



database building air temperature thermal store ratio
 SEER assessment parameters energy consumption
 capacity water output
 chiller cooling

GSAS SEER TOOL v2.0

USER GUIDE 2017

IMPORTANT NOTE:

For CD installation:

- 1 Copy the contents of the CD to your Drive C - Local Disk(C:)
- 2 Click the “set-up” application to install the GSAS – SEER tool.

For installation using downloaded link:

- 1 Use the “Extract Files” option when extracting/unzipping the files.
- 2 Extracted files should be saved in a folder named, “SEER v2.0”
- 3 Copy the folder your Drive C - Local Disk(C:)
- 4 Click the “set-up” application from the folder to install the GSAS – SEER tool.

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Registration Information

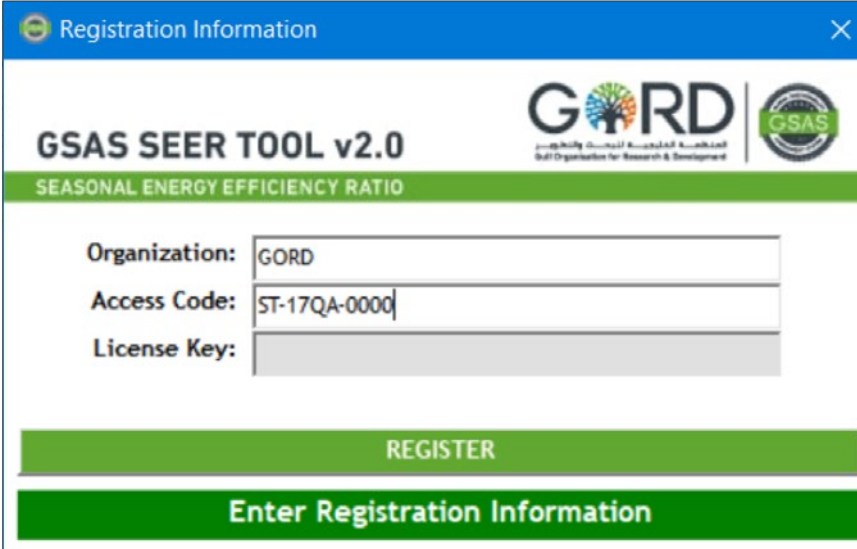
Organization: Provide GORD the exact name of the company/or preferred name (could be shortened or abbreviation) to create a profile in the system.

Access Code: GORD will provide the Service Provider Number to use in the SEER tool.

License Key: License Key will be generated internally based on the provided details above.

Notes:

1. Both information has been provided to consultants based on the details provided. Simply click register to continue.



The screenshot shows a web application window titled "Registration Information". The header includes the "GSAS SEER TOOL v2.0" logo and the "SEASONAL ENERGY EFFICIENCY RATIO" text. The main form area contains three input fields: "Organization:" with the value "GORD", "Access Code:" with the value "ST-17QA-0000", and "License Key:" which is currently empty. Below the form is a green "REGISTER" button. At the bottom of the window, there is a green bar with the text "Enter Registration Information".

Project Information – Building Cooling Coil Demand & Distribution Losses

Notes:

- **For Distribution Losses**

- **Fixed:** For fixed profile, user shall:
 - Select the “**Chiller Plant**” tab
 - Enter the percentage of the maximum energy loss in distribution.

- **User Input:**

- If the Distribution losses is not a fixed value, then enter the data for **8760** hours along with the Cooling Coil Demand in the spreadsheet.

Main

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name Country Qatar

Client City Doha

Consultant Trial Version Only

Fans Cooling Tower Performance Coefficients Calculated Coefficients

Building Cooling Coil Demand/Distribution Losses Chiller Plant Thermal Storage Pumps

INSTRUCTIONS:

- 1.) Click the “Excel” icon below to enter **BUILDING COOLING COIL DEMAND PROFILE** and/or **DISTRIBUTION LOSSES** in the spreadsheet.
- 2.) By default, the Input sheet for the cooling demand profile is hidden. To unhide, switch to the open Excel Application, under “View” tab, click “Unhide” and choose the file named “District Cooling - SEER”.
- 3.) When completed, save the spreadsheet and quit Excel.
- 4.) Enter the other required parameters in each tabs.

