



Daikin Chiller Energy Payback Instructions

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The Worksheet

Section 1: The Worksheet

A Chiller Payback Analysis depends on three sets of information: Job and Building Information, Chiller Comparison Information, and Financial Information.

1. Getting Started with New Analysis: Job and Building Information

The screenshot shows a web form with two main sections: 'Job Information' and 'Building Information'. The 'Job Information' section contains text input fields for 'User', 'Job Name', and 'Date', and dropdown menus for 'State' and 'City'. The 'Building Information' section contains a dropdown menu for 'Building Type', a text input field for 'Energy Rate' with a unit of '\$/kWhr', and a text input field for 'Design Cooling Load' with a unit of 'Tons'.

The User, Job Name, and Date fields are used to populate reports, and should be filled out with the appropriate job specific information.

The State and City fields are used to determine a weather profile for the job. They should be filled in with a location as close as possible to the actual job site. If no such locations are available, then they should be filled in with a location in a similar climate as the job site.

Select your building type using the pull down menu. Your choices include: Office 1-2 Story, Office 3+ Story, Primary School, Secondary School, Health Care, Hotel, Retail, Condo/Apartment, Factory, and Data Center. The Building Type will determine a default Annual Operating Hour profile for the Chillers, which will be populated in the leftmost grid. The values in this grid can then be edited to match the job specific conditions.

The Energy Rate field should be set to the cost of electricity at the job site. This value will be used to determine the cost of running the Chillers.

Design Load %	Annual Operating Hours
100%	
90%	
80%	
70%	
60%	
50%	
40%	
30%	
20%	
10%	
	0

The Design Cooling Load field should be filled in with the maximum cooling load the building will experience. It will be used to calibrate the cooling load profiles of the Chiller to your building.

2. Specify a Base and an Alternative Chiller for Comparison

The screenshot shows the 'Chiller Comparison' tool interface. It is divided into two main sections: 'Base Chillers' on the left and 'Alternate Chillers' on the right. Each section has a header and a large empty area below it. A green button labeled 'Add Base Chiller' is located in the Base Chillers section, and a green button labeled 'Add Alternate Chiller' is located in the Alternate Chillers section.

The screenshot shows the 'Chiller Comparison' tool interface with one chiller added to each section. In the 'Base Chillers' section, there is a row with 'Base Chiller 1' in a text box, 'Base Chiller 1' in another text box, and '100 tons' in a third text box. Below this row is a green button labeled 'Add Base Chiller'. In the 'Alternate Chillers' section, there is a row with 'Alternate Chiller 1' in a text box, 'Alternate Chiller 1' in another text box, and '100 tons' in a third text box. Below this row is a green button labeled 'Add Alternate Chiller'.

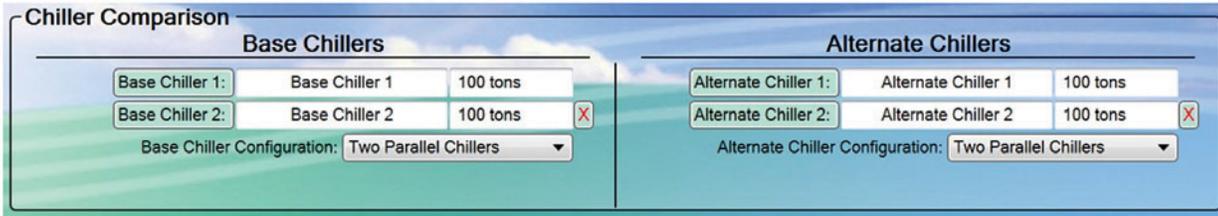
In terms of the Chiller Payback Tool, the Base Chiller represents an existing or benchmark chiller in the comparison. The Alternate Chiller represents the new or replacement chiller. For each Base Chiller and each Alternate Chiller you must define a Capacity in tons, Number of Efficiency Points (2 through 10 points), and Efficiency Measurement (kW/ton, EER, and COP). Once complete, enter in each Chiller's rating from the Daikin Tools Selection Software or from another reliable source. Enter an appropriate Oil Degradation Factor for each Chiller. Below are example layouts for the 4 point and 10 point Chiller Ratings.

The screenshot shows the 'Define Efficiencies for Base Chiller 1' form. The 'Name' field contains 'Base Chiller 1'. The 'Capacity' field is empty, followed by the unit 'Tons'. The 'Number Of Efficiency Points' dropdown menu is set to '4'. The 'Efficiency Measurement' dropdown menu is set to 'kW/ton'. Below this, there are four rows of input fields for efficiency ratings: 100%, 75%, 50%, and 25%, each followed by a 'kW/ton' label. The 'Oil Degradation Factor' field contains '0%'. At the bottom is a green button labeled 'Save Chiller'.

