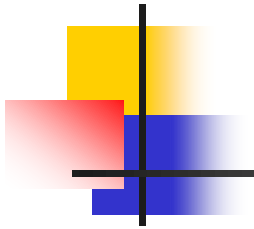


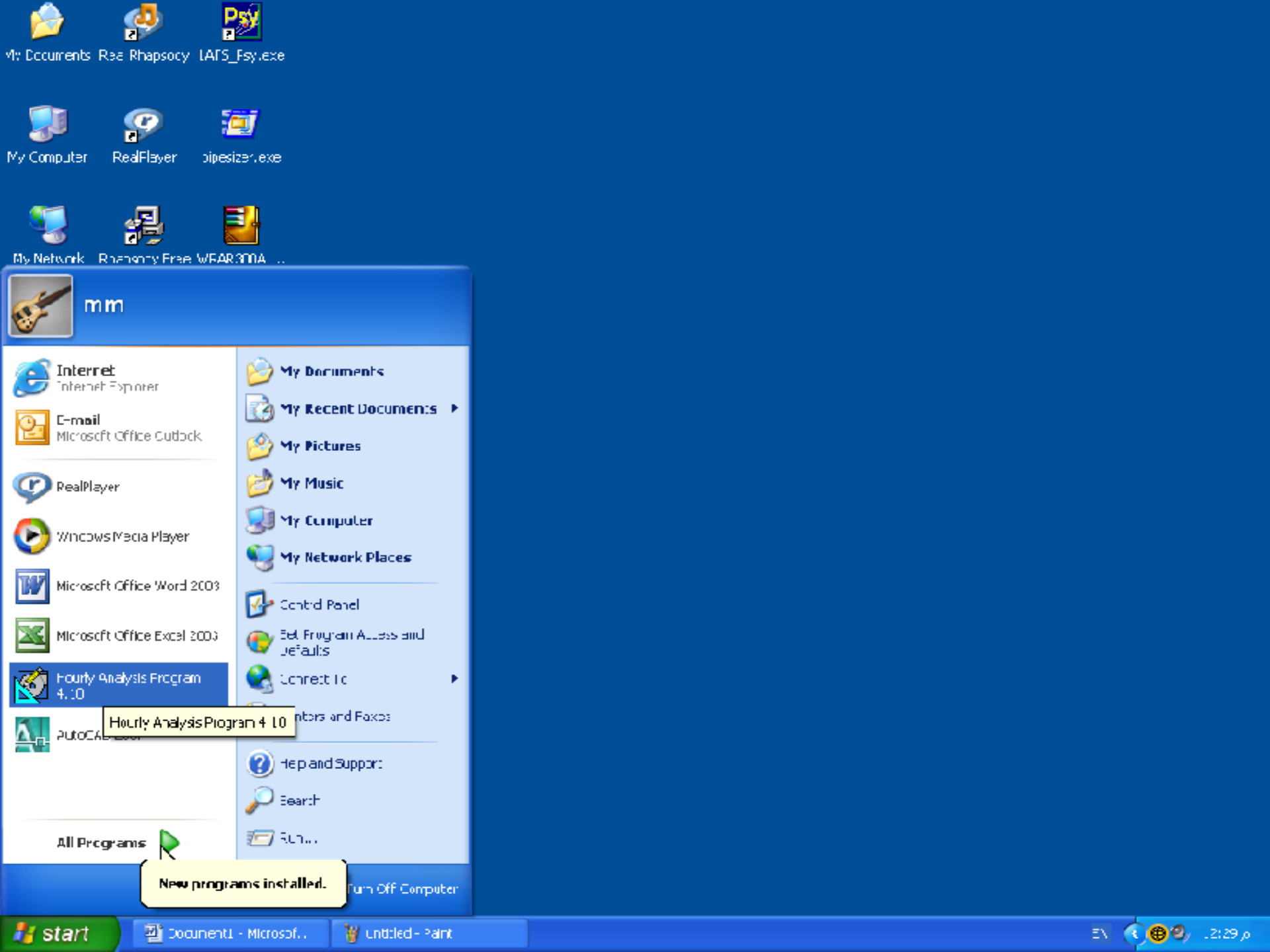
SAMPLE OF COOLING LOAD ESTIMATION WITH HAP

HOURLY ANALYSIS PROGRAM (HAP)

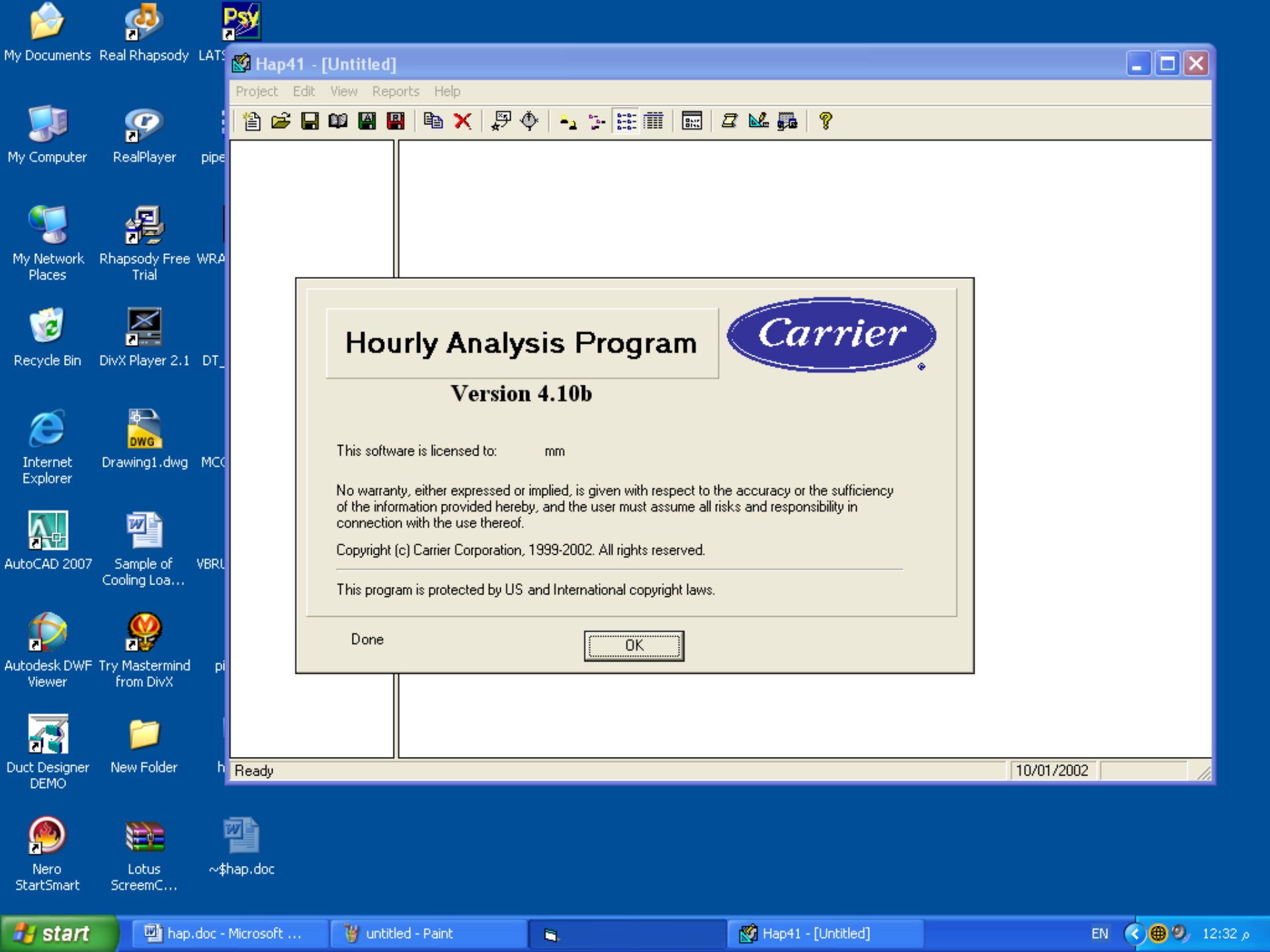
- **HAP SYSTEM DESIGN FEATURES.**
- **HAP ENERGY ANALYSIS FEATURES.**
- **USING HAP TO DESIGN SYSTEMS AND PLANTS.**
- **USING HAP TO ESTIMATE ENERGY USE AND COST.**
- **WORKING WITH PROJECTS.**
- **GENERATING INPUT DATA REPORTS.**
- **USING THE REPORT VIEWER .**

HOW TO START?

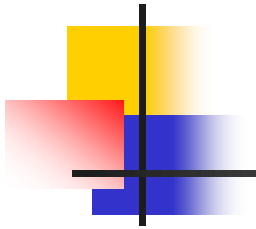
- **From START MENU choose Hourly Analysis Program (HAP).**


My Documents
Rhapsody
LARS_Psy.exe
My Computer
RealPlayer
My Network
mm
Internet
E-mail
RealPlayer
Windows Media Player
Microsoft Office Word 2003
Microsoft Office Excel 2003
Hourly Analysis Program 4.10
Hourly Analysis Program 4.10
My Documents
My Recent Documents
My Pictures
My Music
My Computer
My Network Places
Control Panel
Help and Support
Search
All Programs
New programs installed.
start
Document1 - Microsof...
Untitled - Paint

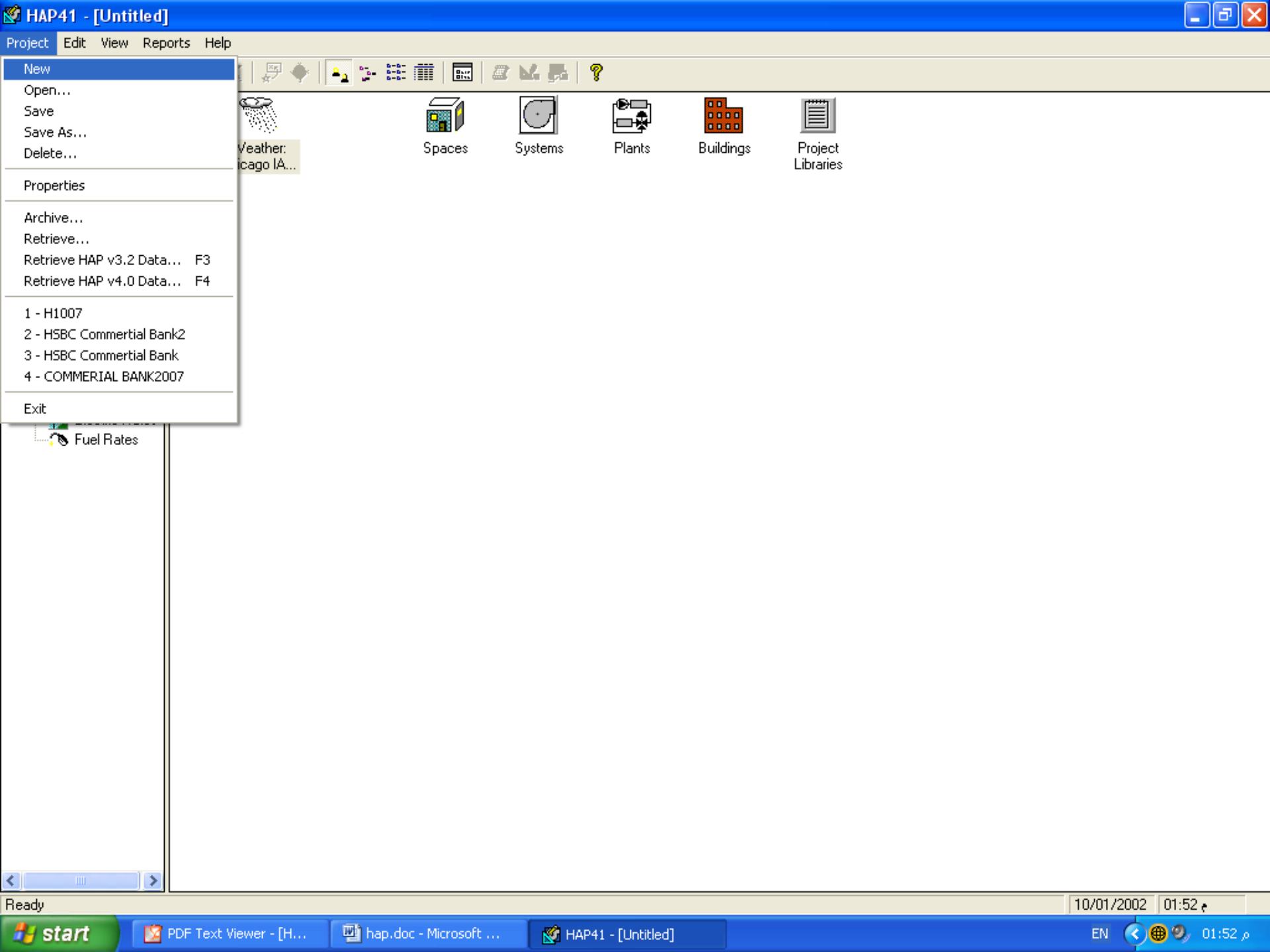
Click on (HAP) starting window will appear.

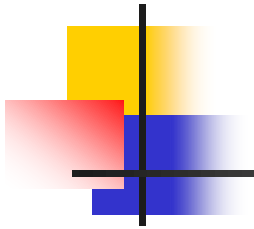

My Documents
Real Rhapsody
My Computer
RealPlayer
My Network Places
Rhapsody Free Trial
Recycle Bin
DivX Player 2.1
Internet Explorer
Drawing1.dwg
AutoCAD 2007
Sample of Cooling Loa...
Autodesk DWF Viewer
Try Mastermind from DivX
Duct Designer DEMO
New Folder
Nero StartSmart
Lotus ScreemC...
~$hap.doc
Hap41 - [Untitled]
Project Edit View Reports Help
Hourly Analysis Program
Carrier
Version 4.10b
This software is licensed to: mm
No warranty, either expressed or implied, is given with respect to the accuracy or the sufficiency of the information provided hereby, and the user must assume all risks and responsibility in connection with the use thereof.
Copyright (c) Carrier Corporation, 1999-2002. All rights reserved.
This program is protected by US and International copyright laws.
Done
OK
Ready
10/01/2002
start
hap.doc - Microsoft ...
untitled - Paint
Hap41 - [Untitled]
EN
12:32

Create a New Project

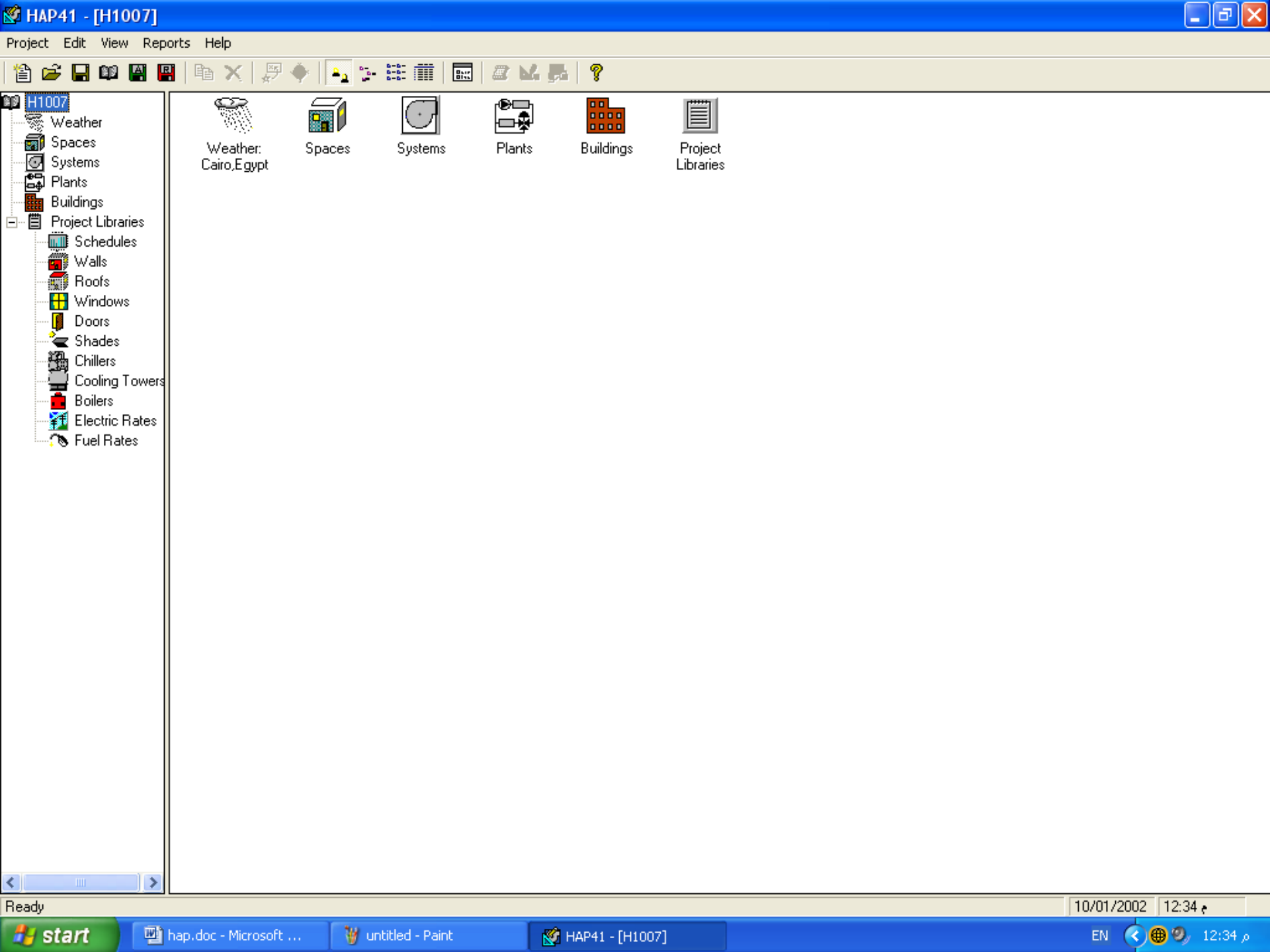


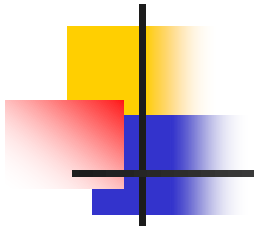
Choose new on the PROJECT MENU this creates a NEW PROJECT a project is the container which holds your data.


