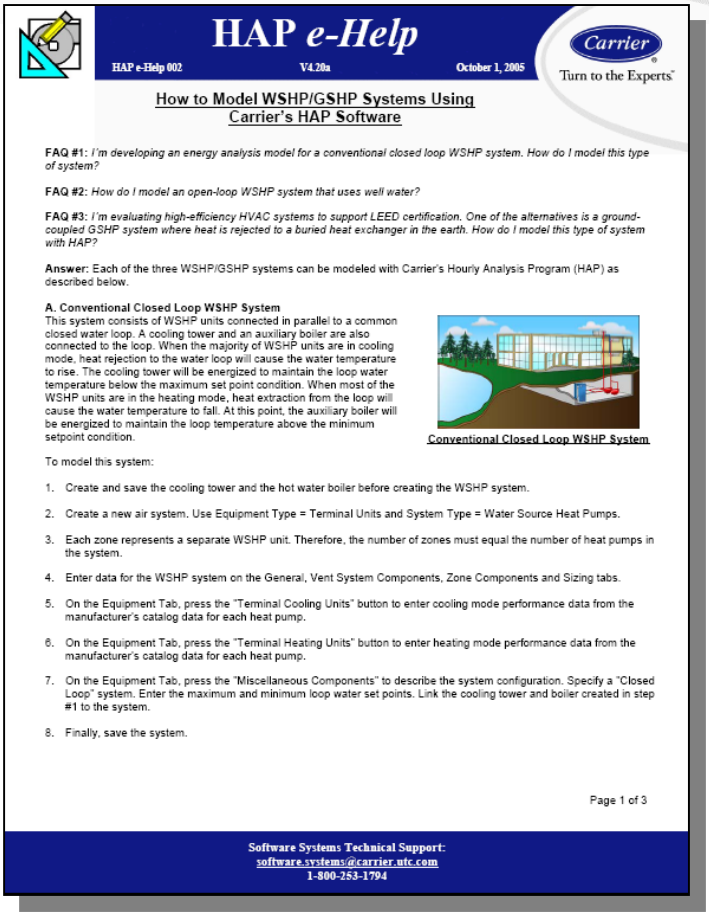
Introducing HAP *e-Help*

Welcome to Carrier's latest technical advice for HAP users.

HAP *e-Help* is a regularly published white paper that provides timely guidance on the many technical questions that may arise when using HAP. From building modeling for LEED™ certification and system design guidance, to hourly weather data and report interpretation, **HAP *e-Help*** provides easy to follow, helpful information to lead you to HVAC system design solutions and thorough energy analysis investigations.



HAP *e-Help*

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Carrier® Turn to the Experts.™

How to Model WSHP/GSHP Systems Using Carrier's HAP Software

FAQ #1: *I'm developing an energy analysis model for a conventional closed loop WSHP system. How do I model this type of system?*

FAQ #2: *How do I model an open-loop WSHP system that uses well water?*

FAQ #3: *I'm evaluating high-efficiency HVAC systems to support LEED certification. One of the alternatives is a ground-coupled GSHP system where heat is rejected to a buried heat exchanger in the earth. How do I model this type of system with HAP?*

Answer: Each of the three WSHP/GSHP systems can be modeled with Carrier's Hourly Analysis Program (HAP) as described below.

A. Conventional Closed Loop WSHP System

This system consists of WSHP units connected in parallel to a common closed water loop. A cooling tower and an auxiliary boiler are also connected to the loop. When the majority of WSHP units are in cooling mode, heat rejection to the water loop will cause the water temperature to rise. The cooling tower will be energized to maintain the loop water temperature below the maximum set point condition. When most of the WSHP units are in the heating mode, heat extraction from the loop will cause the water temperature to fall. At this point, the auxiliary boiler will be energized to maintain the loop temperature above the minimum setpoint condition.

Conventional Closed Loop WSHP System

To model this system:

1. Create and save the cooling tower and the hot water boiler before creating the WSHP system.
2. Create a new air system. Use Equipment Type = Terminal Units and System Type = Water Source Heat Pumps.
3. Each zone represents a separate WSHP unit. Therefore, the number of zones must equal the number of heat pumps in the system.
4. Enter data for the WSHP system on the General, Vent System Components, Zone Components and Sizing tabs.
5. On the Equipment Tab, press the "Terminal Cooling Units" button to enter cooling mode performance data from the manufacturer's catalog data for each heat pump.
6. On the Equipment Tab, press the "Terminal Heating Units" button to enter heating mode performance data from the manufacturer's catalog data for each heat pump.
7. On the Equipment Tab, press the "Miscellaneous Components" to describe the system configuration. Specify a "Closed Loop" system. Enter the maximum and minimum loop water set points. Link the cooling tower and boiler created in step #1 to the system.
8. Finally, save the system.

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http://www.commercial.carrier.com/commercial/hvac/general/0,,CLI1_DIV12_ETI433_MID164,00.html

So, please feel free to visit this site to learn more about **HAP *e-Help*** and the rest Carrier's E20-II suite of HVAC system design tools.

We look forward to serving you with this exciting new technical information. We are confident **HAP *e-Help*** will greatly influence your knowledge of HAP and improve your HVAC system design and energy analysis productivity.

Carrier Software Systems

Technical Training & Support

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