If the **DISTRIBUTION LOSSES** profile is fixed, choose the option “Percentage” in the Chiller Plant tab. Otherwise, update the spreadsheet profile and choose “User Input”

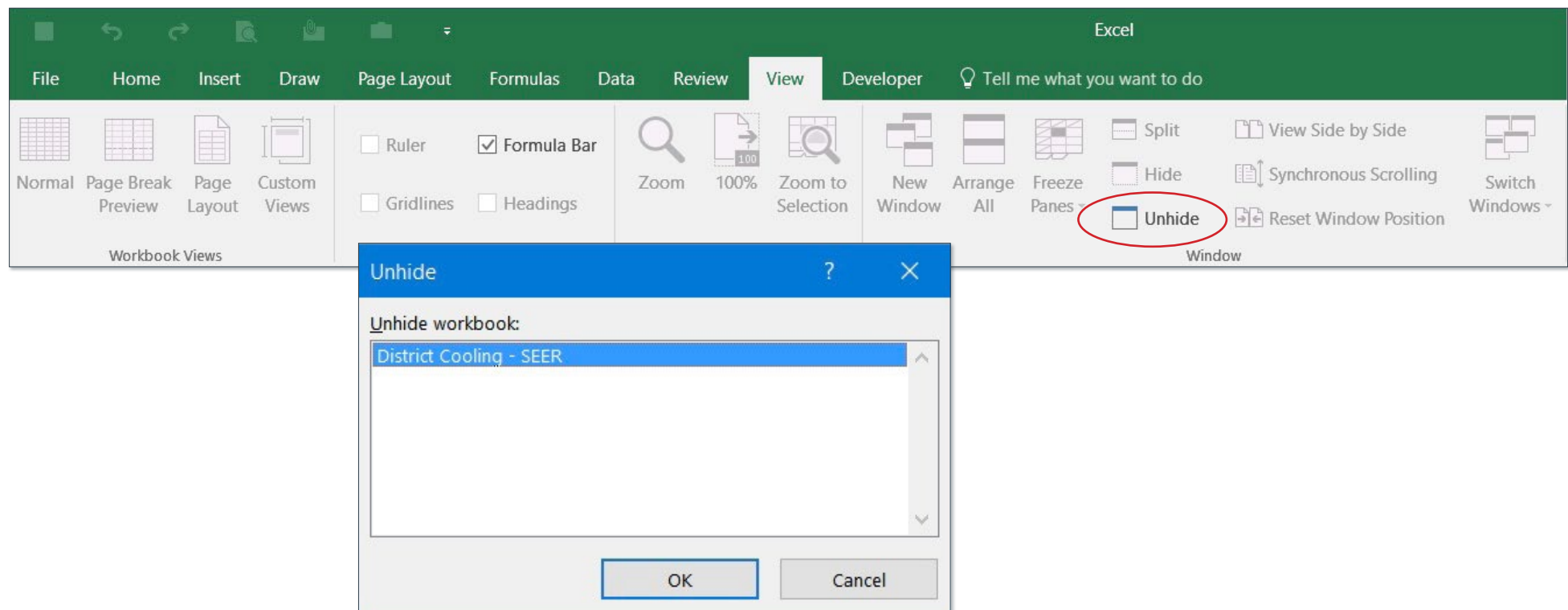
SAVE PRINT EXIT

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Building Cooling Coil Demand & Distribution Losses – Spreadsheet

Notes:

By default, the Input sheet for the cooling demand profile is hidden. To unhide:



(Continue on next page)

Building Cooling Coil Demand & Distribution Losses – Spreadsheet (Continued)