HAP41 - [Untitled]
Project
Edit
View
Reports
Help
New
Open...
Save
Save As...
Delete...
Properties
Archive...
Retrieve...
Retrieve HAP v3.2 Data... F3
Retrieve HAP v4.0 Data... F4
1 - H1007
2 - HSBC Commertial Bank2
3 - HSBC Commertial Bank
4 - COMMERIAL BANK2007
Exit
Weather:
icago IA...
Spaces
Systems
Plants
Buildings
Project
Libraries
Fuel Rates
Ready
10/01/2002
01:52
start
PDF Text Viewer - [H...
hap.doc - Microsoft ...
HAP41 - [Untitled]
EN
01:52

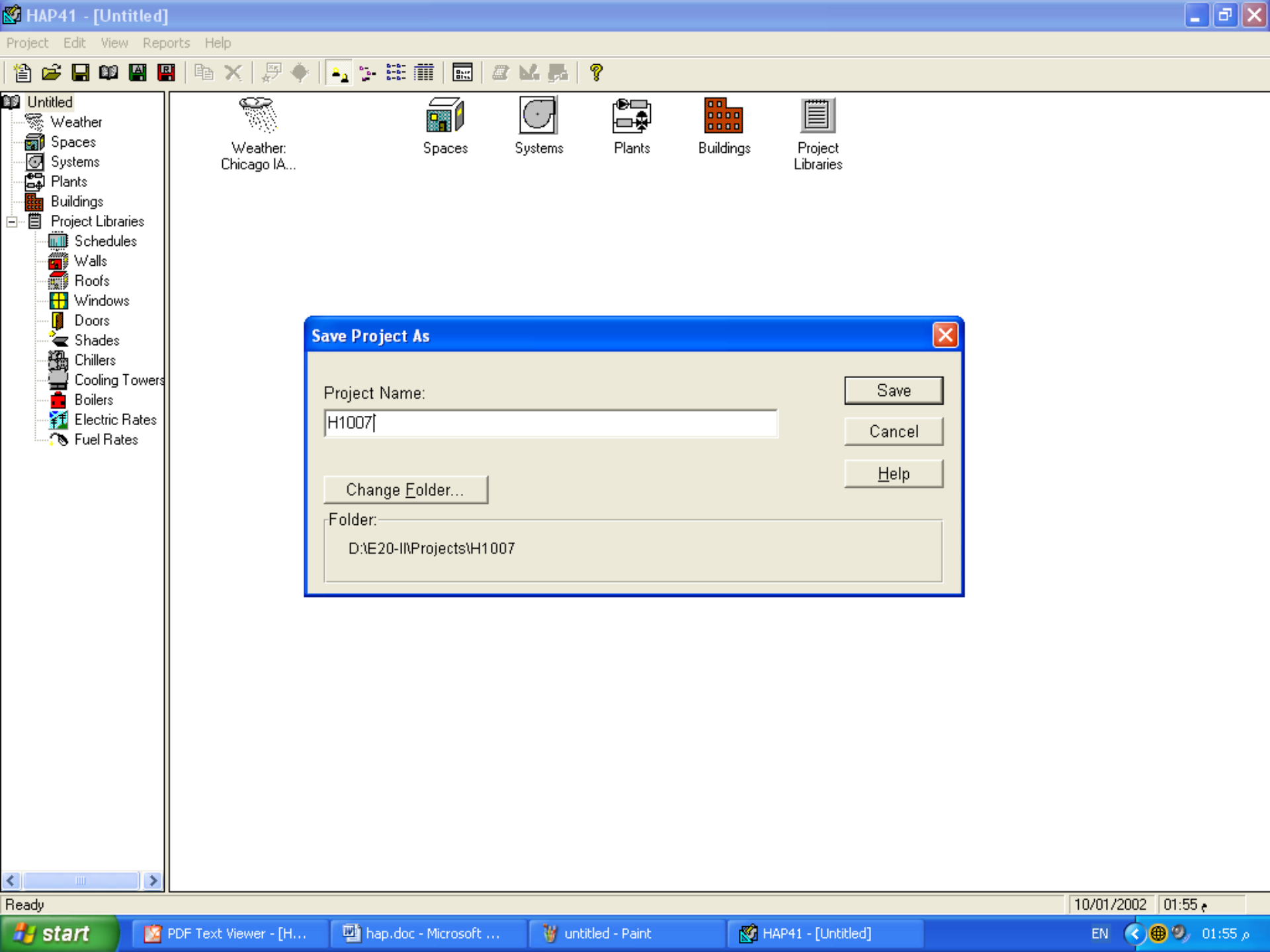


New project will be established which will be contain" SAMPLE DATA. "


HAP41 - [H1007]
Project Edit View Reports Help
H1007
Weather
Spaces
Systems
Plants
Buildings
Project Libraries
Schedules
Walls
Roofs
Windows
Doors
Shades
Chillers
Cooling Towers
Boilers
Electric Rates
Fuel Rates
Weather: Cairo,Egypt
Spaces
Systems
Plants
Buildings
Project Libraries
Ready
10/01/2002
12:34
start
hap.doc - Microsoft ...
untitled - Paint
HAP41 - [H1007]
EN
12:34

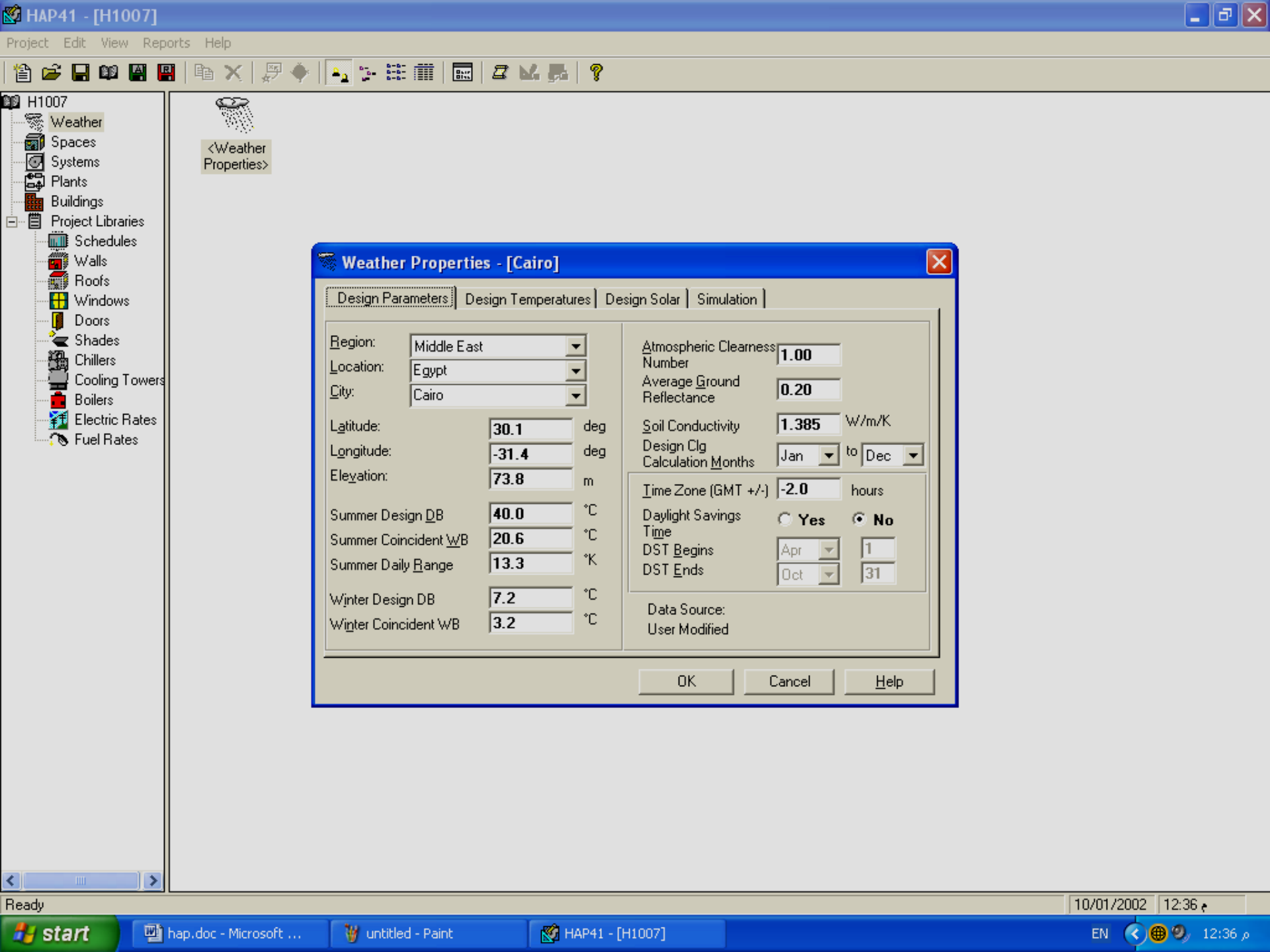


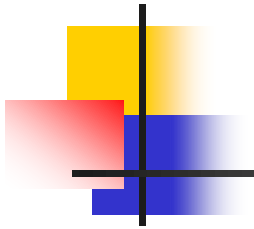
Choose Save on the Project menu you'll be asked to name the project from here on, save the project periodically.


HAP41 - [Untitled]
Project Edit View Reports Help
Untitled
Weather
Spaces
Systems
Plants
Buildings
Project Libraries
Schedules
Walls
Roofs
Windows
Doors
Shades
Chillers
Cooling Towers
Boilers
Electric Rates
Fuel Rates
Weather: Chicago IA...
Spaces
Systems
Plants
Buildings
Project Libraries
Save Project As
Project Name:
H1007
Save
Cancel
Help
Change Folder...
Folder:
D:\E20-II\Projects\H1007
Ready
10/01/2002
01:55
start
PDF Text Viewer - [H...
hap.doc - Microsoft ...
untitled - Paint
HAP41 - [Untitled]
EN
01:55

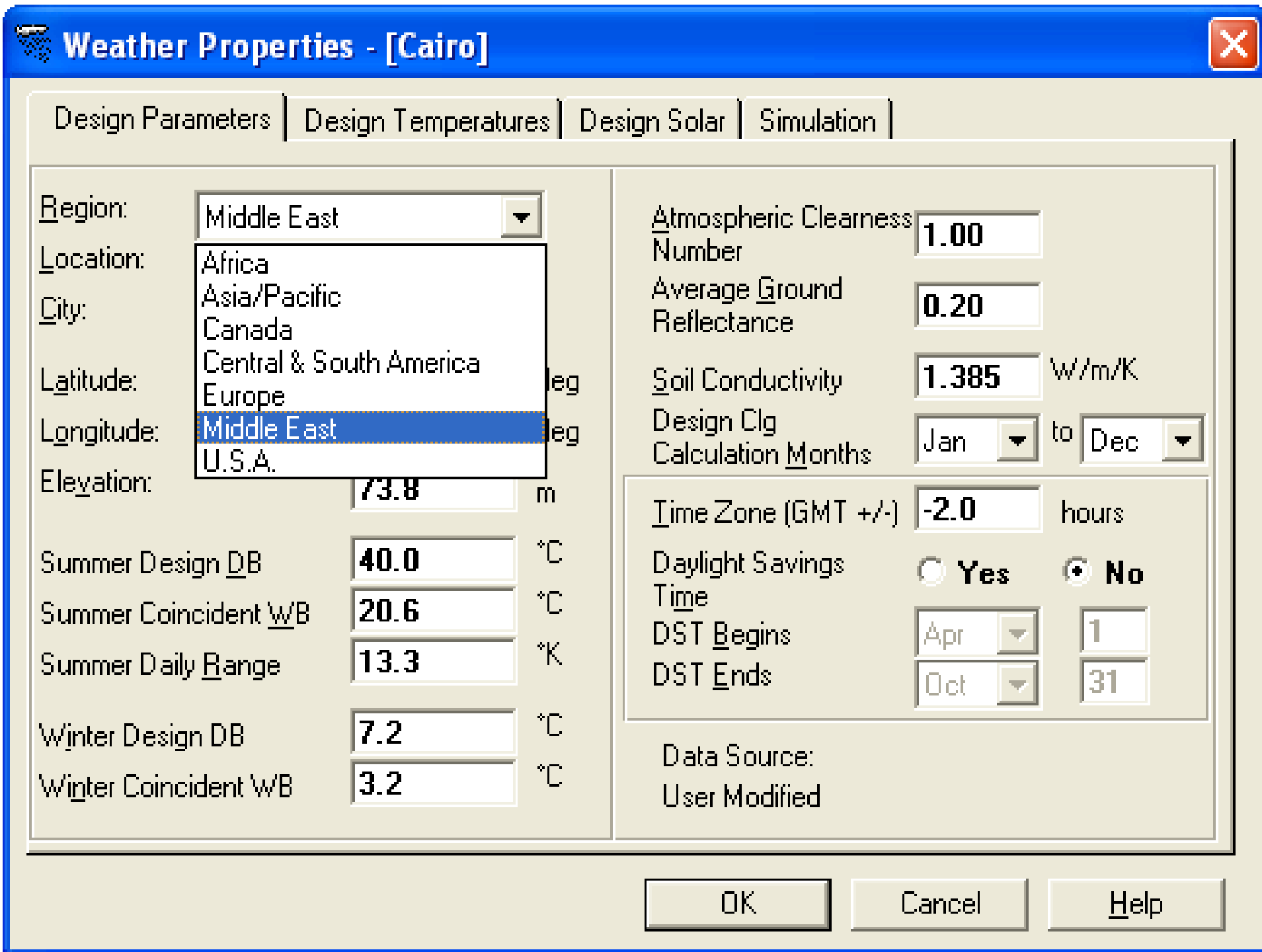
ENTER WEATHER DATA

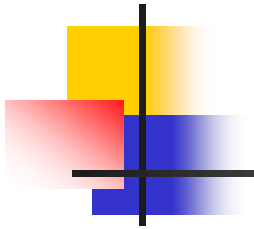
Click on the “Weather” item in the tree view in the main program window. The Weather input form will appear .


HAP41 - [H1007]
Project Edit View Reports Help
H1007
Weather
Spaces
Systems
Plants
Buildings
Project Libraries
Schedules
Walls
Roofs
Windows
Doors
Shades
Chillers
Cooling Towers
Boilers
Electric Rates
Fuel Rates
<Weather Properties>
Weather Properties - [Cairo]
Design Parameters
Design Temperatures
Design Solar
Simulation
Region: Middle East
Location: Egypt
City: Cairo
Latitude: 30.1 deg
Longitude: -31.4 deg
Elevation: 73.8 m
Summer Design DB 40.0 °C
Summer Coincident WB 20.6 °C
Summer Daily Range 13.3 °K
Winter Design DB 7.2 °C
Winter Coincident WB 3.2 °C
Atmospheric Clearness Number 1.00
Average Ground Reflectance 0.20
Soil Conductivity 1.385 W/m/K
Design Clg Calculation Months Jan to Dec
Time Zone (GMT +/-) -2.0 hours
Daylight Savings Time Yes No
DST Begins Apr 1
DST Ends Oct 31
Data Source:
User Modified
OK
Cancel
Help
Ready
10/01/2002
12:36
start
hap.doc - Microsoft ...
untitled - Paint
HAP41 - [H1007]
EN
12:36

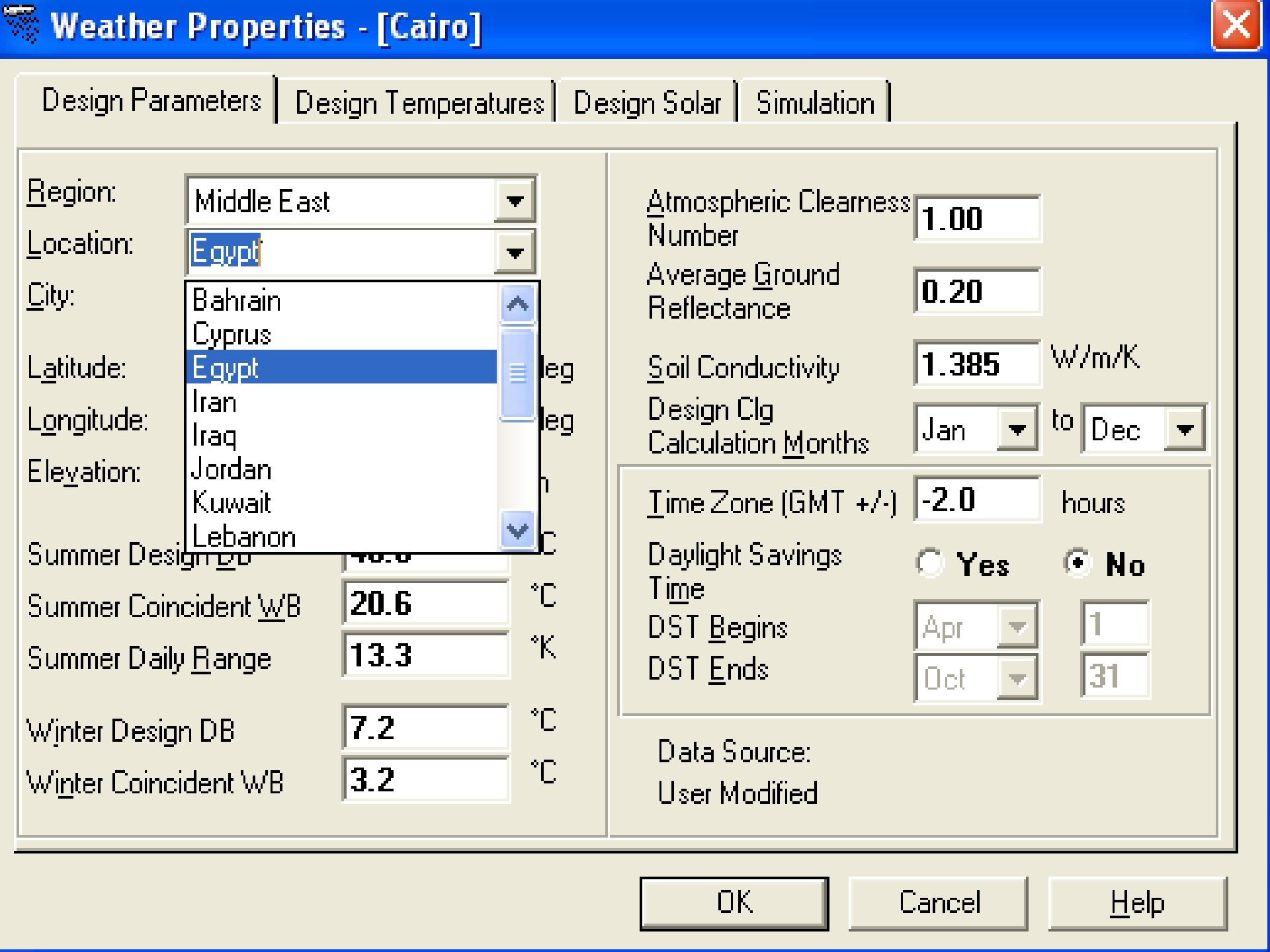


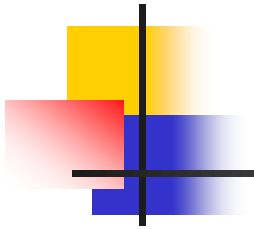
Select MIDDLE EAST region.


Weather Properties - [Cairo]
Design Parameters
Design Temperatures
Design Solar
Simulation
Region:
Middle East
Location:
City:
Latitude:
Longitude:
Elevation:
73.8
m
Africa
Asia/Pacific
Canada
Central & South America
Europe
Middle East
U.S.A.
Summer Design DB
40.0
°C
Summer Coincident WB
20.6
°C
Summer Daily Range
13.3
°K
Winter Design DB
7.2
°C
Winter Coincident WB
3.2
°C
Atmospheric Clearness Number
1.00
Average Ground Reflectance
0.20
Soil Conductivity
1.385
W/m/K
Design Clg Calculation Months
Jan
to
Dec
Time Zone (GMT +/-)
-2.0
hours
Daylight Savings Time
Yes
No
DST Begins
Apr
1
DST Ends
Oct
31
Data Source:
User Modified
OK
Cancel
Help

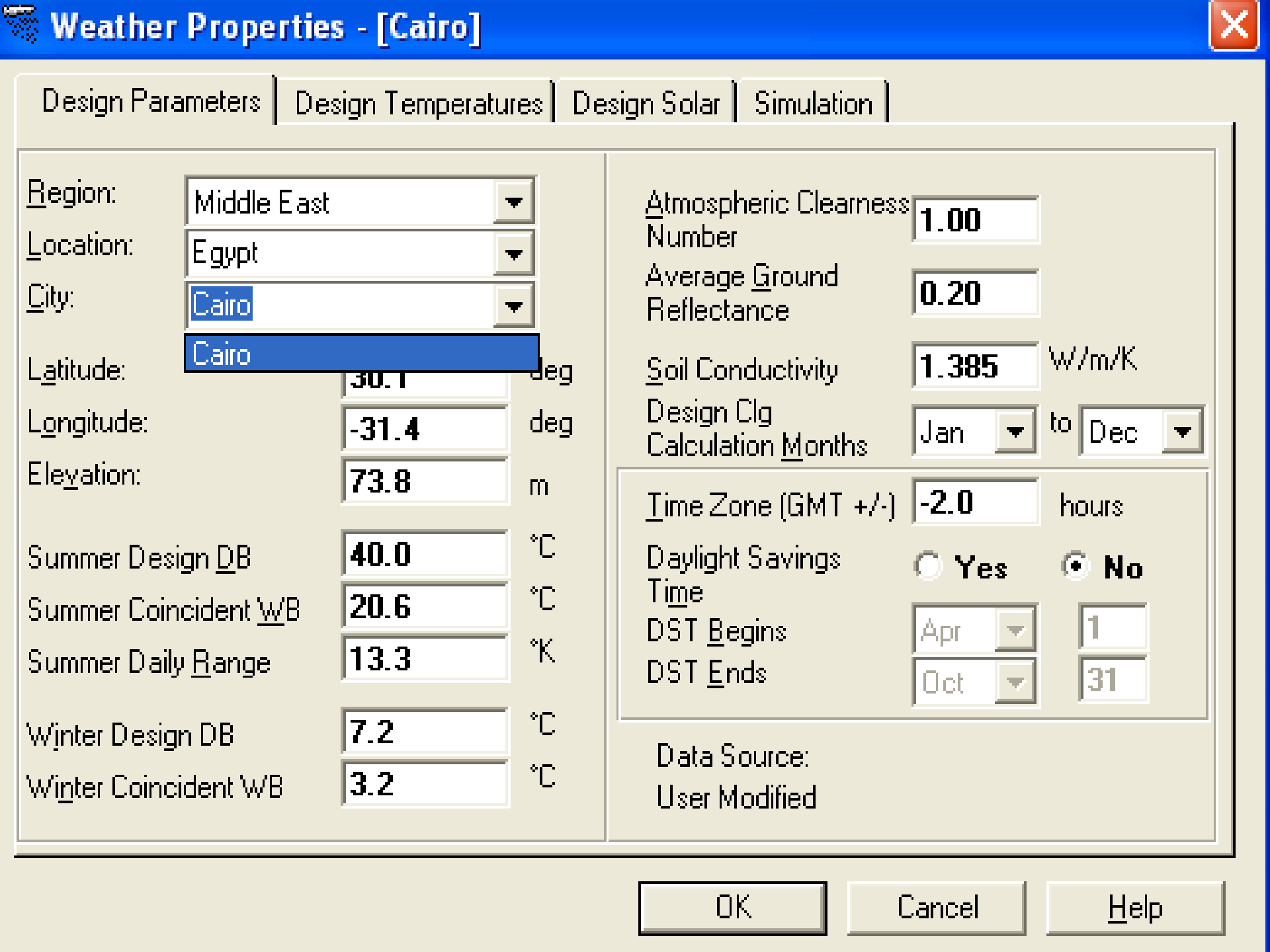


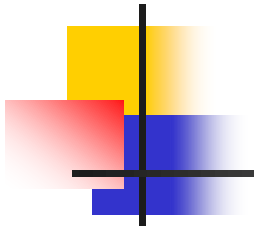
from location menu select EGYPT.


