.

For additional information, request literature ES-FV-4M1.

Accessories

Series AS-MB Microbubble Air Separator



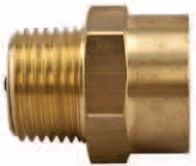
Sizes: 3/4" – 1 1/4" (20-32mm) and Flanged

Series AS-MB Microbubble Air Separator is designed for efficient separation and elimination of entrained air in hydronic heating systems.

- Durable forged brass body construction
- Rugged, corrosion-resistant polyphenylsulfone (PPSU) coalescing media withstands petroleum based cleaners, glycol antifreeze and temperatures up to 240° F.
- DuoVent air vent assembly has a high capacity and high temperature rating and is ideal for use with glycol systems or for use as an anti-vacuum device.

For additional information, request literature ES-AS-MB1.

Series SCV Service Check Valve



Sizes: 1/8" – 3/4" (3-20mm)

Series SCV service check valves facilitate the servicing of components in systems under pressure.

As the component is removed, the valve closes, maintaining system integrity while the component is being inspected. This prevents having to drain the entire system each time a component is serviced.

Max. Temperature: 240°F (115°C), Max. Pressure: 150psi (10 bar)

For additional information, request literature PG-HHS.

Series FlowGuard Balancing Valve



Sizes: 3/4" and 1" (20-25mm)

Flow rates:

3/4": 0.5 – 4.0 gpm

1": 1.0 – 13.0 gpm

The FlowGuard balancing valve offers precise flow control and measurement in one compact unit.

- * Brass body
- * Easy flow adjustment using Allen wrench
- * Compatible with water and water/glycol mixes
- * Easy to read flow gauge

For additional information, request literature ES-FlowGuard.

Series 600 Bronze Silent Check Valve



- Install in a horizontal or vertical position
- Stainless steel guide rod and spring
- Silent check operation
- Prevents water hammer

For additional information, request literature ES-600, ES-601 or ES-600-Z3.

Series 777 SI Wye-Pattern Bronze Strainer



Sizes: $\frac{3}{8}$ " – 3" (10-80mm)

Series 777SI, S777SI Wye-Pattern, Bronze Strainers are designed to protect plumbing system components from dirt, rust and other damaging debris.

- Bronze body
- Tapped retainer cap
- Closure plug

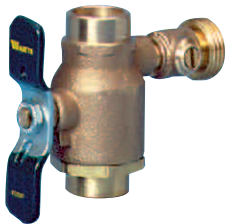
Models

777SI – $\frac{3}{8}$ " – 3" threaded connections

S777SI – $\frac{1}{2}$ " – 2" solder connections†

For additional information, request literature ES-777 SI.

Series RPV Purge and Balancing Valves



Sizes: $\frac{3}{4}$ " – 1 $\frac{1}{4}$ " (20-32mm)

Purge, Drain and Balancing Valves, provide a unique and low cost solution for start-up purging, balancing and draining of hydronic heating loops. 1) high-volume purging; 2) accurate balancing; 3) a tight shutoff; 4) hose connection for draining and purging.

$\frac{3}{4}$ " solder and threaded connections

1" and 1 $\frac{1}{4}$ " solder connections

- Maximum air purging — purges 500 foot loop in 10 seconds
- Positive shutoff dual-ball valve design

For additional information, request literature ES-RPV.

EMV II Motorized Valve



Sizes: $\frac{1}{4}$ "-3" (8-80mm)

Series EMVII-6400SS 2-Piece, Standard Port, Bronze Motorized Ball Valves consist of an electrically actuated motor available in 115 or 24 VAC models and features visual position indicator, manual over-ride, and can be mounted in any position. The EMVII-6400SS ball valve features a 316 stainless steel ball and stem, Durafill® PTFE seats, stem packing, thrust washer and an adjustable packing nut.

For additional information, request literature ES-EMVII-6400SS.

Accessories

Series AS-B Bronze Air Separator



Sizes: 3/4", 1" and 1 1/4" (20, 25, 32mm) NPT

Perfect for solar heating applications. It's unique design separates and collects even the smallest micro-bubbles for fast efficient and continuous air removal from all hydronic systems. Includes 1/2" FV-4M1 air vent.