	A	B	C		A	B	C		A	B	C		A	B	C
1	Date	Time	Cooling demand from buildings	746	Wed, 01-Feb	0:30	7,458.00	1418	Wed, 01-Mar	0:30	14,649.00	2162	Sat, 01-Apr	0:30	32,227.00
2	Sun, 01-Jan	0:30	1,199.00	747		1:30	7,458.00	1419		1:30	14,649.00	2163		1:30	32,227.00
3		1:30	1,199.00	748		2:30	7,458.00	1420		2:30	14,649.00	2164		2:30	32,227.00
4		2:30	1,199.00	749		3:30	7,458.00	1421		3:30	14,649.00	2165		3:30	32,227.00
5		3:30	1,199.00	750		4:30	14,649.00	1422		4:30	14,649.00	2166		4:30	32,227.00
6		4:30	1,199.00	751		5:30	14,649.00	1423		5:30	14,649.00	2167		5:30	42,348.00
7		5:30	7,458.00	752		6:30	14,649.00	1424		6:30	14,649.00	2168		6:30	42,348.00
8		6:30	14,649.00	753		7:30	14,649.00	1425		7:30	14,649.00	2169		7:30	42,348.00
9		7:30	14,649.00	754		8:30	14,649.00	1426		8:30	14,649.00	2170		8:30	42,348.00
10		8:30	14,649.00	755		9:30	14,649.00	1427		9:30	22,722.00	2171		9:30	42,348.00
11		9:30	14,649.00	756		10:30	14,649.00	1428		10:30	22,722.00	2172		10:30	42,348.00
12		10:30	14,649.00	757		11:30	14,649.00	1429		11:30	22,722.00	2173		11:30	51,004.00
13		11:30	14,649.00	758		12:30	14,649.00	1430		12:30	22,722.00	2174		12:30	51,004.00
14		12:30	14,649.00	759		13:30	14,649.00	1431		13:30	22,722.00	2175		13:30	51,004.00
15		13:30	14,649.00	760		14:30	22,722.00	1432		14:30	22,722.00	2176		14:30	51,004.00
16		14:30	14,649.00	761		15:30	22,722.00	1433		15:30	22,722.00	2177		15:30	51,004.00
17		15:30	14,649.00	762		16:30	22,722.00	1434		16:30	22,722.00	2178		16:30	51,004.00
18		16:30	22,722.00	763		17:30	22,722.00	1435		17:30	22,722.00	2179		17:30	48,208.00
19		17:30	22,722.00	764		18:30	22,722.00	1436		18:30	22,722.00	2180		18:30	48,208.00
20		18:30	22,722.00	765		19:30	22,722.00	1437		19:30	22,722.00	2181		19:30	48,208.00
21		19:30	22,722.00	766		20:30	22,722.00	1438		20:30	22,722.00	2182		20:30	48,208.00
22		20:30	7,458.00	767		21:30	22,722.00	1439		21:30	22,722.00	2183		21:30	48,208.00
23		21:30	7,458.00	768		22:30	22,722.00	1440		22:30	22,722.00	2184		22:30	48,208.00
24		22:30		769		23:30	14,649.00	1441		23:30	22,722.00	2185		23:30	32,227.00
25		23:30													

Enter the coil demand of the building for cooling for 8760 hours. The 8760 INPUTS are mandatory.

Notes:

- Save the spreadsheet and quit excel when done.

Chiller Plant

No. of Chillers: Choose the number of chillers as applicable to the project.

Capacity: Enter the capacity of **EACH** chiller at **specified condenser temperature**.

Minimum Start up Capacity: Enter the minimum start up capacity of the chiller as per manufacturers standards and design inputs.

Condenser Cooling Media: Select the type of condenser heat transfer medium:

- Air cooled
- Water Cooled

Compressor type: Enter the compressor type

Distribution Loss: Select between the two options:

- **Percentage:** Enter the percentage of maximum energy loss in distribution. This value will be used for the entire year
- **User Input:** Enter the data in the spreadsheet along with the Cooling Coil Demand

Nominal COP: Enter the COP at **specified condenser temperature**.