Weather Properties - [Cairo]
Design Parameters
Design Temperatures
Design Solar
Simulation
Region:
Middle East
Location:
Egypt
City:
Latitude:
Longitude:
Elevation:
Bahrain
Cyprus
Egypt
Iran
Iraq
Jordan
Kuwait
Lebanon
Summer Coincident WB
20.6
°C
Summer Daily Range
13.3
°K
Winter Design DB
7.2
°C
Winter Coincident WB
3.2
°C
Atmospheric Clearness Number
1.00
Average Ground Reflectance
0.20
Soil Conductivity
1.385
W/m/K
Design Clg Calculation Months
Jan
to
Dec
Time Zone (GMT +/-)
-2.0
hours
Daylight Savings Time
Yes
No
DST Begins
Apr
1
DST Ends
Oct
31
Data Source:
User Modified
OK
Cancel
Help



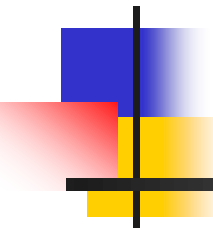
from CITY MENU select CAIRO.


Weather Properties - [Cairo]
Design Parameters
Design Temperatures
Design Solar
Simulation
Region:
Middle East
Location:
Egypt
City:
Cairo
Cairo
Latitude:
deg
Longitude:
-31.4
deg
Elevation:
73.8
m
Summer Design DB
40.0
°C
Summer Coincident WB
20.6
°C
Summer Daily Range
13.3
°K
Winter Design DB
7.2
°C
Winter Coincident WB
3.2
°C
Atmospheric Clearness Number
1.00
Average Ground Reflectance
0.20
Soil Conductivity
1.385
W/m/K
Design Clg Calculation Months
Jan
to
Dec
Time Zone (GMT +/-)
-2.0
hours
Daylight Savings Time
Yes
No
DST Begins
Apr
1
DST Ends
Oct
31
Data Source:
User Modified
OK
Cancel
Help

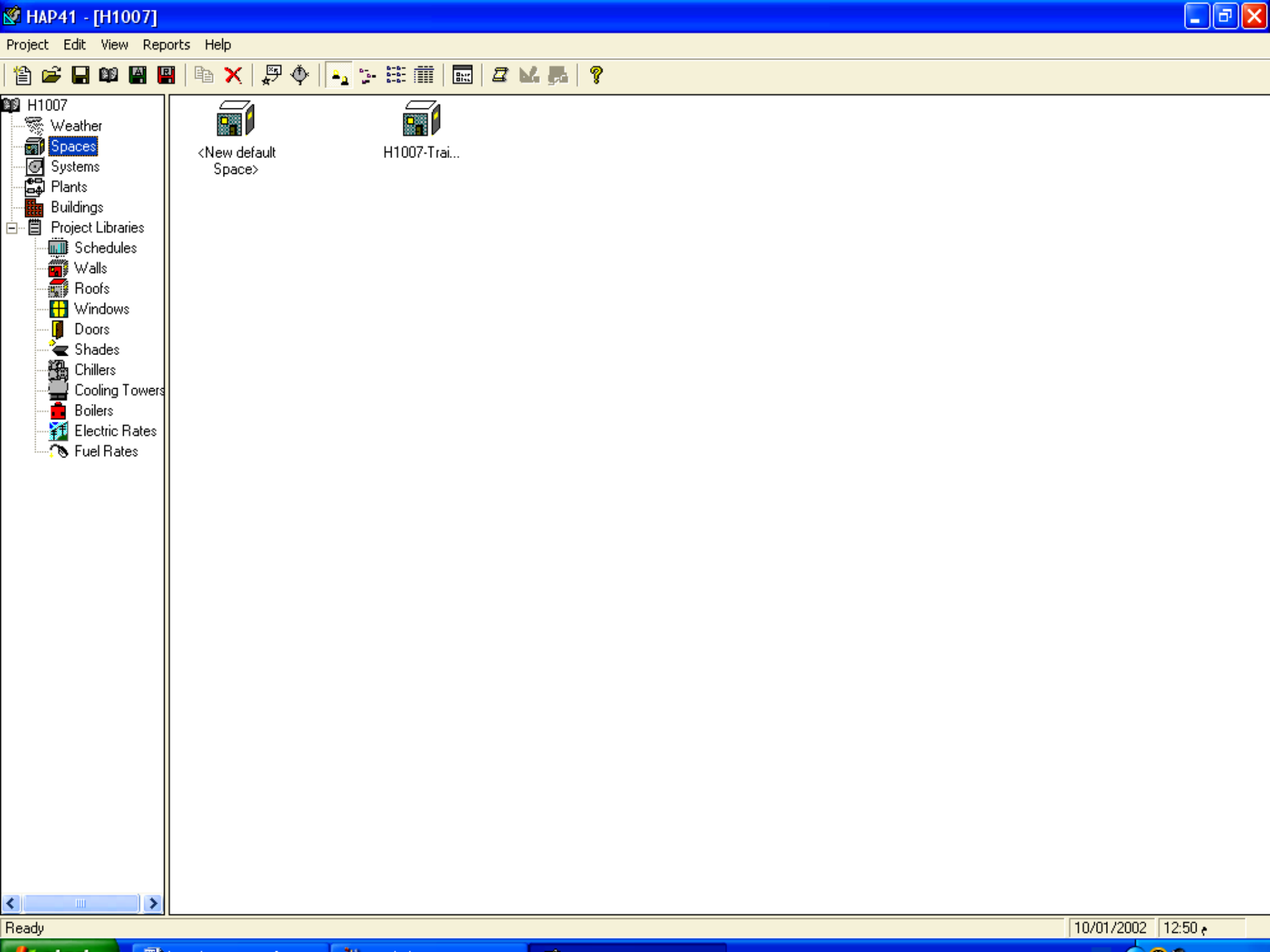


Press the OK button on the Weather input form to save the data and return to the main program window.

Enter Space Data General (General)

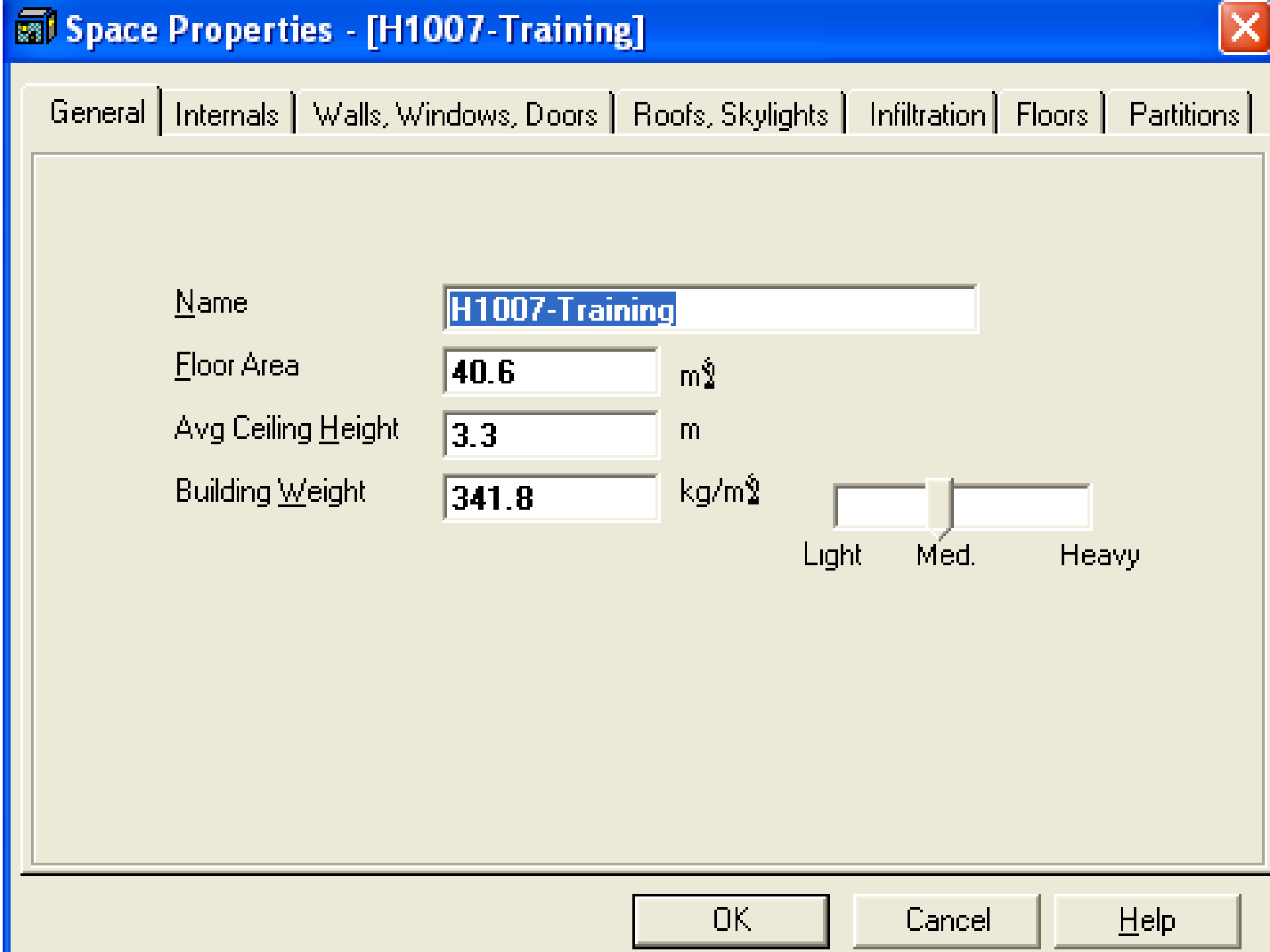


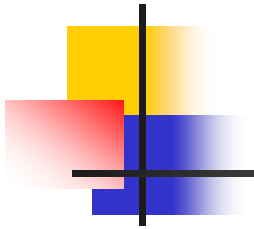
Click on the “Space” item in the tree view in the main program window. Space information will appear in the list view double-click on the “<new default space>” item in the list view.


HAP41 - [H1007]
Project
Edit
View
Reports
Help
H1007
Weather
Spaces
Systems
Plants
Buildings
Project Libraries
Schedules
Walls
Roofs
Windows
Doors
Shades
Chillers
Cooling Towers
Boilers
Electric Rates
Fuel Rates
<New default Space>
H1007-Trai...
Ready
10/01/2002
12:50

Enter data for your space.

- **-Naming the space.**
- **-Input floor area, average ceiling height and building weight.**

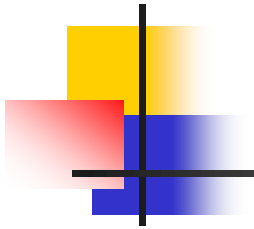

Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Name
H1007-Training
Floor Area
40.6
m²
Avg Ceiling Height
3.3
m
Building Weight
341.8
kg/m²
Light
Med.
Heavy
OK
Cancel
Help



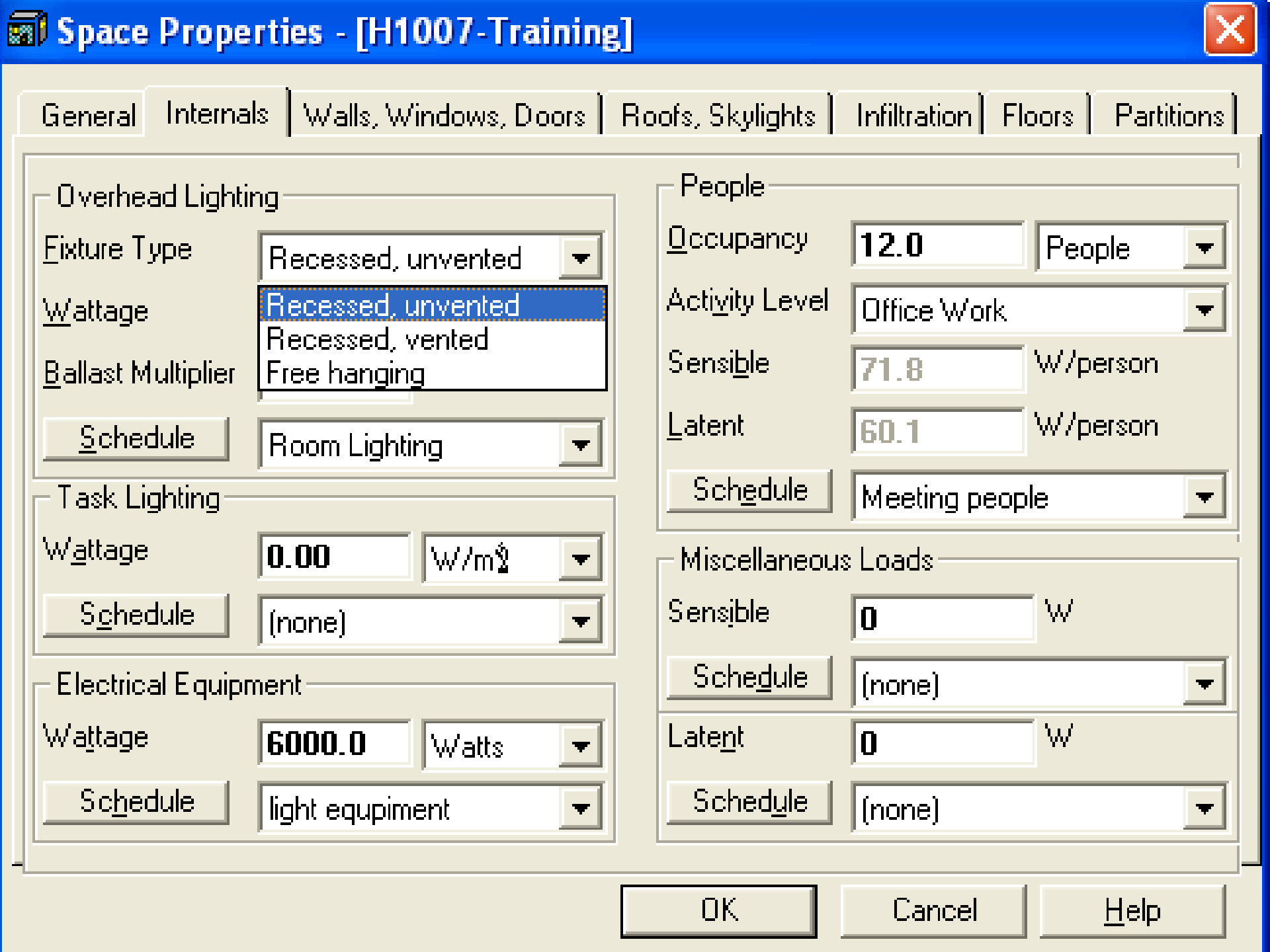
INTERNAL LOAD


Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Overhead Lighting
Fixture Type
Recessed, unvented
Wattage
26.00
W/m²
Ballast Multiplier
1.08
Schedule
Room Lighting
Task Lighting
Wattage
0.00
W/m²
Schedule
(none)
Electrical Equipment
Wattage
6000.0
Watts
Schedule
equpiment
People
Occupancy
12.0
People
Activity Level
Office Work
Sensible
71.8
W/person
Latent
60.1
W/person
Schedule
Meeting people
Miscellaneous Loads
Sensible
0
W
Schedule
(none)
Latent
0
W
Schedule
(none)
OK
Cancel
Help

Entering overhead lighting

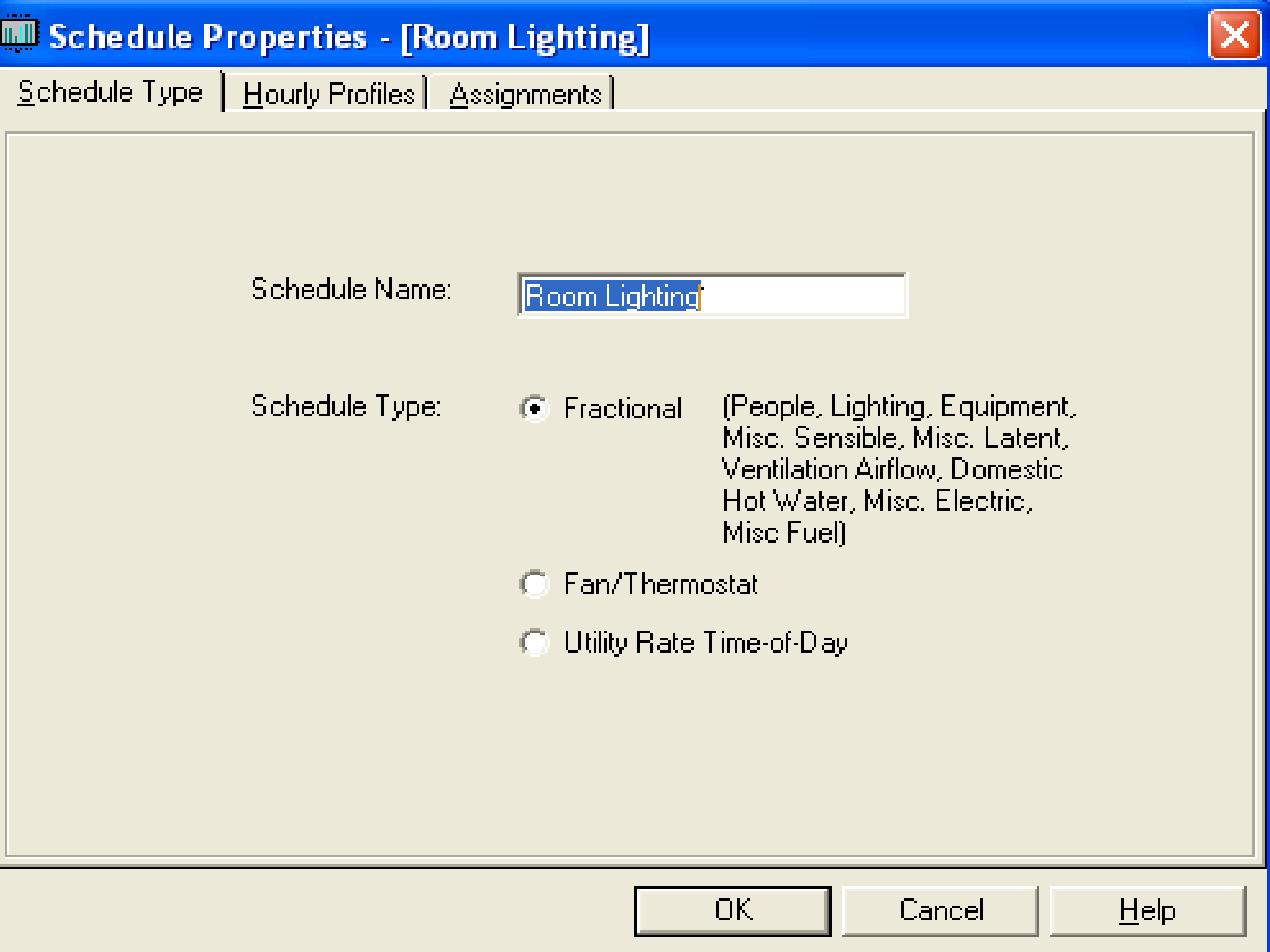


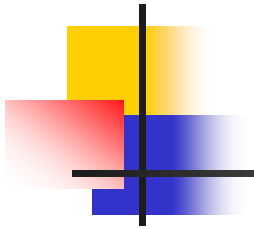
- **-select recessed unvented as fixture type, as lighting intensity and ballast multiplier as default.**


Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Overhead Lighting
Fixture Type
Recessed, unvented
Wattage
Recessed, unvented
Recessed, vented
Free hanging
Ballast Multiplier
Schedule
Room Lighting
Task Lighting
Wattage
0.00
W/m²
Schedule
(none)
Electrical Equipment
Wattage
6000.0
Watts
Schedule
light equipment
People
Occupancy
12.0
People
Activity Level
Office Work
Sensible
71.8
W/person
Latent
60.1
W/person
Schedule
Meeting people
Miscellaneous Loads
Sensible
0
W
Schedule
(none)
Latent
0
W
Schedule
(none)
OK
Cancel
Help

Create Schedules.