- Bronze construction
 - Comes standard with tapings for boiler fill valves, expansion tank and air vent
- For additional information, request literature ES-AS-B.

Series IPF Isolation Pump Flanges for Circulator Pumps



Sizes: 3/4" – 2" (20-50mm)

Series IPF Isolation Pump Flanges are designed to isolate circulator pumps to facilitate circulator pump replacement or repairs.

- Brass body and flange
- Supplied with lever handle
- Optional T-handle included

Models

IPF-T-M1 3/4" – 2" NPT threaded end connection

IPF-S-M1 3/4" – 2" Solder end connection

Maximum Temperature: 406°F (208°C) at 100psi (6.9 bar)

For additional information, request literature ES-IPF-M1.

Series PIPF Isolation Pump Flange with Purge & Swivel



Sizes: 3/4" – 1 1/4" (20-32mm)

Isolation Pump Flanges with Purge Port & Swivel Flange are designed to provide circulator pump isolation to facilitate the circulator pump replacement or repair while the integral purge port facilitates system purging.

- Brass body and flange

Models

PIPF-T 3/4" – 1 1/4" (20-32mm) threaded NPT end connections

PIPF-S 3/4" – 1 1/4" (20-32mm) solder end connections

Pressure Rated: 400psi (28 bar) WOG

For additional information, request literature ES-PIPF.

Model 3L Pressure Relief Valve



Size: 3/4" (20 mm)

75 - 150psi

For protection against excessive pressure. Used on domestic storage tanks or tankless water heaters. Standard settings 75, 100, 125 and 150psi (2.1, 6.9, 8.6 and 10.3 bar).

Model 3L is tested, listed and certified by the National Board of Boiler and Pressure Vessel Inspectors.

Stainless steel lever and pin for outside solar applications.

ANSI Z21.22 "Relief Valves and Automatic Gas Shutoff Devices", Design Certified and Listed by CSA.

For additional information, request literature ES-FP53L.

Series 1L, 1XL, 10L, 100XL T&P Relief Valves



Series 1L, 1XL

Size: 1/2" (15 mm)

Series 10L and 100XL

Size: 3/4" (20 mm)

Self-closing T&P Safety Relief Valves for Hot Water Storage Tanks and Heaters

- These combined two-in-one Temperature and Pressure relief valves provide the least expensive and proven means for protection against both excessive temperature and pressure emergency conditions
- Fully automatic temperature and pressure relief protection for domestic hot water supply tanks and heaters based on the latest ANSI Z21.22 listing requirements for temperature discharge capacity

For additional information, request literature ES-10L, ES-100XL, ES-SL100XL/L100XL/LL100XL/LLL100XL.

Series 007 Double Check Valve Assembly



Sizes: 1/2" - 3" (15-80mm)

- Designed to prevent the reverse flow of polluted water from entering the potable water system
- Replaceable seats and seat discs
- Low pressure drop
- 1/2" - 2" cast bronze body construction
- 2 1/2" - 3" fused epoxy coated cast iron body

For additional information, request literature ES-007 or ES-SS007.

Accessories

Series FBV-3C and FBVS-3C

2-Piece, Full Port, Brass Ball Valves



Sizes: 1/4" – 4" (8-100 mm)

- Certified to NSF/ANSI Standard 61
 - FBV-3C – 1/4" – 3" threaded end connections
 - FBVS-3C – 1/2" – 3" solder end connections
- For additional information, request literature ES-FBV-3C.

Series N45B

Water Pressure Reducing Valve



Sizes: 1 1/4" – 2" (32-50mm)
(25 - 75psi)

- Bronze body construction
- Ideal for residential and commercial applications
- Temperature Range: 33°F – 180°F (0.5°C – 82°C)
- Maximum Working Pressure: 300psi (20.7 bar)
- Adjustable Reduced Pressure Range: 25 – 75psi (172 – 517kPa)
- Standard Reduced Pressure Setting: 50psi (345kPa)
- Integral stainless steel strainer
- Thermoplastic seat & cage
- Serviceable in line

For additional information, request literature ES-N45B-L.

Series 25AUB-Z3

Standard Capacity Water Pressure Reducing Valve



Sizes: 1/2" – 2" (15-50mm)
(25-75psi)

- Accurate water pressure control
- Bronze body construction
- Union inlet connection
- Integral stainless steel strainer
- Replaceable seat module
- Serviceable in line

For additional information, request literature ES-25AUB.