Condenser Temp: Enter the condenser entering air temperature.

The screenshot displays the 'Chiller Plant' configuration screen within the 'GSAS SEER TOOL v2.0' software. The interface is organized into several sections:

- Project Information:** Fields for Project Name, Client, and Consultant (set to 'Trial Version Only'). Country is set to 'Qatar' and City to 'Doha'.
- Navigation Tabs:** 'Fans', 'Cooling Tower', 'Performance Coefficients', and 'Calculated Coefficients'. Under 'Cooling Tower', 'Chiller Plant' is selected, with other options being 'Building Cooling Coil Demand/Distribution Losses', 'Thermal Storage', and 'Pumps'.
- CHILLER PLANT Section:**
 - 'No. of Chillers' is set to 3.
 - 'Capacity (kW)' table:

	Chiller 1	Chiller 2	Chiller 3	Chiller 4	Chiller 5	Chiller 6
Capacity (kW)	19343.5	19343.5	19343.5	0	0	0
- CHILLER SELECTION PARAMETERS Section:**
 - Minimum Start up Capacity (%): 0
 - Nominal COP: 5.4
 - Distribution Loss: Percentage (dropdown)
 - Losses (%): 2.5
 - Condenser Cooling Media: Water Cooled (dropdown)
 - Compressor Type: Centrifugal (dropdown)
 - Condenser Temp °C: 35
 - Evaporator Temp °C: 5.5
 - Condenser Delta T (K): 5
 - If total cooling capacity is lower than minimum, will the chiller start?: Yes, By Pass (dropdown)

At the bottom right, there are buttons for 'SAVE', 'PRINT', and 'EXIT'. The footer shows '© EE 2017' and 'GSAS - SEER v2.0'.

(Continue on next page)

Chiller Plant (Continued)

Evaporator Temp: Enter the leaving water temperature.

Condenser Delta (T): Enter the temperature difference across the condenser media.

If total cooling capacity is lower than the minimum, will the chiller start? : Select the appropriate option based on the design considerations.

- **Yes, By pass:** Here the chiller will start when the sum of the thermal store charging and the coil load is less than the minimum capacity. The system will assume a by pass mode. (**Note:** based on the cooling coil profile, this may be energy intensive)
- **No, Shut down:** Here the chiller will NOT start when the sum of the thermal store charging and the coil load is less than the minimum capacity. (**Note:** This is crucial, there must be a proof how the cooling coil load will be met especially if the buildings' cooling load is lower than the thermal store minimum discharge operation capacity.)

Main

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Logo: GORD (General Organization for Resources & Development) and GSAS

Project Name:
 Client:
 Consultant:

Country:
 City:

Navigation: Fans, Cooling Tower, Performance Coefficients, Calculated Coefficients
 Building Cooling Coil Demand/Distribution Losses, Chiller Plant, Thermal Storage, Pumps

CHILLER PLANT

No. of Chillers:

	Chiller 1	Chiller 2	Chiller 3	Chiller 4	Chiller 5	Chiller 6
Capacity (kW)	19343.5	19343.5	19343.5	0	0	0

CHILLER SELECTION PARAMETERS

Minimum Start up Capacity (%):
 Nominal COP:
 Distribution Loss:
 Losses (%):

Condenser Cooling Media:
 Compressor Type:
 Condenser Temp °C:
 Evaporator Temp °C:
 Condenser Delta T (K):

If total cooling capacity is lower than minimum, will the chiller start?

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Thermal Store

Thermal Store: Select "Yes" if the project comprises a Thermal Storage. If "Yes", then:

Capacity: Enter the capacity of the Thermal Storage

Design TS Charging Capacity:

- **Maximum:** Enter the maximum design the thermal store can charge or discharge in kWh per hour.
- **Minimum:** Enter the minimum design the thermal store can charge or discharge in kWh per hour.

If "No", delete the Capacity and Design TS Charging Capacity default inputs.

Lower allowable Thermal Store Capacity: Enter the lowest allowable thermal store capacity in percentage.

