

PRE-ENGINEERED GEOTHERMAL PUMP STATION



Manifest is the first ever pre-engineered pump station for commercial Geothermal HVAC systems that includes all your necessary hydronic components.

BENEFITS FOR:



Pump Failure

Easy Selection & Installation

Smaller Footprint & Optimized Design

Greater Energy Savings & Performance

Water Make-Up Train

The Water Make-Up Train consists of the Backflow Preventer, Water Meter, Pressure Regulating Valve and Water Make Up Connection.

PACKAGED SOLUTION

Expansion Tank

Armstrong's AX Diaphragm expansion tank uses compressed air to maintain system pressures by accepting and expelling the changing volume of water as it heats and cools.

Remote Monitoring

Allows building owners and engineers to track loop return and supply temperatures, pump energy use, bypass status, water make up train status, and other important factors to ensure the HVAC system is optimized. We can even monitor the system for the building owner and send alerts and periodic performance reports.

Design Envelope Pump

The Armstrong Design Envelope Tango pump is a leading solution that offers efficiency, simple installation and the security of built-in

redundancy. The 2 pumps can be operated in a standard duty / standby mode, or in a coordinated mode that shares the load between two pumps for best overall efficiency.

Pump Manager

Pump manager is a software solution that monitors pumping efficiency and provides alerts to changes in pump settings that can reduce pump efficiency.

Sensorless

Armstrong Design Envelope pumps use intelligent variable speed to provide superior pump speed modulation, with no need for remotely located sensors.

Parallel Sensorless Technology

The Armstrong Parallel Sensorless Pump Controller (PSPC) stages individual pumps in a parallel configuration for best overall pumping efficiency. Using Best Efficiency Staging, PSPC improves energy efficiency by up to 30% over traditional parallel pumping installations without the use of external sensors.



Single Point Power Panel

Suction Guides

Armstrong Suction Guides are multi-function pump fittings that provide a 90° elbow, guide vanes, and an in-line strainer. Suction guides reduce pump installation cost and floor space requirements.



Air Separator

Armstrong Vortex air separators remove entrained air from the water to improve heat transfer and support accurate flow within the system. They create a vortex or whirlpool action, sending the heavier air-free water to the outer portion of the tank, and allowing the lighter air-entrained water mixture to move to the center, before being expelled through the air vent.



Flo-Trex Valve

To protect pumps from damage and keep them operating at peak efficiency, Armstrong Flo-Trex Valves are used on the discharge side of pumping equipment. The Flo-Trex Valve can act as a shutoff valve, non-slam check valve, flow throttling valve and 90 degree elbow - all in a single device.

geothermal BETTER WITH BYPASS

Automatic GHX Bypass closes the connection to the ground loop when conditions are right, thereby reducing system pressure drop. This ensures optimal efficiency of the system, reduces pump energy by 50-75% when engaged, and reclaims heat from different building zones.

HOW IT WORKS

Cooling Dominant Scenario No Bypass Needed



All of the interior building zones are operating in cooling mode, meaning they are providing cool air to the space and adding heat to the geothermal water loop.

Under normal operation, water is flowed through the ground loop to reject this excess heat to the ground. The newly cooled water is then returned to the building to be used again for cooling.



Balanced Load Scenario

System without bypass

Some interior building zones will be operating in cooling mode while others are operating in heating mode. Since some of these zones are adding heat to the water loop while others are removing heat from the water loop, their effects counteract one another which results in stable loop temperatures.

Under normal operation, even though there is not a need for a net heat transfer from the ground, water is flowed through the ground loop (requiring pump energy) and then returned to the building.

Balanced Load Scenario System with bypass



This shows how the same balanced load scenario would be handled with a ground loop bypass. In this case, some interior building zones are still operating in cooling mode while others are still operating in heating mode. However, with a ground loop bypass installed, flow can now be cut off to the ground loop. The balanced load ensures efficient operations are maintained within the building, but not requiring flow through the ground loop allows the facility to save substantially on pump energy.

CASE Study

What: 70 ton office building

Size: 35,000 square feet

Where: Midwestern United States

| | Summer | Fall/Spring | Winter |
|---------------------------------|--------|-------------|--------|
| % of Time Bypass Was Active | 8.1% | 40.6% | 55.3% |
| Average Bypass Duration (hours) | 1.06 | 1.72 | 2.04 |
| Bypass Activations/Day | 1.88 | 5.12 | 6.50 |

BYPASS Energy Savings



ABOUT MELINK

PRODUCTS & SERVICES

Melink T&B - National provider of commercial HVAC testing, adjusting, balancing, and commissioning services.

Melink Intelli-Hood[®] - National manufacturer and installer of demand control kitchen ventilation systems.

Melink Solar - National developer of solar PV projects including finance, EPC (Design/Build), maintenance and monitoring services.

Melink Geo - National developer of geothermal HVAC systems and manufacturer of pre-engineered pump stations.





WHO WE ARE

We are a global provider of energy efficiency and renewable energy solutions for commercial buildings with four businesses. For 30 years, we've been helping companies save energy, increase profits, and make the world a more sustainable place. Our corporate headquarters is LEED Platinum and Net-Zero Energy, and our vehicle fleet consists of all hybrid and electric cars.

Integrity. Service Excellence. Innovation.

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