The screenshot shows the 'Define Efficiencies for Base Chiller 1' form. The 'Name' field contains 'Base Chiller 1'. The 'Capacity' field is empty, followed by the unit 'Tons'. The 'Number Of Efficiency Points' dropdown menu is set to '10'. The 'Efficiency Measurement' dropdown menu is set to 'kW/ton'. Below this, there are ten rows of input fields for efficiency ratings: 100%, 90%, 80%, 70%, 60%, 50%, 40%, 30%, 20%, and 10%, each followed by a 'kW/ton' label. The 'Oil Degradation Factor' field contains '0%'. At the bottom is a green button labeled 'Save Chiller'.

The Worksheet

If you are modeling two chillers you will need to specify your configuration type. The options include Two Chillers in Parallel or Two Chillers in Series.



The Energy Savings and Simple Payback Calculations for the Chiller Payback Tool are setup for the Alternate Chiller to be the more efficient chiller option. Otherwise Total Annual Savings and Simple Payback Calculations in the next section will be negative.

IMPORTANT NOTE: Only use this tool for air source-to-air source or water source-to-water source chillers comparisons. Do not compare air source-to-water source chillers with this tool. Refer to the Daikin Applied EnergyAnalyzer II energy analysis program for such comparisons.

3. Financial Information for Job Savings and Payback Calculations

In the Expected Rebate field, enter the dollar amount of the rebate (if any) you expect to receive with the Alternate Chiller.

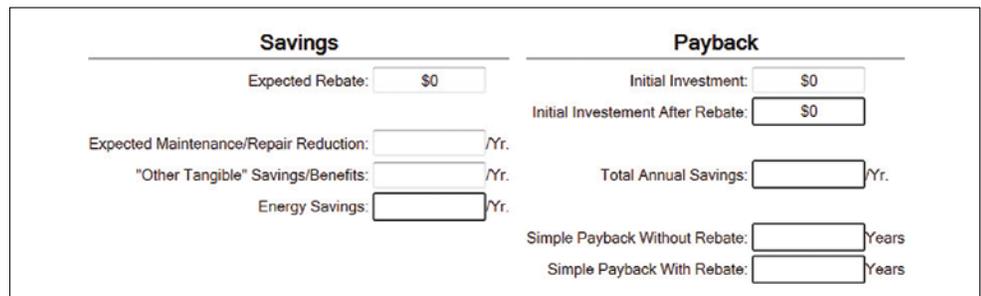
In the Expected Maintenance/Repair Reduction field, enter the annual savings you expect to receive on maintenance and repair with the Alternate Chiller.

In the "Other Tangible" field, you can enter any other annual savings you expect with the Chiller. You can also use this field to enter a negative value corresponding to any annual costs that might be associated with the Alternate Chiller.

The Energy Savings field will automatically populate with the results of the energy usage comparison analysis performed by the program.

In the Initial Investment field, enter the cost difference between the Base (or Existing) Chiller and the Alternate (or New/Replacement) Chiller. For example if you are modeling a Base Chiller at \$0 initial investment and alternate chiller at \$100,000 initial investment, then enter \$100,000. If you are modeling a base chiller at \$100,000 and an alternate chiller at \$125,000, then enter \$25,000.

The Total Annual Savings field will automatically populate, showing the total annual savings provided by the Alternate Chiller, discounting startup costs.



Section 2: The Menu Options

At the top of the screen, there are seven (7) menu options.

Home Save Data File Open Data File Email Data File View and Print Report Email Report Help

Home

This option will take you back to the Applied Systems Toolbox homepage. Any information you've entered on the worksheet will be saved, and you can resume working on your Chiller Payback job by clicking the "Chiller Energy Payback" button from the homepage.

Save Data File

This option will allow you to select a location to save your job data file. This will save all of your input information, and can be reloaded by any Applied Systems Toolbox user.

Open Data File

This option will allow you to find and select a job data file to open. Opening a data file will erase any work done on your current job if the work was not previously saved.

Email Data File

This option will save your job to a temporary file, and create and open a blank email with the job data file attached.

View and Print Report

This option will generate and open an XPS report document detailing all of the information on your job. The document can then be printed or saved.

Email Report

This option will save a report to a temporary file, and create and open a blank email with the report file attached.

Help

The Help menu option will open this document.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to www.DaikinApplied.com.