Note: Thermal Store will be controlled in order that its capacity will not drop below the set limit. A command will be sent to the chiller to start charging the thermal store even if there is no coil load. This command will override the profile, if and only if, the capacity of the thermal store dropped below the controlled capacity.

If there is no minimum capacity then the percentage should equal to 0.

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name: Country: Qatar
 Client: City: Doha
 Consultant: Trial Version Only

Building Cooling Coil Demand/Distribution Losses | Chiller Plant | Thermal Storage | Pumps

THERMAL STORE

Thermal Store: Yes
 Capacity (kWh/hr): 98448
 Design TS Charging Capacity (kWh/hr):
 Maximum: 19300
 Minimum: 0
 Other Auxiliaries (kWh): 87600

Lower Allowable Thermal Store Capacity (%): 0
 TES Losses per day (%): 4
 Daily Charging Threshold: Building Daily Peak
 TES Pumps Same As: Primary Pump

TES Pumps

Chiller	Pump	Capacity (kW)
100	0	0
75	0	0
50	0	0
25	0	0

PROFILE

Select hourly profiles for Charge/Discharge

Fixed (selected) | Weekly

	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
CHARGE	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
DISCHARGE	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0

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Thermal Store (Continued)

TES Loss per day: Enter the percentage of energy losses from the Thermal Store tank per day.

Daily Charging Threshold:

- **Building Daily Peak:** The user shall inform the software if the charging capacity will only meet the Daily Peak. This will override the charging profile when the TES meets the mentioned capacity.
- **Thermal Store Peak:** The user shall inform the software if the charging capacity will meet the TES Peak. This will override the charging profile when the TES meets the maximum capacity.

TES Pumps Same as:

- **Primary Pump:** Select this option if the project has no separate TES Pumps and considers Primary Pumps for TES Tank.
- **User Input:** Select this option if the project has a separate set of pumps for TES.
- **TES PUMPS:** Enter the Pump Capacity and Power Input at various part-load value of Chiller.

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name:
Client:
Consultant: Trial Version Only

Country: Qatar
City: Doha

THERMAL STORE

Thermal Store: Yes
Capacity (kWh/hr): 98448
Design TS Charging Capacity (kWh/hr):
Maximum: 19300
Minimum: 0
Other Auxiliaries (kWh): 87600

Lower Allowable Thermal Store Capacity (%): 0
TES Losses per day (%): 4
Daily Charging Threshold: Building Daily Peak
TES Pumps Same As: Primary Pump

TES Pumps

Chiller	Pump	Capacity (kW)
100	0	0
75	0	0
50	0	0
25	0	0

PROFILE

Select hourly profiles for Charge/Discharge

Fixed (selected) | Weekly

	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
CHARGE	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
DISCHARGE	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0

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Thermal Store - Profile

If “Thermal Storage”, is applicable, then

Profile:

Fixed: Select this option if the profile of TES Tank is fixed for the entire year.

Weekly: Select this option if weekly profile is available. Update the spreadsheet and save the data.

The screenshot displays the 'Thermal Store' configuration section of the GSAS SEER TOOL v2.0. It includes input fields for Project Name, Client, Consultant, Country (Qatar), and City (Doha). Below these are tabs for Fans, Cooling Tower, Performance Coefficients, and Calculated Coefficients. The 'Thermal Storage' tab is active, showing 'Thermal Store' set to 'Yes', 'Capacity (kWh/hr)' as 98448, 'Lower Allowable Thermal Store Capacity (%)' as 0, and 'TES Losses per day (%)' as 4. The 'TES Pumps' section shows 'Type' as 0 and a table for Chiller and Pump capacities. A 'PROFILE' section allows selecting between 'Fixed' and 'Weekly' profiles, with a 24-hour grid for CHARGE and DISCHARGE values (1 for applicable, 0 for not-applicable). At the bottom, there are 'SAVE', 'PRINT', and 'EXIT' buttons, and a copyright notice '© EE 2017'.