- **When entering overhead lighting data, you must choose a schedule. In the schedule drop-down list, choose the" create new schedule”**


Schedule Properties - [Room Lighting]
Schedule Type
Hourly Profiles
Assignments
Schedule Name:
Room Lighting
Schedule Type:
Fractional
(People, Lighting, Equipment, Misc. Sensible, Misc. Latent, Ventilation Airflow, Domestic Hot Water, Misc. Electric, Misc Fuel)
Fan/Thermostat
Utility Rate Time-of-Day
OK
Cancel
Help



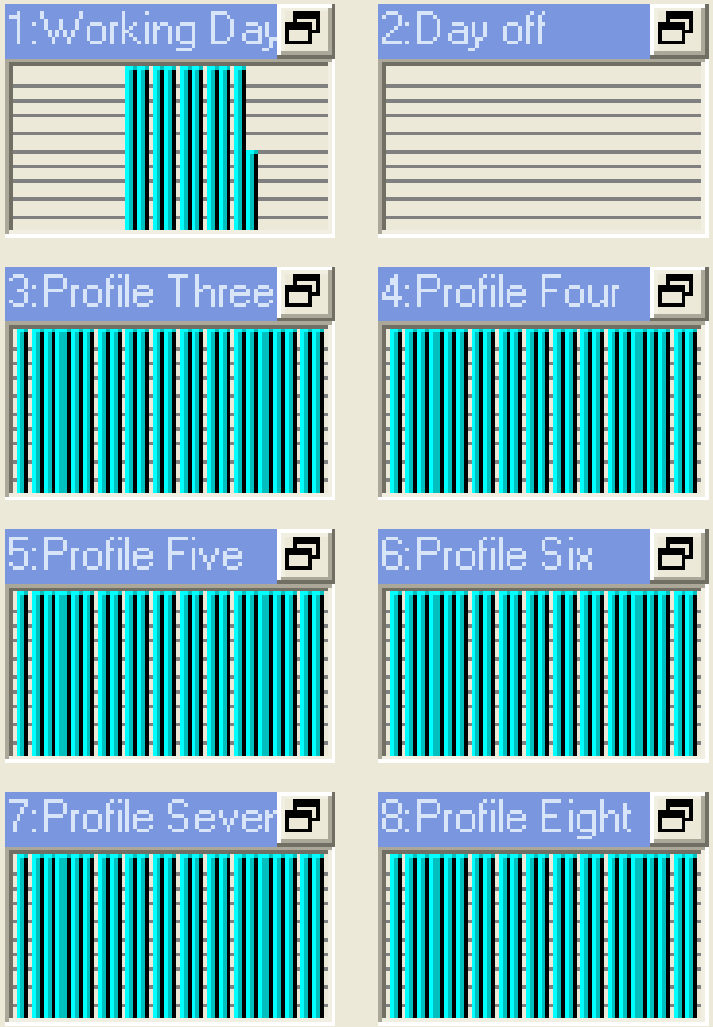
LIGHT SCHEDULES WINDOW WILL APPEAR.

Schedule Properties - [Room Lighting]

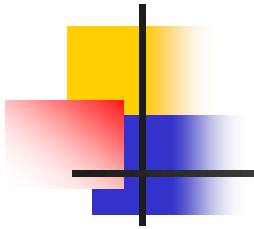
Schedule Type | Hourly Profiles | Assignments

Profile:

Choose a profile from the dropdown list and edit it by dragging the bars with the mouse, by using the arrow keys, or by entering data in the text fields directly. Navigate between profiles with the Tab key: navigate within a profile with the arrow keys.

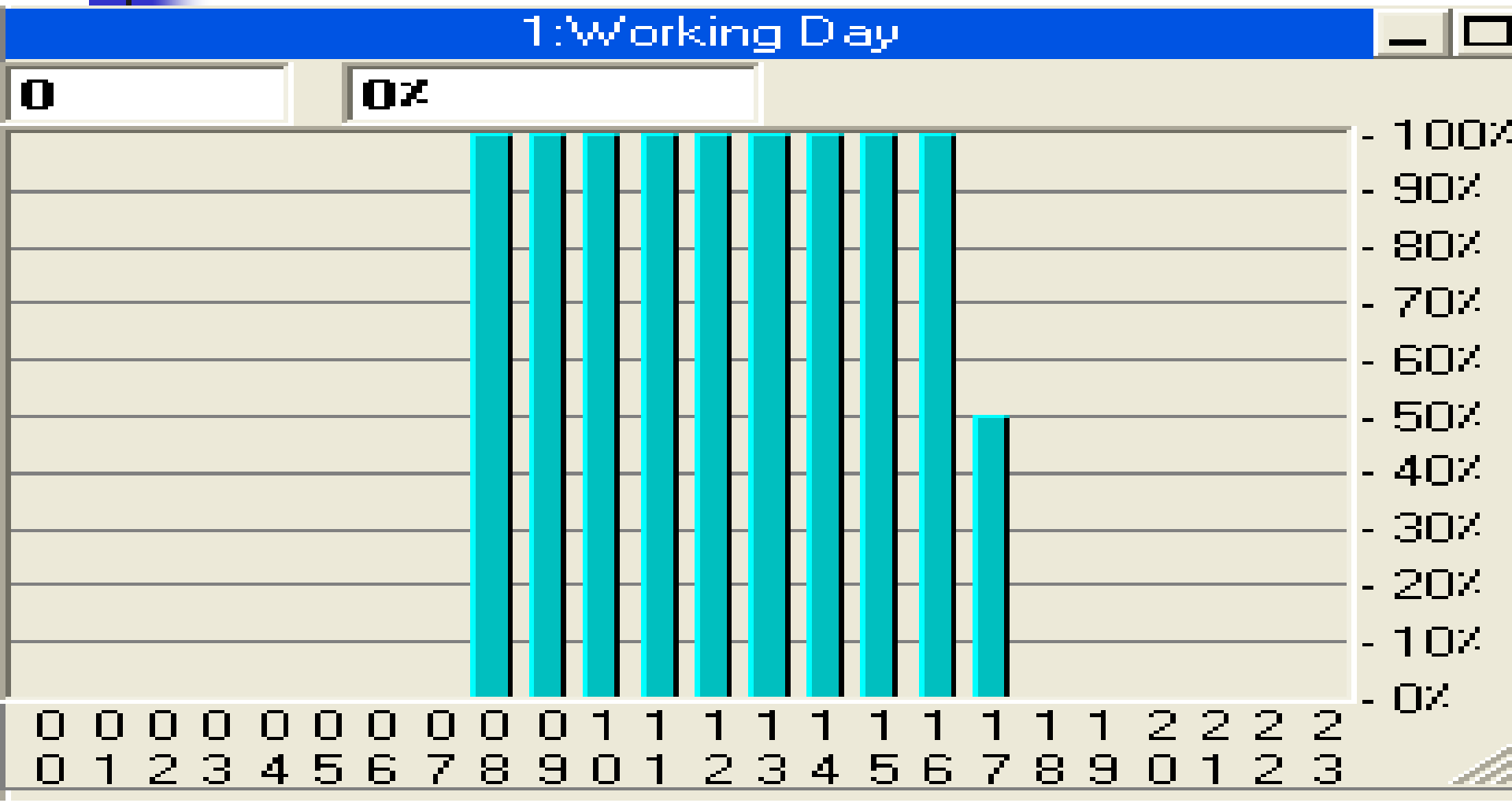


OK | Cancel | Help

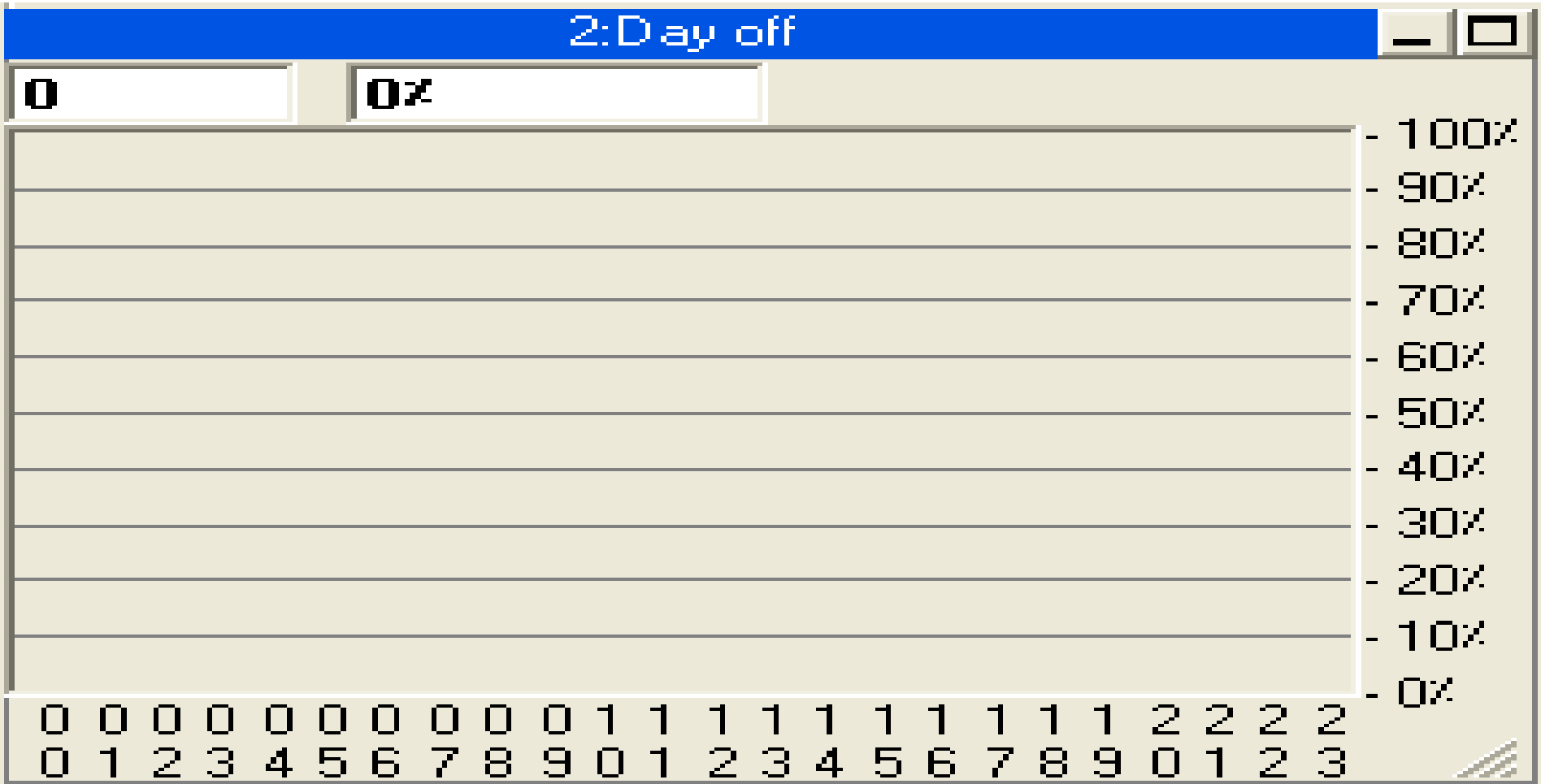


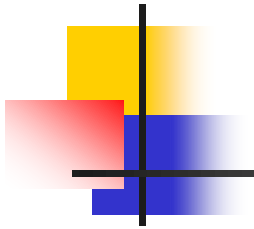
There are two different profiles which the space working

Working day profile

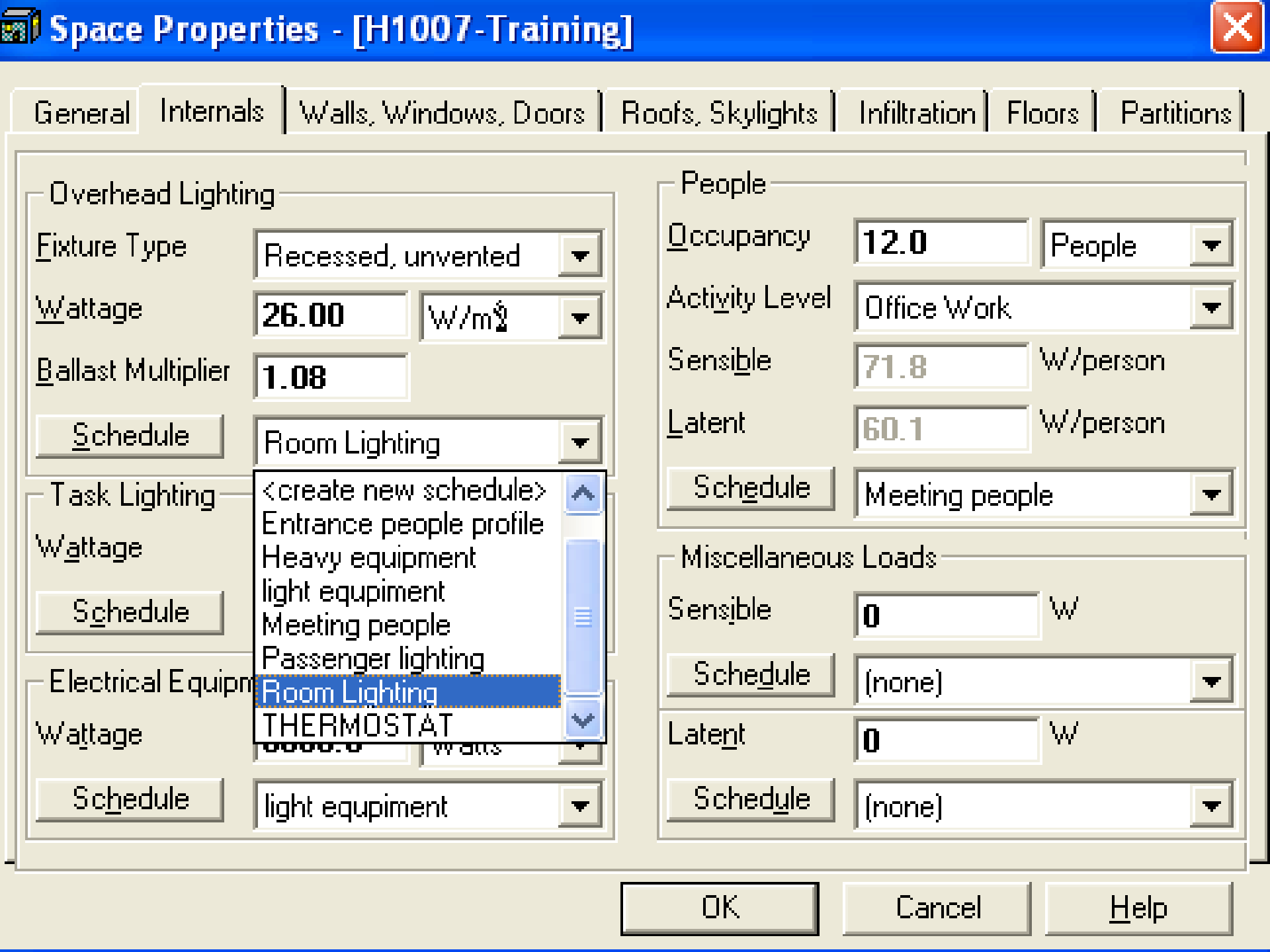


Day off profile



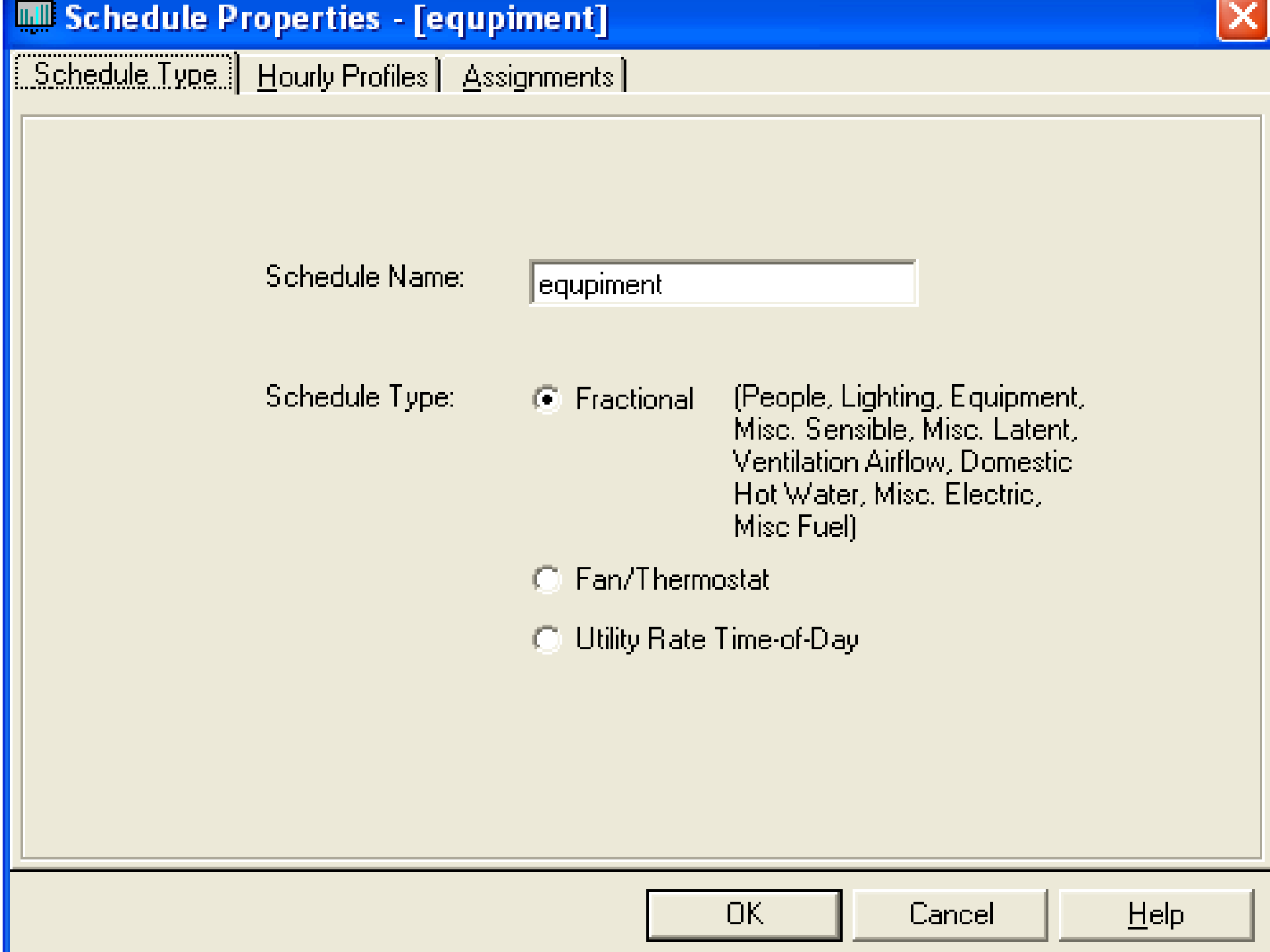


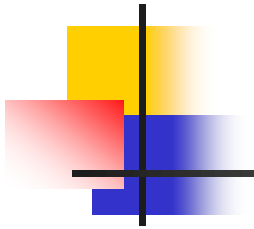
Finally choose ROOM LIGHTING schedule


Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Overhead Lighting
Fixture Type
Recessed, unvented
Wattage
26.00
W/m²
Ballast Multiplier
1.08
Schedule
Room Lighting
<create new schedule>
Entrance people profile
Heavy equipment
light equipment
Meeting people
Passenger lighting
Room Lighting
THERMOSTAT
Task Lighting
Wattage
Schedule
Electrical Equipm
Wattage
Watts
Schedule
light equipment
People
Occupancy
12.0
People
Activity Level
Office Work
Sensible
71.8
W/person
Latent
60.1
W/person
Schedule
Meeting people
Miscellaneous Loads
Sensible
0
W
Schedule
(none)
Latent
0
W
Schedule
(none)
OK
Cancel
Help

ENTERING EQUIPMENT .