Series U5B-Z3

High Performance Water Pressure Reducing Valve



Sizes: 1/2" – 2" (15-50mm)
(25-75psi)

- Provides water pressure control solutions for residential, commercial, and industrial applications
- Basic design and construction is time tested and proven
- High temperature resistant reinforced diaphragm for hot water

For additional information, request literature ES-U5

Series N36

Water Service Vacuum Relief Valve



Sizes: 1/2", 3/4" (15, 20mm)

- Automatically vents a closed system if vacuum occurs
- Relieves vacuum conditions which could siphon the water from the system and burn out a water heater or collapse a tank
- Design certified by CSA. Tested and rated under ANSI Z21.22
- Opens at less than 1/2" (15mm) vacuum

For additional information, request literature ES-N36.

Series DPTG-3

Combination Pressure/ Temperature Gauge



Sizes: 2 1/2" and 3" (65, 80mm)

Dial Size: 2 1/2" and 3"

DPTG3 – Center Back Entry

Connection: 1/2" NPT

Accuracy: ASME Type "B"

Working Temperature: 40°F to 250°F (4.4°C to 121°C)

For additional information, request literature F-Gauges.

Series TBP

Pipe-mount Bimetal Thermometer



Size: 2 1/2" (65mm)

Dial Size: 2 1/2"

Type: Pipe Mount

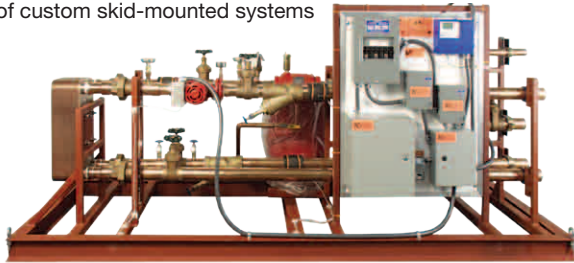
For additional information, request literature F-Gauges.

Custom Solutions

Our OEM customers deliver high-quality, turn-key solar solutions and in today's market with skilled installers at a premium...turn-key is critical. Considering our depth of product knowledge, as well as our extensive experience helping OEM customers balance their internal vs. external capabilities, it's not surprising that we work with some of the best known names in the business. But big isn't the end of the story. Dedicated teams in both Europe and America allow us the flexibility to work with smaller companies who are just getting started. Partnering with Watts, a prime manufacturer and one of the trusted names in hydronic heating technology, gives our customers the tailored support they need to compete effectively in today's global solar marketplace.



Examples of custom skid-mounted systems



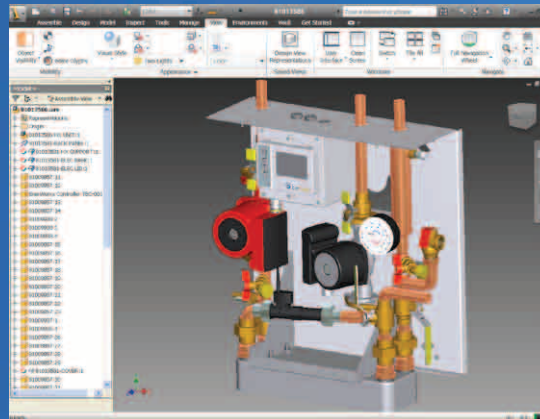
"In close collaboration with Watts, the Apricus technical team successfully developed their concept of an innovative, modular, "turn key" pump station and brought it to the North American market place. Throughout the design and fabrication

process Watts was responsive and attentive to detail at all times, ensuring this to be a professional and rewarding partnership."

Nigel Ruddell
Vice President, Apricus Inc.

"Working with Watts on bringing a product to market was a very smooth and quick process. Their product team was able to take our requirements, and go through an iterative design process, building a working prototype and final product within a matter of months."

- Andrew Mauchlen, Manager of Engineering, EnerWorks Inc.



A Watts Water Technologies Company



USA: No. Andover, MA • Tel. (978) 688-1811 • Fax: (978) 794-1848 • www.watts.com
Canada: Burlington, ONT. • Tel. (905) 332-4090 • Fax: (905) 332-7068 • www.wattscanada.ca