Notes:

Provide the hourly profile for the “Charging” and “Discharging” of Thermal Storage Tank.

“1” corresponds to “applicable” and

“0” corresponds to “not-applicable”

Pumps

All Pumps:

Type: Select the type of pumps based on design considerations:

- Fixed
- Variable

Enter the Pump capacity and Power input at various part-load values of Chiller

Dependency*: Select the appropriate option based on the design of the project.

- Chiller
- Building's Cooling Coil

Note: This is crucial to calculate the pump consumed power

** Applies to Primary, Secondary and Tertiary Pump*

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name:
Client:
Consultant:

Country:
City:

PUMPS PERFORMANCE

Condenser Pumps
Type:
Chiller Pump Capacity (kW)

Chiller	Pump	Capacity (kW)
100	1	266
75	0.8	212.8
50	0.6	159.6
25	0.3	79.8

Primary Pumps
Type: Dependency:
Chiller Pump Capacity (kW)

Chiller	Pump	Capacity (kW)
100	1	148
75	0.8	118.4
50	0.6	88.8
25	0.3	44.4

Secondary Pumps
Type: Dependency:
Chiller Pump Capacity (kW)

Chiller	Pump	Capacity (kW)
100	1	448.65
75	0.8	365.896
50	0.6	269.19
25	0.3	134.595

Tertiary Pumps
Type: Dependency:
Chiller Pump Capacity (kW)

Chiller	Pump	Capacity (kW)
100	0	0
75	0	0
50	0	0
25	0	0

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Fans

All Fans:

Type: Select the type of fans based on design considerations:

- Fixed
- Variable

Enter the Fan capacity and Power input at various part-load values of Chiller.

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name: [] Country: Qatar
Client: [] City: Doha
Consultant: Trial Version Only

Navigation: Building Cooling Coil Demand/Distribution Losses | Chiller Plant | Thermal Storage | Pumps
Sub-navigation: Fans | Cooling Tower | Performance Coefficients | Calculated Coefficients

FANS PERFORMANCE

Fan 1

Fan Type: Variable

Chiller	Fan	Capacity (kW)
100	1	200
75	0.8	160
50	0.6	120
25	0.3	60

Fan 2

Fan Type: Variable

Chiller	Fan	Capacity (kW)
100	1	200
75	0.8	160
50	0.6	120
25	0.3	60

Fan 3

Fan Type: Variable

Chiller	Fan	Capacity (kW)
100	1	200
75	0.8	160
50	0.6	120
25	0.3	60

Fan 4

Fan Type: []

Chiller	Fan	Capacity (kW)
100	0	0
75	0	0
50	0	0
25	0	0

Fan 5

Fan Type: []

Chiller	Fan	Capacity (kW)
100	0	0
75	0	0
50	0	0
25	0	0

Fan 6

Fan Type: []

Chiller	Fan	Capacity (kW)
100	0	0
75	0	0
50	0	0
25	0	0

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SAVE | PRINT | EXIT

Cooling Tower

Wet Bulb Temperature: Wet Bulb Temperature: Enter the wet bulb temperature considering the maximum and minimum temperature ranges throughout the year and various steps between minimum and maximum.

Leaving Temperature: Enter the cooling tower leaving temperatures for the corresponding wet bulb temperatures at various part-load conditions of the chiller.

Note: Cooling tower performance shall be provided at full load and part loads (100%, 75%, 50% & 25%)

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name:
 Client:
 Consultant:

Country:
 City:

Building Cooling Coil Demand/Distribution Losses | **Chiller Plant** | Thermal Storage | Pumps

Fans | **Cooling Tower** | Performance Coefficients | Calculated Coefficients

COOLING TOWER PERFORMANCE

Cooling Tower Parameters

Chiller Load (%)	Leaving Temperature °C	Wet Bulb Temperature °C				
		14	20	24	28	32
100		23.8	27.2	29.6	32.2	35
75		23.8	27.2	29.6	32.2	35
50		23.8	27.2	29.6	32.2	35
25		23.8	27.2	29.6	32.2	35

SAVE | PRINT | EXIT

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Chiller Performance Coefficient – Default Values

Default Values:

Default values of coefficients for different ratio based on the selected Condenser Cooling Medium and Compressor Type.