- **Create Schedules, when entering equipment data, you must choose a schedule. In the schedule drop-down list, choose the "create new schedule"**


Schedule Properties - [equpiment]
Schedule Type
Hourly Profiles
Assignments
Schedule Name:
equpiment
Schedule Type:
Fractional
(People, Lighting, Equipment, Misc. Sensible, Misc. Latent, Ventilation Airflow, Domestic Hot Water, Misc. Electric, Misc Fuel)
Fan/Thermostat
Utility Rate Time-of-Day
OK
Cancel
Help



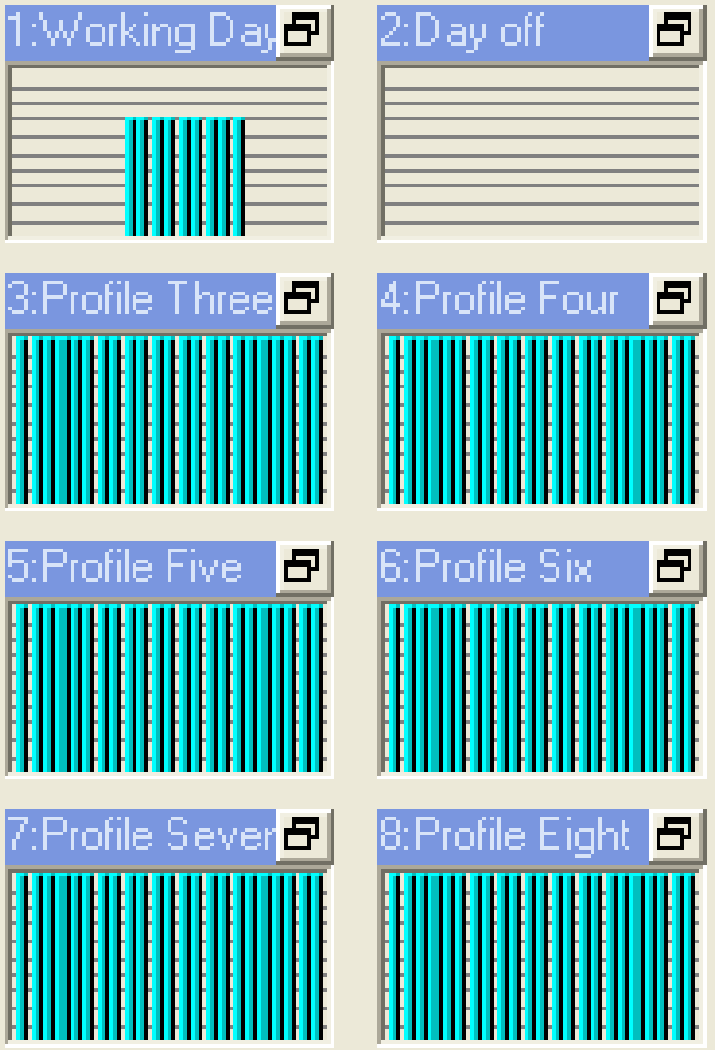
There are two different profiles which the space working

Schedule Properties - [equpiment]

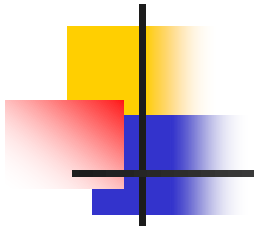
Schedule Type | Hourly Profiles | Assignments

Profile:

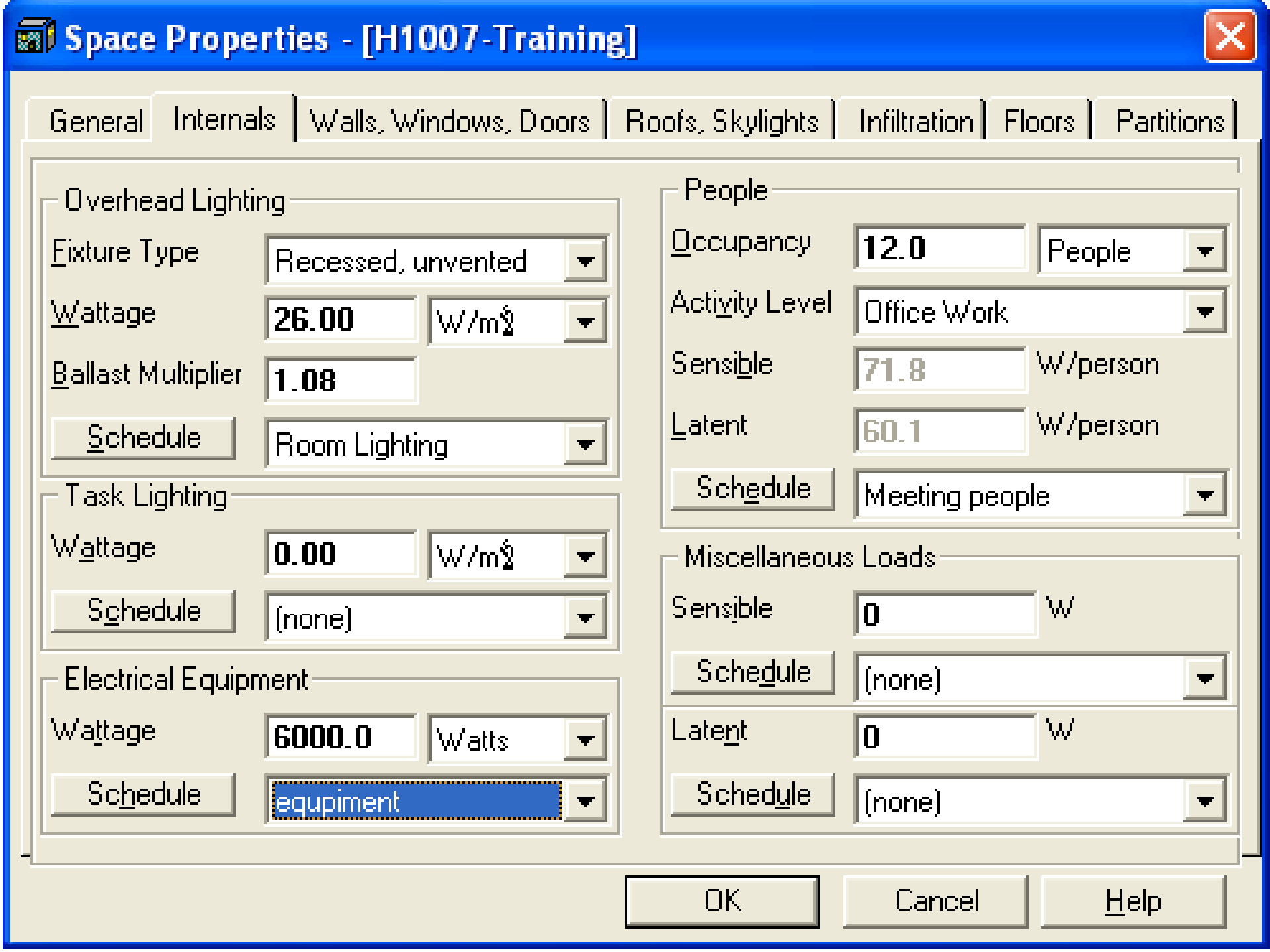
Choose a profile from the dropdown list and edit it by dragging the bars with the mouse, by using the arrow keys, or by entering data in the text fields directly. Navigate between profiles with the Tab key: navigate within a profile with the arrow keys.



OK | Cancel | Help



Finally choose equipment schedule

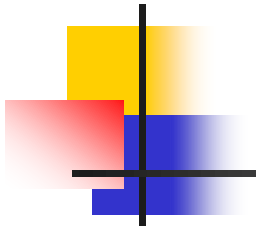

Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Overhead Lighting
Fixture Type
Recessed, unvented
Wattage
26.00
W/m²
Ballast Multiplier
1.08
Schedule
Room Lighting
Task Lighting
Wattage
0.00
W/m²
Schedule
(none)
Electrical Equipment
Wattage
6000.0
Watts
Schedule
equpiment
People
Occupancy
12.0
People
Activity Level
Office Work
Sensible
71.8
W/person
Latent
60.1
W/person
Schedule
Meeting people
Miscellaneous Loads
Sensible
0
W
Schedule
(none)
Latent
0
W
Schedule
(none)
OK
Cancel
Help

ENTERING PEOPLE .

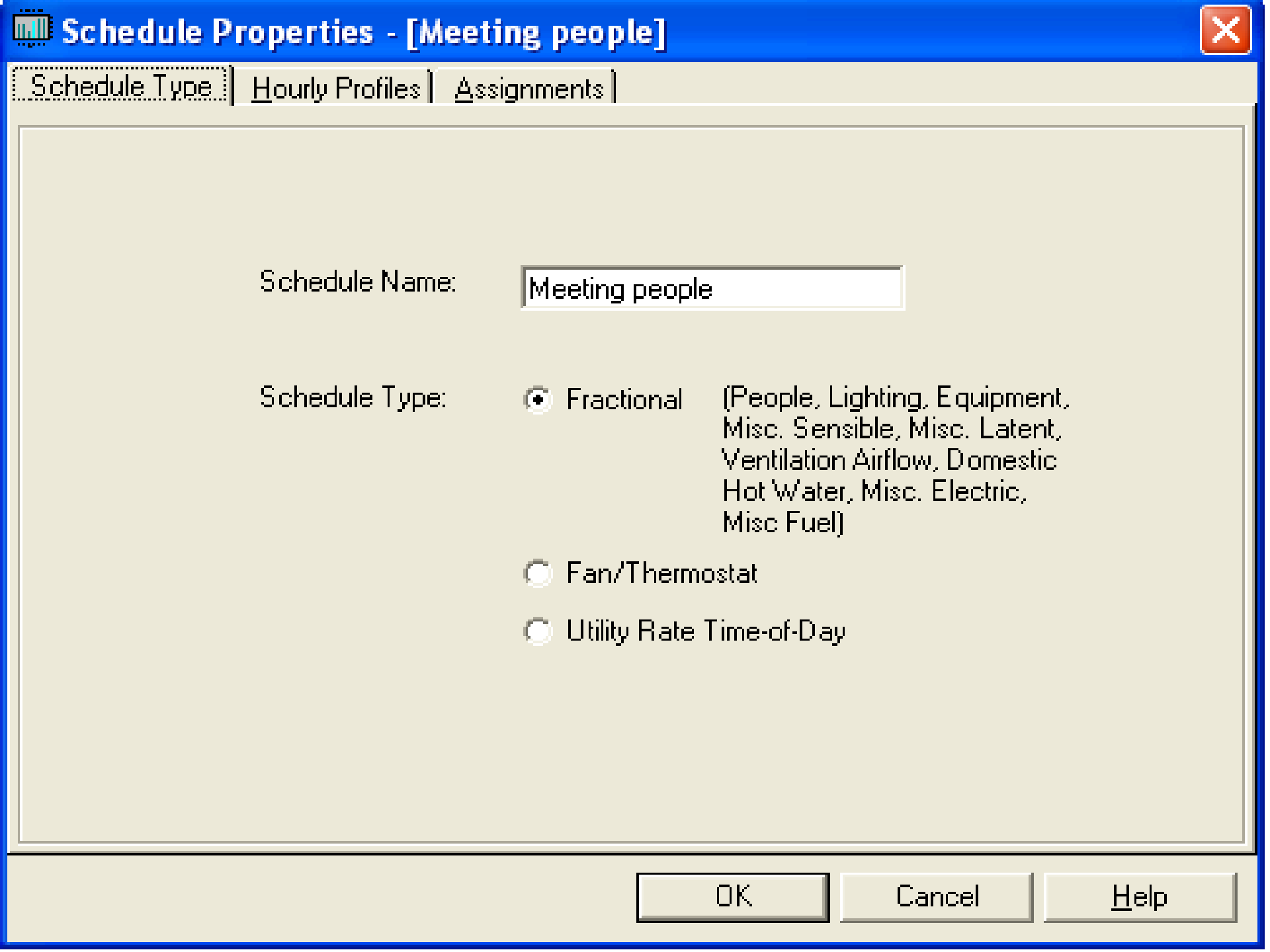
- **Create Schedules, when entering people data, you must choose activity level .**

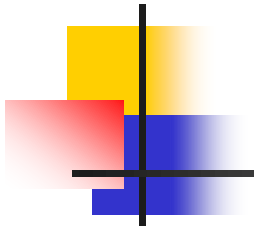

Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Overhead Lighting
Fixture Type
Recessed, unvented
Wattage
26.00
W/m²
Ballast Multiplier
1.08
Schedule
Room Lighting
Task Lighting
Wattage
0.00
W/m²
Schedule
(none)
Electrical Equipment
Wattage
6000.0
Watts
Schedule
equpiment
People
Occupancy
12.0
People
Activity Level
Office Work
Sensible
71.8
W/person
Latent
60.1
W/person
Schedule
Meeting people
Miscellaneous Loads
Sensible
0
W
Schedule
(none)
Latent
0
W
Schedule
(none)
OK
Cancel
Help

Create Schedules.



- **when entering equipment data, you must choose a schedule. In the schedule drop-down list, choose the “create new schedule”**


Schedule Properties - [Meeting people]
Schedule Type
Hourly Profiles
Assignments
Schedule Name:
Meeting people
Schedule Type:
Fractional
(People, Lighting, Equipment, Misc. Sensible, Misc. Latent, Ventilation Airflow, Domestic Hot Water, Misc. Electric, Misc Fuel)
Fan/Thermostat
Utility Rate Time-of-Day
OK
Cancel
Help



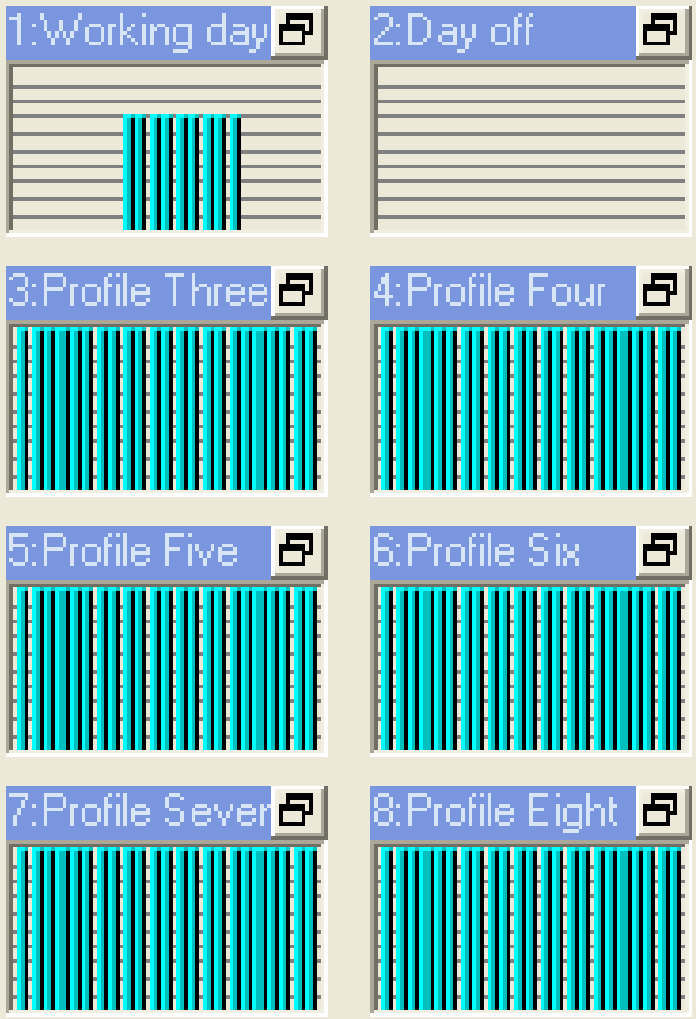
There are two different profiles which the space working

Schedule Properties - [Meeting people]

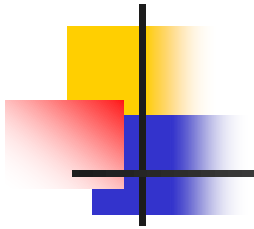
Schedule Type | Hourly Profiles | Assignments

Profile:

Choose a profile from the dropdown list and edit it by dragging the bars with the mouse, by using the arrow keys, or by entering data in the text fields directly. Navigate between profiles with the Tab key: navigate within a profile with the arrow keys.



OK | Cancel | Help

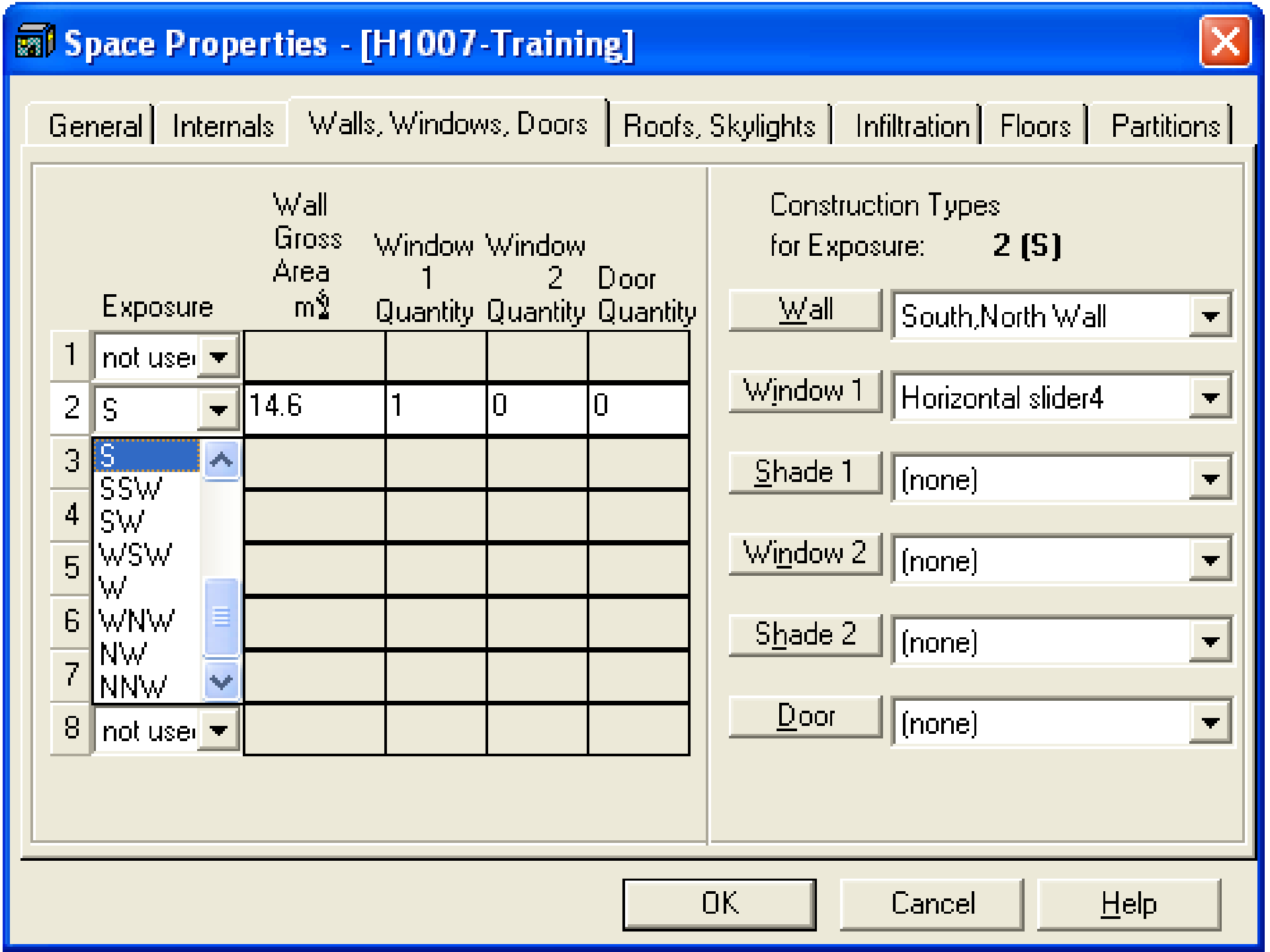


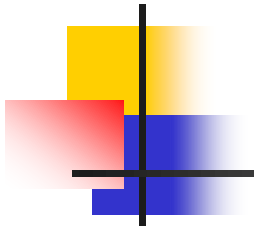
Finally choose PEOPLE schedule.


Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Overhead Lighting
Fixture Type
Recessed, unvented
Wattage
26.00
W/m²
Ballast Multiplier
1.08
Schedule
Room Lighting
Task Lighting
Wattage
0.00
W/m²
Schedule
(none)
Electrical Equipment
Wattage
6000.0
Watts
Schedule
equpiment
People
Occupancy
12.0
People
Activity Level
Office Work
Sensible
71.8
W/person
Latent
60.1
W/person
Schedule
Meeting people
Miscellaneous Loads
Sensible
0
W
Schedule
(none)
Latent
0
W
Schedule
(none)
OK
Cancel
Help

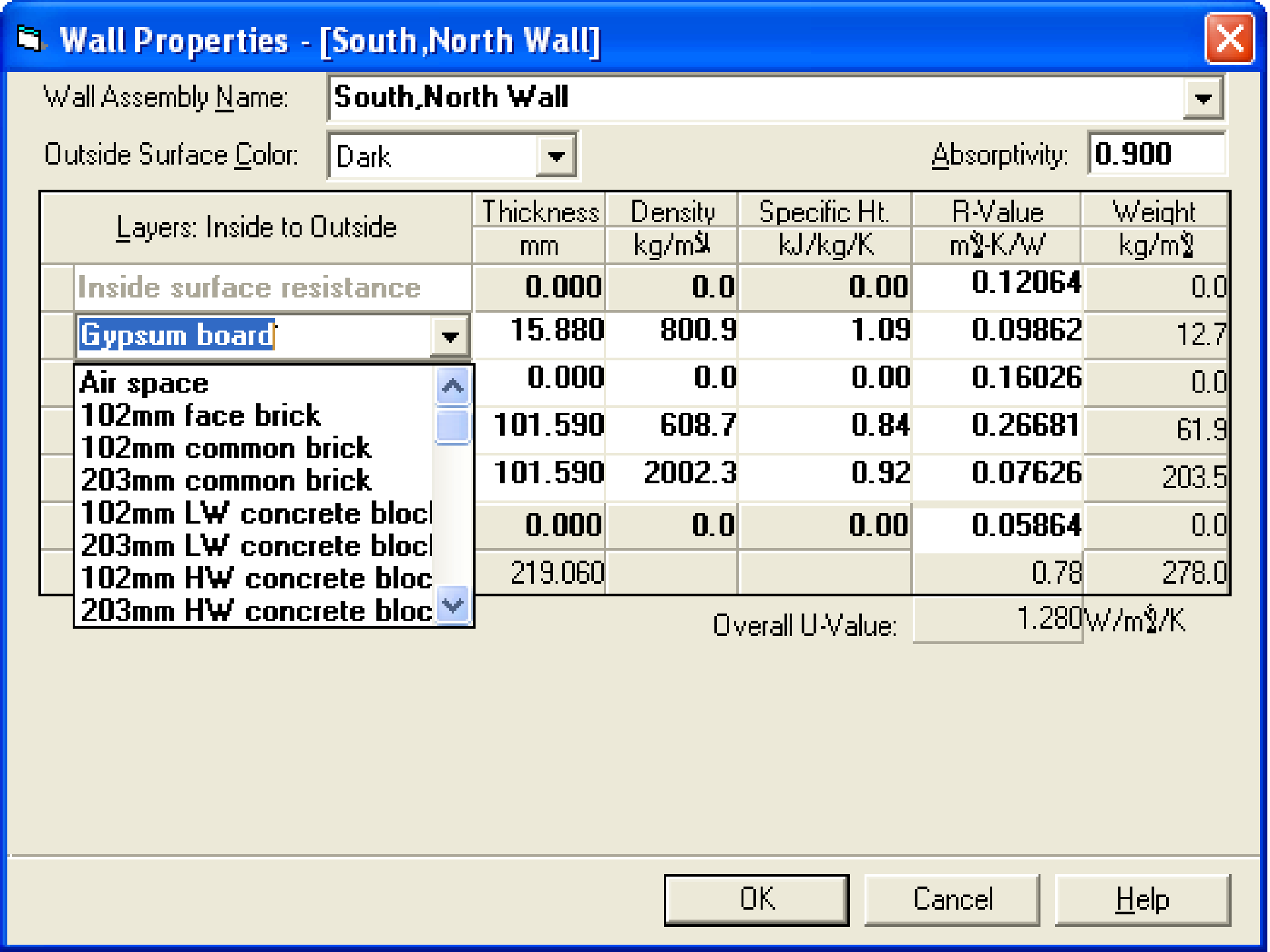
ENTERING WALL, WINDOWS AND DOORS DETAILS

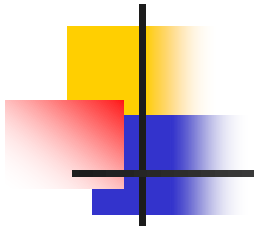
- **choose direction of exposure wall**


Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Exposure
Wall Gross Area m²
Window 1 Quantity
Window 2 Quantity
Door Quantity
1 not use
2 S 14.6 1 0 0
3 S
SSW
SW
WSW
W
WNW
NW
NNW
4
5
6
7
8 not use
Construction Types for Exposure: 2 (S)
Wall
South,North Wall
Window 1
Horizontal slider4
Shade 1
(none)
Window 2
(none)
Shade 2
(none)
Door
(none)
OK
Cancel
Help

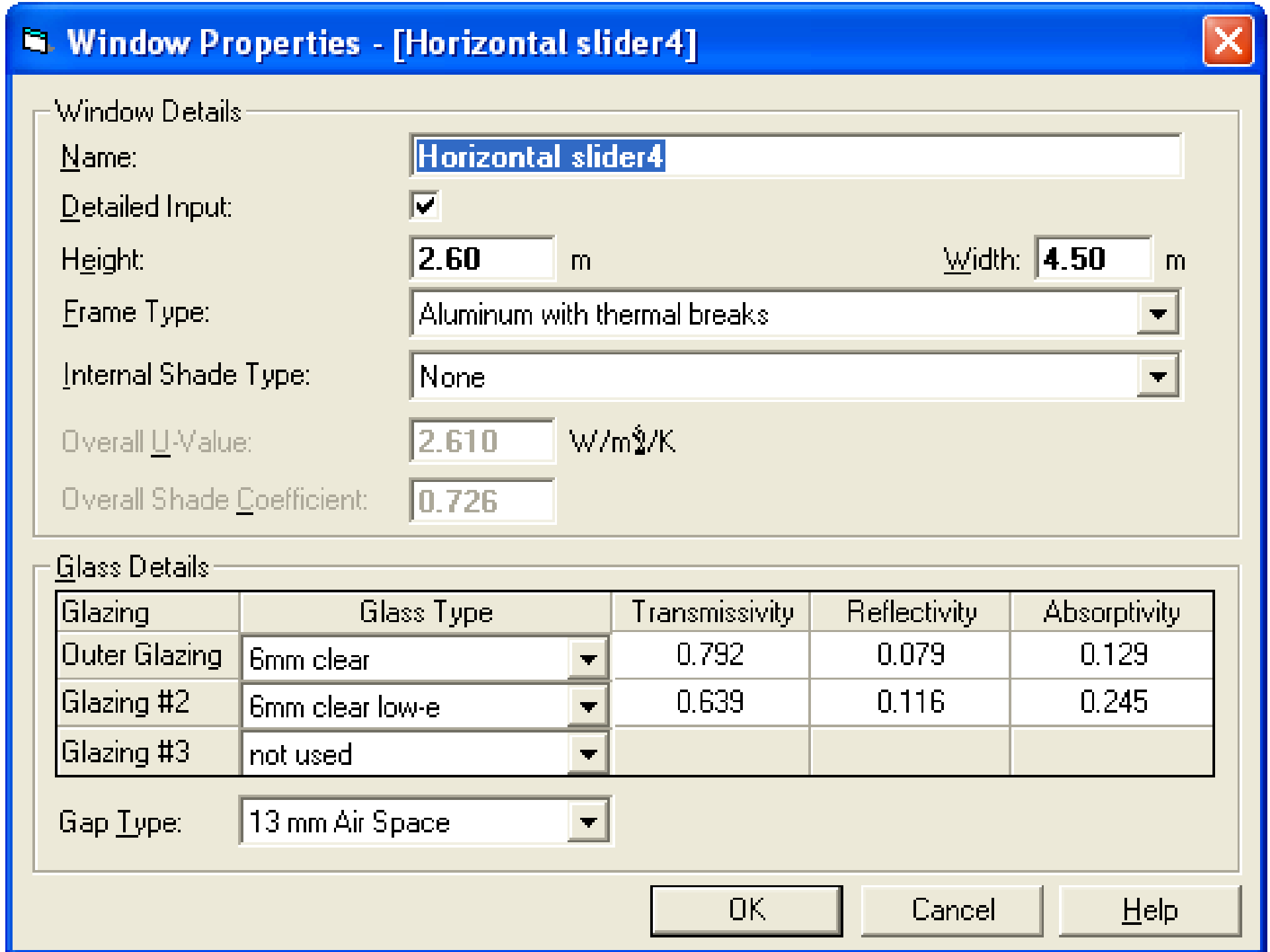


CHOOSE LAYERS OF WALL

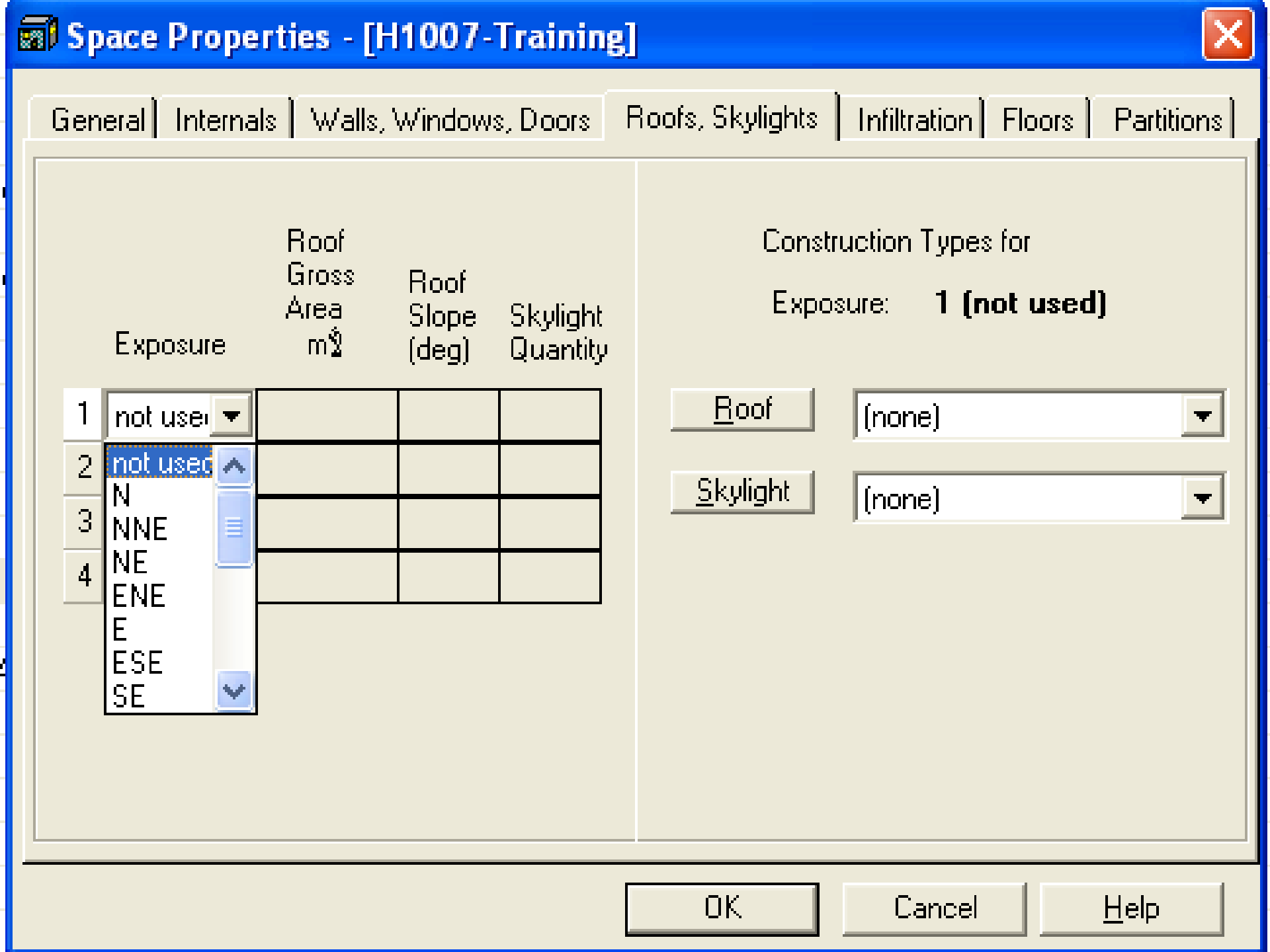

Wall Properties - [South,North Wall]
Wall Assembly Name:
South,North Wall
Outside Surface Color:
Dark
Absorptivity:
0.900
Layers: Inside to Outside
Thickness mm
Density kg/m³
Specific Ht. kJ/kg/K
R-Value m²-K/W
Weight kg/m²
Inside surface resistance
0.000
0.0
0.00
0.12064
0.0
Gypsum board
15.880
800.9
1.09
0.09862
12.7
Air space
0.000
0.0
0.00
0.16026
0.0
102mm face brick
101.590
608.7
0.84
0.26681
61.9
102mm common brick
203mm common brick
101.590
2002.3
0.92
0.07626
203.5
102mm LW concrete bloc
203mm LW concrete bloc
0.000
0.0
0.00
0.05864
0.0
102mm HW concrete bloc
203mm HW concrete bloc
219.060
0.78
278.0
Overall U-Value:
1.280 W/m²/K
OK
Cancel
Help

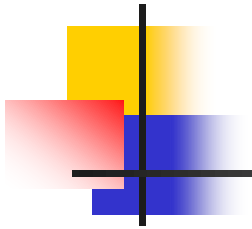


ENTERING ROOF DATA


Window Properties - [Horizontal slider4]
Window Details
Name:
Horizontal slider4
Detailed Input:
Height:
2.60
m
Width:
4.50
m
Frame Type:
Aluminum with thermal breaks
Internal Shade Type:
None
Overall U-Value:
2.610
W/m²/K
Overall Shade Coefficient:
0.726
Glass Details
Glazing
Glass Type
Transmissivity
Reflectivity
Absorptivity
Outer Glazing
6mm clear
0.792
0.079
0.129
Glazing #2
6mm clear low-e
0.639
0.116
0.245
Glazing #3
not used
Gap Type:
13 mm Air Space
OK
Cancel
Help

choose direction of roof.


Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Exposure
Roof Gross Area m²
Roof Slope (deg)
Skylight Quantity
1
not use
2
3
4
not used
N
NNE
NE
ENE
E
ESE
SE
Construction Types for
Exposure: 1 (not used)
Roof
(none)
Skylight
(none)
OK
Cancel
Help



choose layer of roof .

Roof Properties - [TOP ROOF]

Roof Assembly Name: **TOP ROOF**

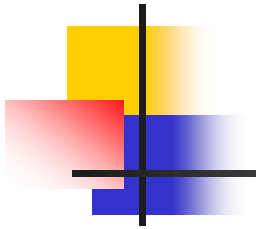
Outside Surface Color: Dark

Absorptivity: **0.900**

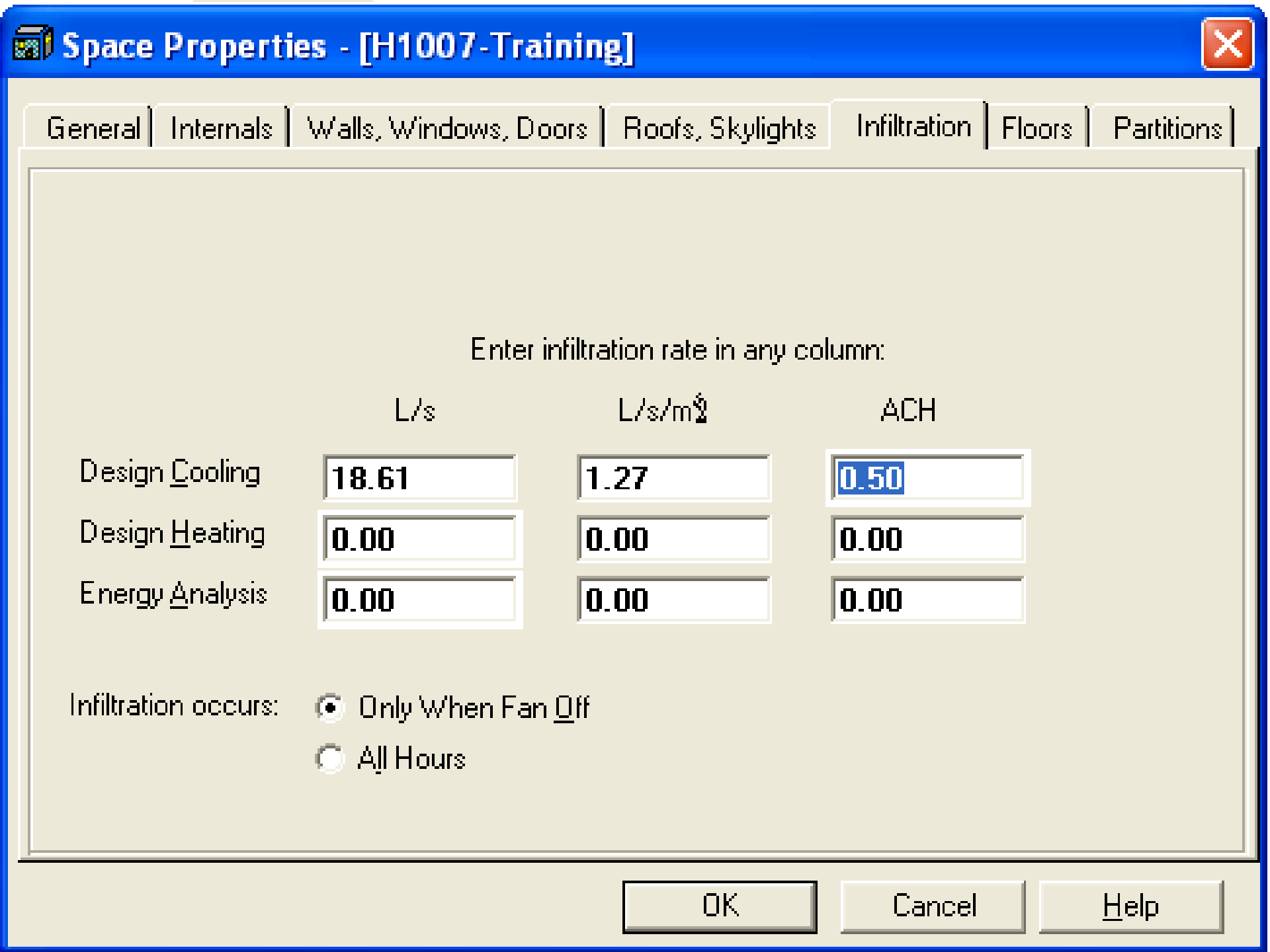
Layers: Inside to Outside	Thickness mm	Density kg/m³	Specific Ht. kJ/kg/K	R-Value m²-K/W	Weight kg/m²
Inside surface resistance	0.000	0.0	0.00	0.12064	0.0
Steel deck	0.853	7833.0	0.50	0.00002	6.7
Board insulation	25.400	32.0	0.92	1.22291	0.8
Built-up roofing	9.540	1121.3	1.47	0.05847	10.7
Outside surface resistance	0.000	0.0	0.00	0.05864	0.0
Totals	35.793			1.46	18.2