Temperature: Enter the unit of temperature used for design of the chillers.

Note:

Default values can only be used for **initial assessment**. For final submissions, the actual/technical data sheet from the manufacturer has to be submitted.

The screenshot displays the 'GSAS SEER TOOL v2.0' interface. At the top, there are logos for GORD (General Organization for Research & Development) and GSAS. The main content area is titled 'SEASONAL ENERGY EFFICIENCY RATIO' and contains several input fields: 'Project Name', 'Client', 'Consultant' (set to 'Trial Version Only'), 'Country' (set to 'Qatar'), and 'City' (set to 'Doha'). Below these fields are four tabs: 'Building Cooling Coil Demand/Distribution Losses', 'Chiller Plant', 'Thermal Storage', and 'Pumps'. Under the 'Chiller Plant' tab, there are sub-tabs for 'Fans', 'Cooling Tower', 'Performance Coefficients', and 'Calculated Coefficients'. The 'Performance Coefficients' tab is active, showing a section titled 'Select Performance Coefficients for Cooling Capacity' with three radio buttons: 'Default Values' (selected), 'User Input', and 'Calculated'. Below this is a 'Temperature' dropdown menu. A table titled 'Coefficients' is displayed, showing values for three different ratios across six parameters (a, b, c, d, e, f).

	a	b	c	d	e	f
Cooling Capacity f(T)	-0.29862	0.02996	-0.0008	0.01736	-0.00033	0.00063
Energy Input Ratio f(T)	0.51777	-0.004	0.00002	0.00699	0.00008	-0.00015
Energy Input Ratio f(Part Load Ratio)	0.17149	0.5882	0.23737	0	0	0

At the bottom of the interface, there are three buttons: 'SAVE', 'PRINT', and 'EXIT'. The footer shows '© EE 2017' on the left and 'GSAS - SEER v2.0' on the right.

Chiller Performance Coefficient – User Input

Default Values:

User Input: When selected, the input values will be available for editing. Enter the values of each type for 6 scenarios to create a curve.

- **Cooling Capacity $f(T)$:** Capacity as a Function of Temperature. This curve adjusts the available capacity of the chiller as a function of evaporator and condenser temperatures (or lift).
- **Energy Input Ratio $f(T)$:** Energy Input Ratio as a Function of Temperature. This curve adjusts the efficiency of the chiller as a function of evaporator and condenser temperatures (or lift)
- **Energy Input Ratio $f(\text{Part Load Ratio})$:** Energy Input Ratio as a Function of Part-Load Ratio. This curve adjusts the efficiency of the chiller as a function of part-load operation.

Temperature: Enter the unit of temperature used for design of the chillers.

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name: [] Country: Qatar
Client: [] City: Doha
Consultant: Trial Version Only

Building Cooling Coil Demand/Distribution Losses | Chiller Plant | Thermal Storage | Pumps
Fans | Cooling Tower | Performance Coefficients | Calculated Coefficients

Select Performance Coefficients for Cooling Capacity

Default Values
 User Input
 Calculated

Temperature: []

	a	b	c	d	e	f
Cooling Capacity $f(T)$	-0.29862	0.02996	-0.0008	0.01736	-0.00033	0.00063
Energy Input Ratio $f(T)$	0.51777	-0.004	0.00002	0.00699	0.00008	-0.00015
Energy Input Ratio $f(\text{Part Load Ratio})$	0.17149	0.5882	0.23737	0	0	0

SAVE PRINT EXIT

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Chiller Performance Coefficient - Calculations

Important Note:

Before choosing “**Calculated**”, make sure to change the unit of “**Temperature**” used for design of the chillers.

Calculated: If using this option, the tool will load a new window for the required inputs.