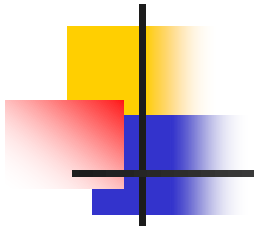
Overall U-Value: 0.685 W/m²/K

OK | Cancel | Help

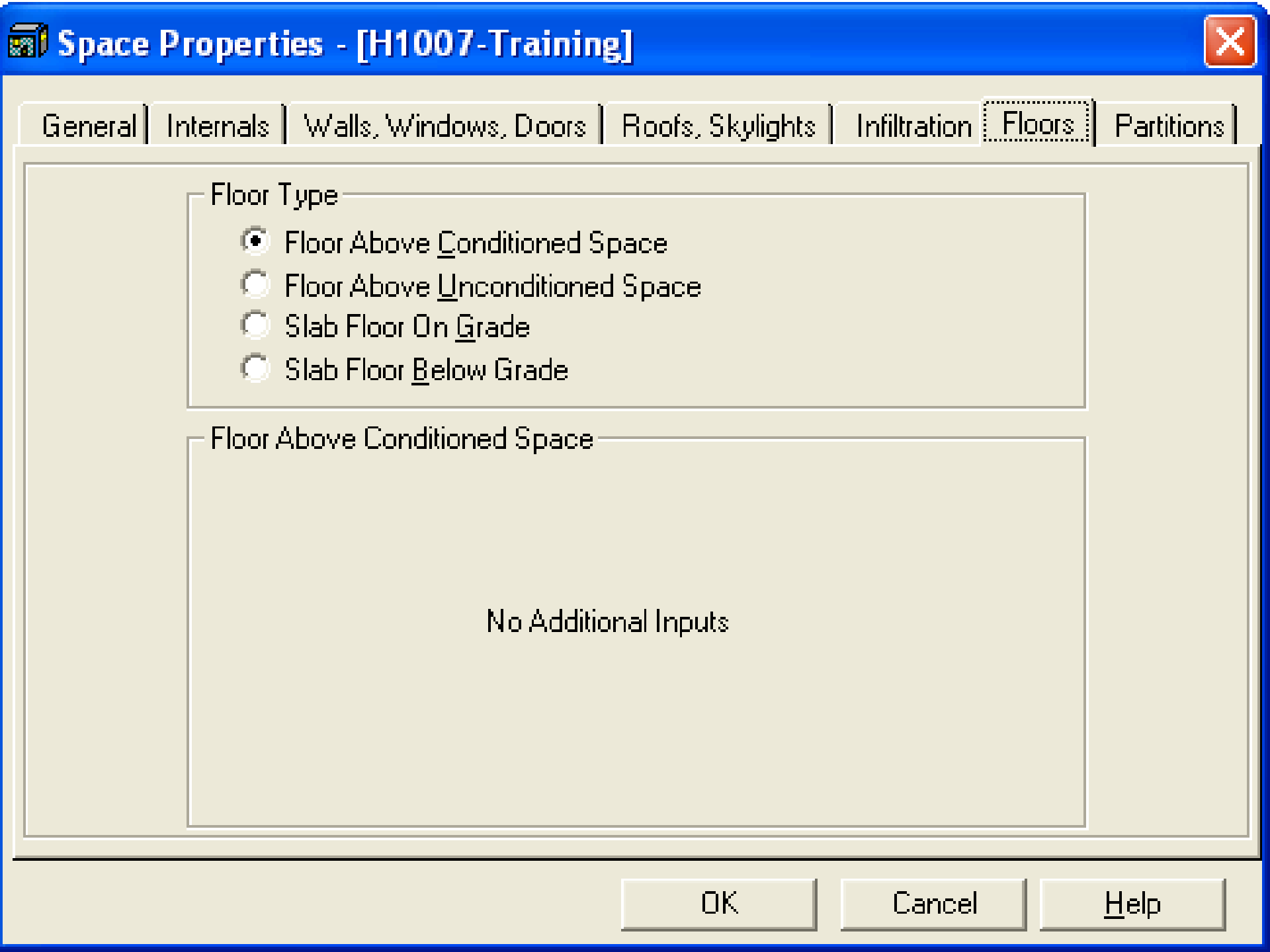


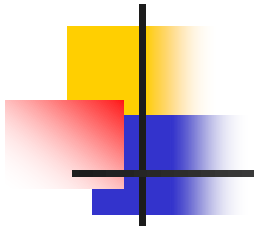
ENTERING INFILTRATION DATA


Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Enter infiltration rate in any column:
L/s
L/s/m²
ACH
Design Cooling
18.61
1.27
0.50
Design Heating
0.00
0.00
0.00
Energy Analysis
0.00
0.00
0.00
Infiltration occurs:
Only When Fan Off
All Hours
OK
Cancel
Help

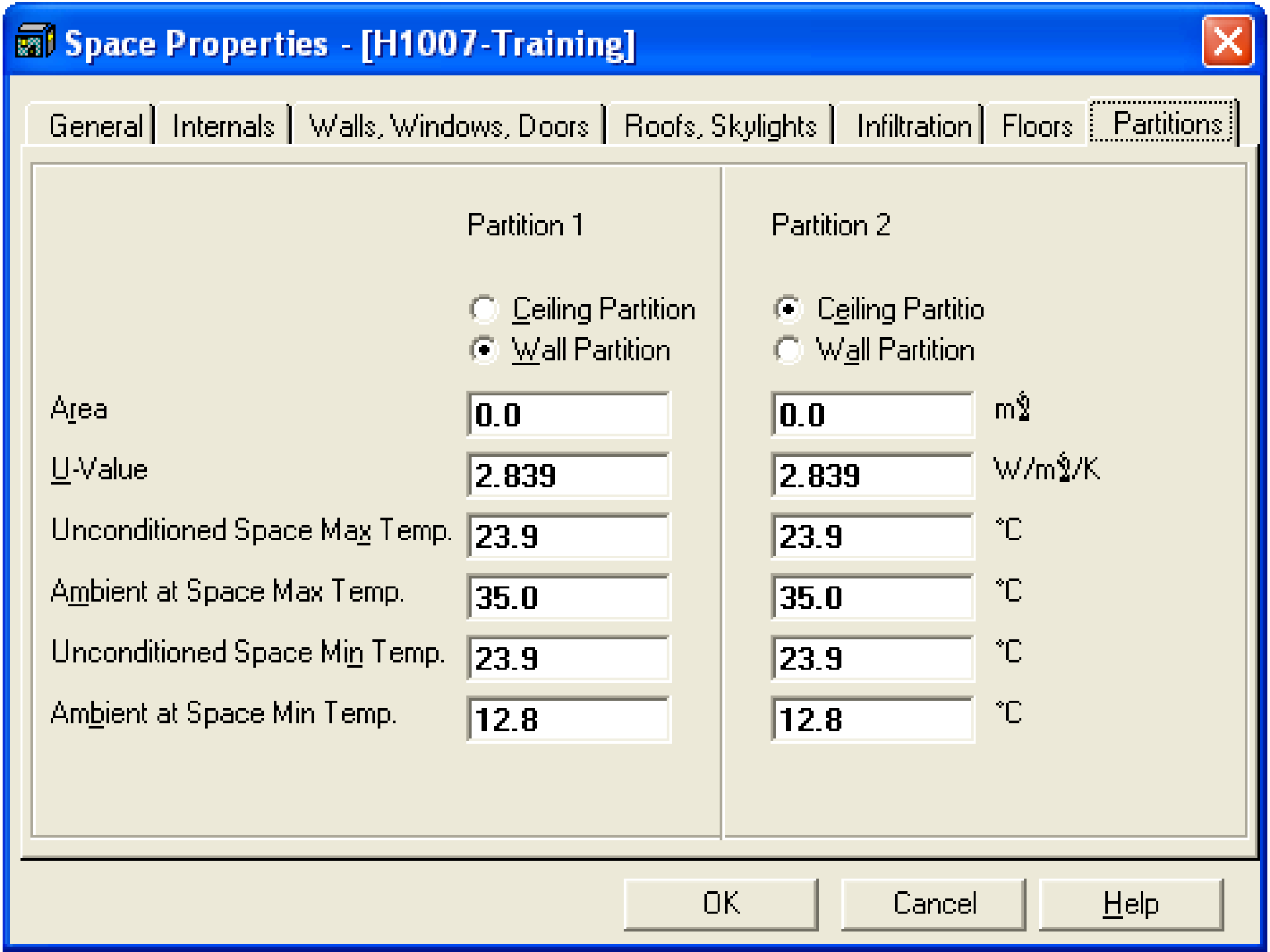


ENTERING FLOOR TYPE DATA


Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Floor Type
Floor Above Conditioned Space
Floor Above Unconditioned Space
Slab Floor On Grade
Slab Floor Below Grade
Floor Above Conditioned Space
No Additional Inputs
OK
Cancel
Help

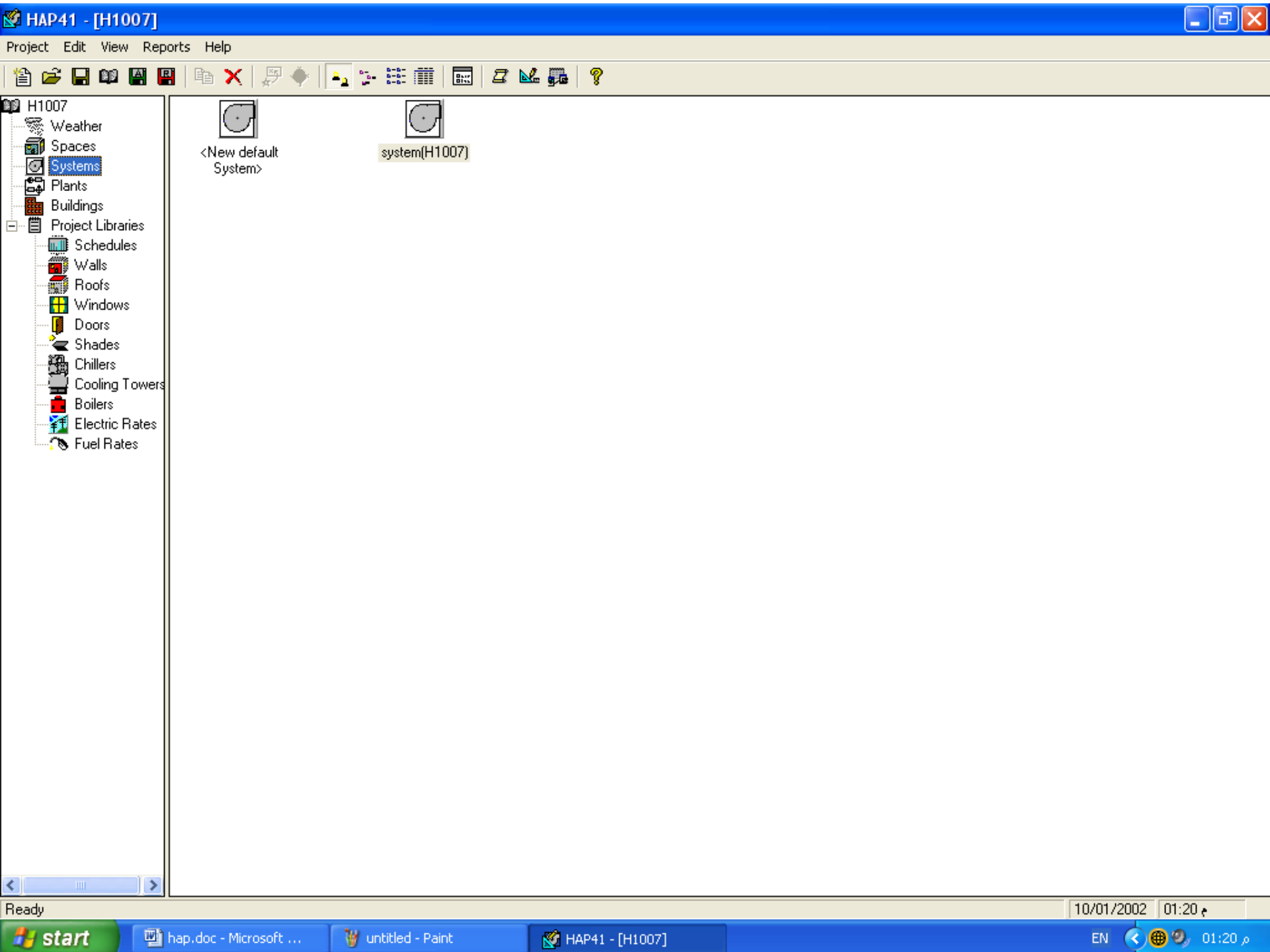


ENTERING PARTITION DETAILS

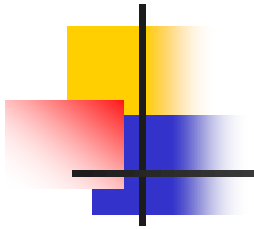

Space Properties - [H1007-Training]
General
Internals
Walls, Windows, Doors
Roofs, Skylights
Infiltration
Floors
Partitions
Partition 1
Partition 2
Ceiling Partition
Wall Partition
Ceiling Partitio
Wall Partition
Area
0.0
0.0
m²
U-Value
2.839
2.839
W/m²/K
Unconditioned Space Max Temp.
23.9
23.9
°C
Ambient at Space Max Temp.
35.0
35.0
°C
Unconditioned Space Min Temp.
23.9
23.9
°C
Ambient at Space Min Temp.
12.8
12.8
°C
OK
Cancel
Help

ENTER AIR SYSTEM DATA

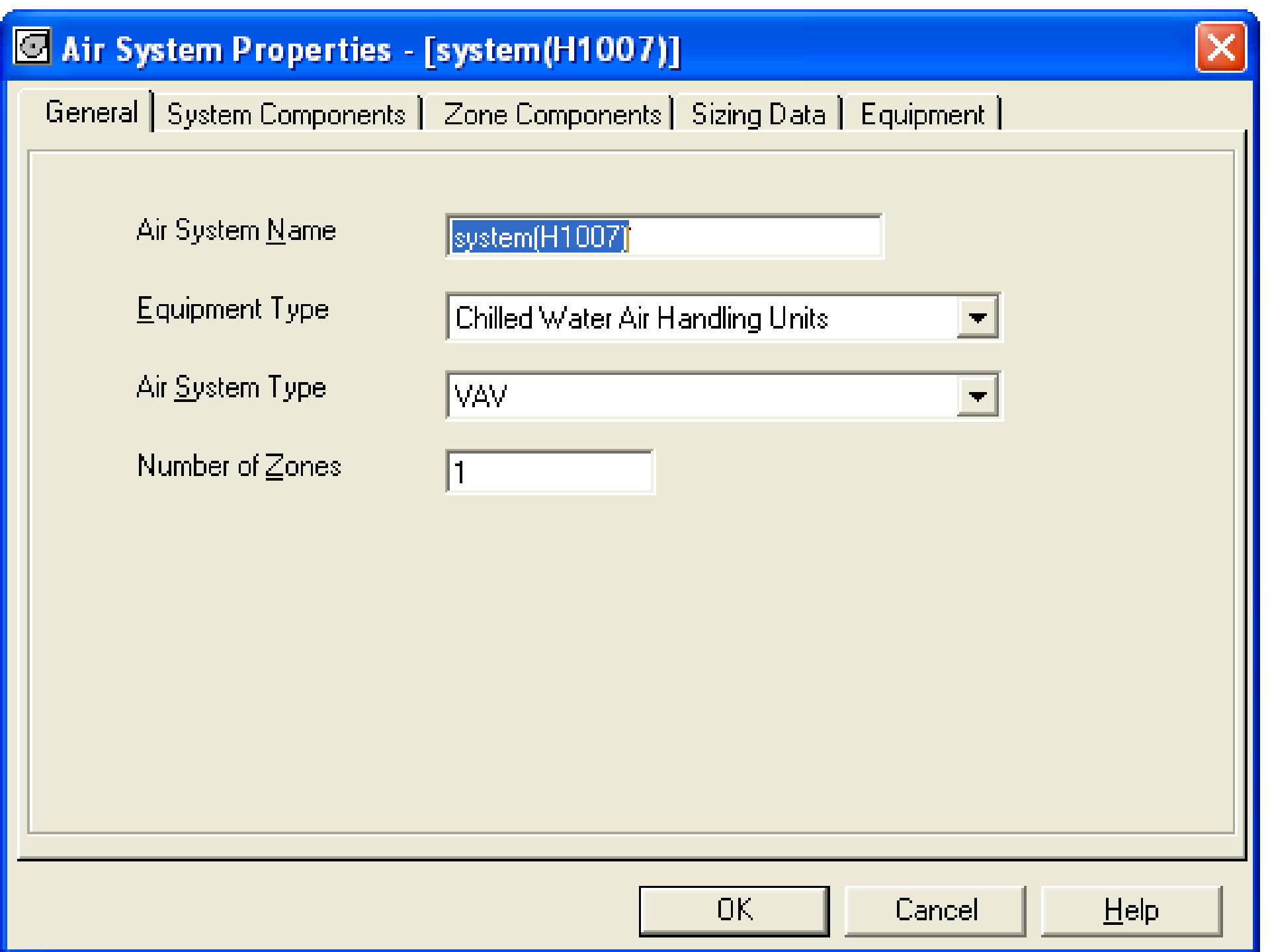
- **Click on the "System" item in the tree view in the main program window. System information will appear in the list view.**
- **Double-click on the "<new default system>" item in the list view. The System input form will appear**

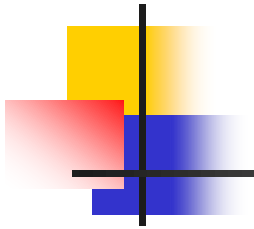

HAP41 - [H1007]
Project Edit View Reports Help
H1007
Weather
Spaces
Systems
Plants
Buildings
Project Libraries
Schedules
Walls
Roofs
Windows
Doors
Shades
Chillers
Cooling Towers
Boilers
Electric Rates
Fuel Rates
<New default System>
system(H1007)
Ready
10/01/2002
01:20
start
hap.doc - Microsoft ...
untitled - Paint
HAP41 - [H1007]
EN
01:20