Main

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name Country
 Client City
 Consultant

Building Cooling Coil Demand/Distribution Losses | Chiller Plant | Thermal Storage | Pumps
 Fans | Cooling Tower | Performance Coefficients | Calculated Coefficients

Select Performance Coefficients for Cooling Capacity

Default Values
 User Input
 Calculated

Temperature

Coefficients

	a	b	c	d	e	f
Cooling Capacity f(T)	1	0	0	0	0	0
Energy Input Ratio f(T)	0.09967	0	0	0	-0.00022	0.00344
Energy Input Ratio f(Part Load Ratio)	1.05832	-0.21274	0.15496	0	0	0

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(Continue on next page)

Chiller Performance Coefficient - Calculations (Continued)

Condenser Inlet Air Temperature Or Condenser Leaving Water Temperature: Enter the different temperature scenarios for condenser temperature provided in the manufacturer’s data sheets.

Evaporator Chiller Water Outlet: Enter the different temperature scenarios for evaporator temperature provided in the manufacturer’s data sheets.

Capacity: Enter the capacity of chillers based on the selected condenser and evaporator temperature as provided in the manufacturer’s data sheets.

Power: Enter the power of chillers based on the selected condenser and evaporator temperature as provided in the manufacturer’s data sheets.

For Part-Load:

Capacity: Enter the capacity of chillers corresponding for each part load ratio as provided in the manufacturer’s data sheets.

Unit Rate: Enter the power consumption of chillers corresponding for each part load ratio as provided in the manufacturer’s data sheets.

Note:

If only one set of data is provided by the manufacturer, the tool will calculate the other values based on the set provided, or based on the capacity of chiller provided in the “**Chiller Plant**” inputs.

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name:
 Client:
 Consultant:

Country:
 City:

Building Cooling Coil Demand/Distribution Losses | Chiller Plant | Thermal Storage | Pumps
 Fans | Cooling Tower | Performance Coefficients | Calculated Coefficients

Coefficients for Cooling Capacity

		Condenser Leaving Water Temp °C					
		19	24	28	32	35	
Evaporator Chilled Water Outlet °C	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5
		Power (kW)	2701	3109	3258	3410.55	3564.55
	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5
		Power (kW)	2701	3109	3258	3410.55	3564.55
	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5
		Power (kW)	2701	3109	3258	3410.55	3564.55
	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5
		Power (kW)	2701	3109	3258	3410.55	3564.55
	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5
		Power (kW)	2701	3109	3258	3410.55	3564.55

Load (%)	Capacity (kW)	Unit Rate (kW)
100	19343.5	3564.55
75	14507	2640
50	9671.75	1762.8
25	4835.75	904.8

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Click “Save” to save the changes you made on the tool. When done saving, the system will show the “System SEER” results and the “Chiller SEER” values.

Print: The tool allows to print all the information provided in a report.

Main

GSAS SEER TOOL v2.0
SEASONAL ENERGY EFFICIENCY RATIO

Project Name:
 Client:
 Consultant:

Country:
 City:

SYSTEM SEER
3.11

Building Cooling Coil Demand/Distribution Losses | Chiller Plant | Thermal Storage | Pumps
 Fans | Cooling Tower | Performance Coefficients | Calculated Coefficients

Coefficients for Cooling Capacity

		Condenser Leaving Water Temp °C					Load (%)	Capacity (kW)	Unit Rate (kW)
		19	24	28	32	35			
Evaporator Chilled Water Outlet °C	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5	19343.5	3564.55
		Power (kW)	2701	3109	3258	3410.55	3564.55		
	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5	14507	2640
		Power (kW)	2701	3109	3258	3410.55	3564.55		
	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5	9671.75	1762.8
		Power (kW)	2701	3109	3258	3410.55	3564.55		
	5.5	Capacity (kW)	19343.5	19343.5	19343.5	19343.5	19343.5	4835.75	904.8
		Power (kW)	2701	3109	3258	3410.55	3564.55		

CHILLER SEER **4.68**

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