General

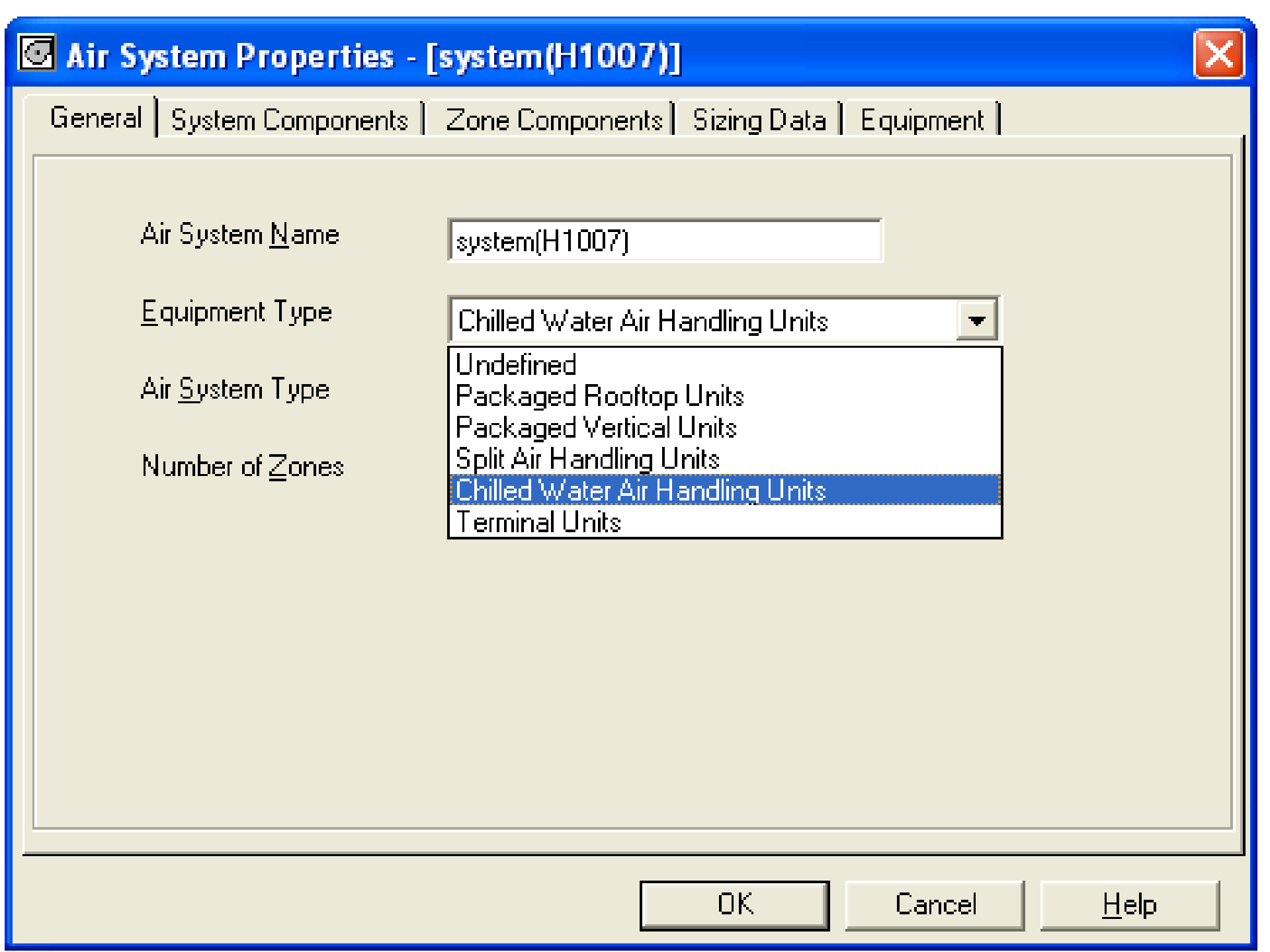


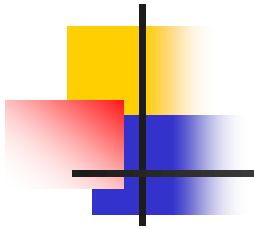
Naming the system


Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Air System Name
system(H1007)
Equipment Type
Chilled Water Air Handling Units
Air System Type
VAV
Number of Zones
1
OK
Cancel
Help

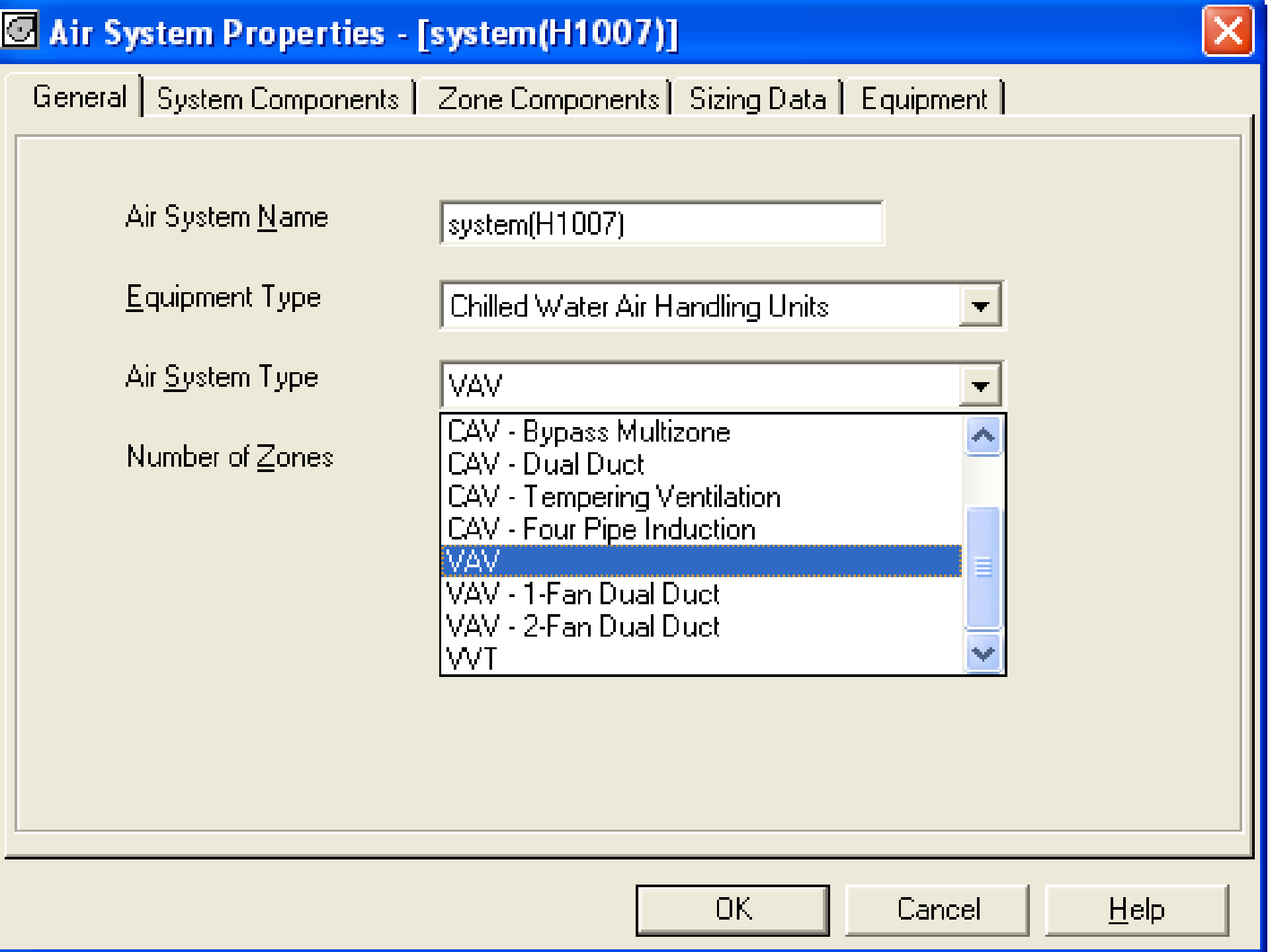


Select “Chilled Water Air Handling Units” as equipment type .


Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Air System Name
system(H1007)
Equipment Type
Chilled Water Air Handling Units
Undefined
Packaged Rooftop Units
Packaged Vertical Units
Split Air Handling Units
Chilled Water Air Handling Units
Terminal Units
Air System Type
Number of Zones
OK
Cancel
Help

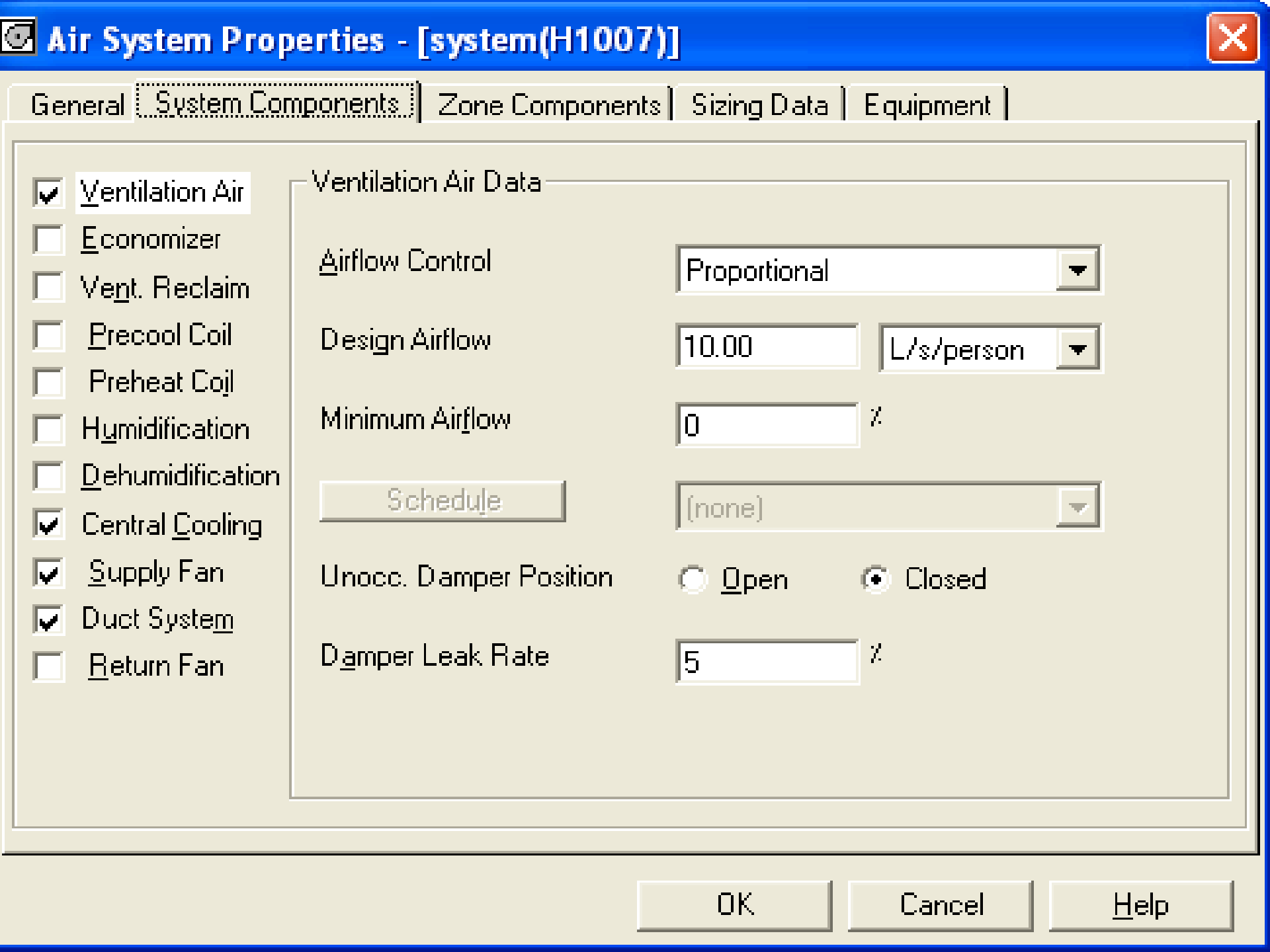


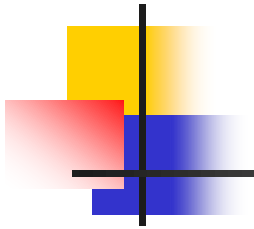
Select “VAV” as air system type


Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Air System Name
system(H1007)
Equipment Type
Chilled Water Air Handling Units
Air System Type
VAV
Number of Zones
CAV - Bypass Multizone
CAV - Dual Duct
CAV - Tempering Ventilation
CAV - Four Pipe Induction
VAV
VAV - 1-Fan Dual Duct
VAV - 2-Fan Dual Duct
VVT
OK
Cancel
Help

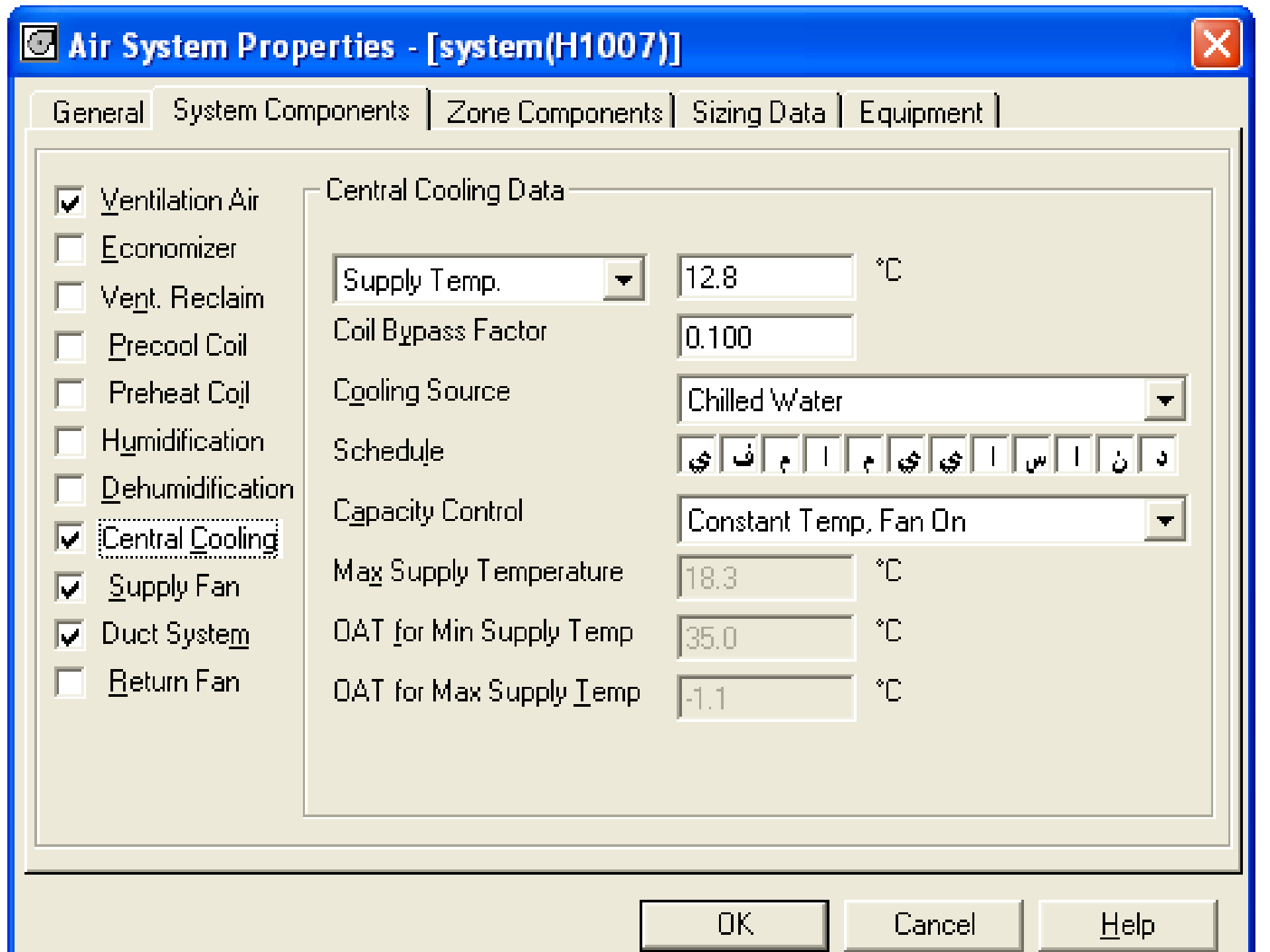
SYSTEM COMPONENT DATA

Ventilation air system

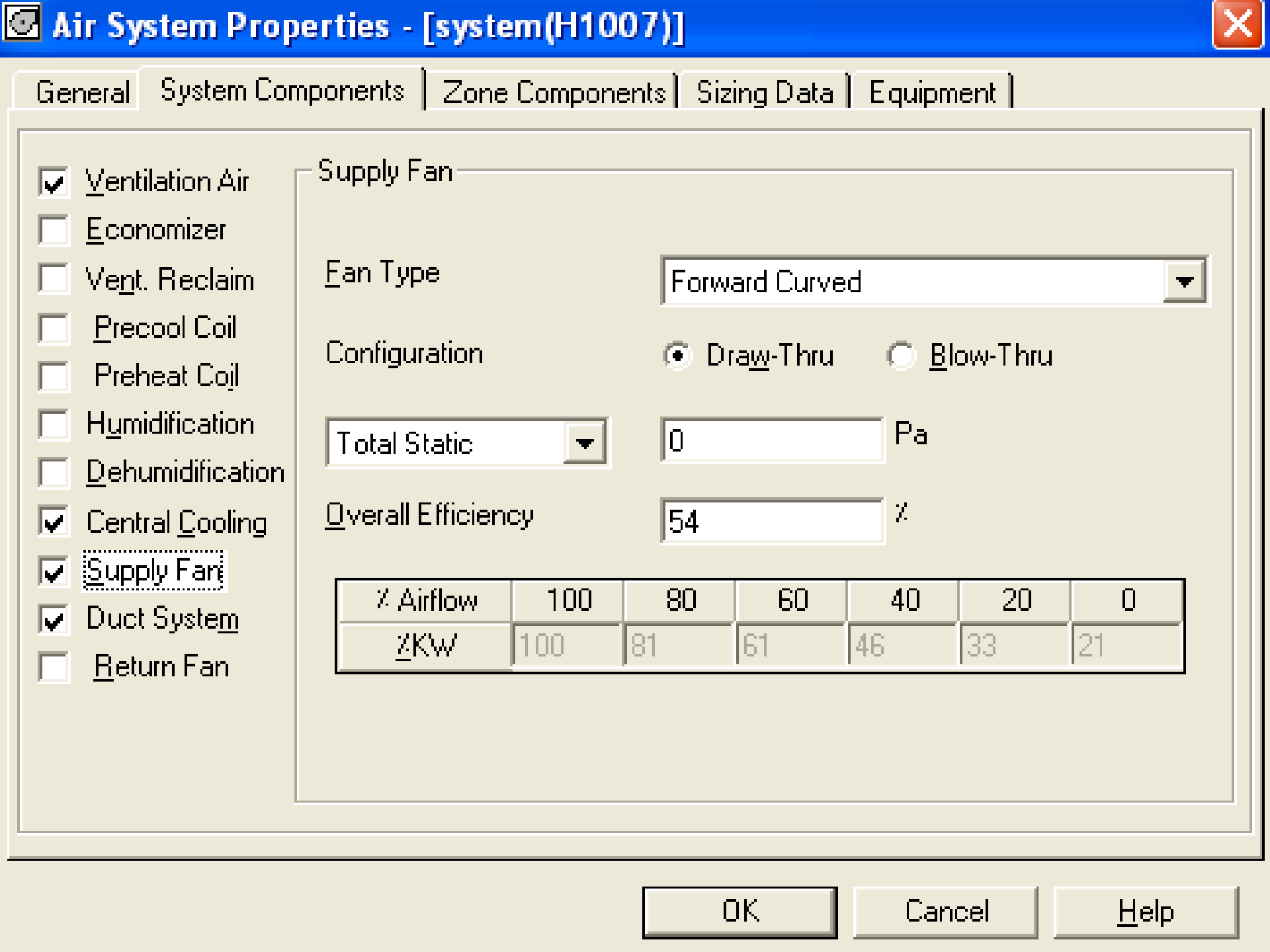

Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Ventilation Air
Economizer
Vent. Reclaim
Precool Coil
Preheat Coil
Humidification
Dehumidification
Central Cooling
Supply Fan
Duct System
Return Fan
Ventilation Air Data
Airflow Control
Proportional
Design Airflow
10.00
L/s/person
Minimum Airflow
0
%
Schedule
(none)
Unocc. Damper Position
Open
Closed
Damper Leak Rate
5
%
OK
Cancel
Help

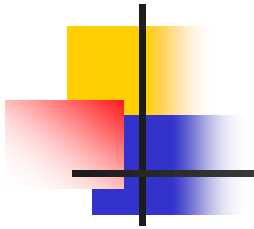


Central Cooling Data

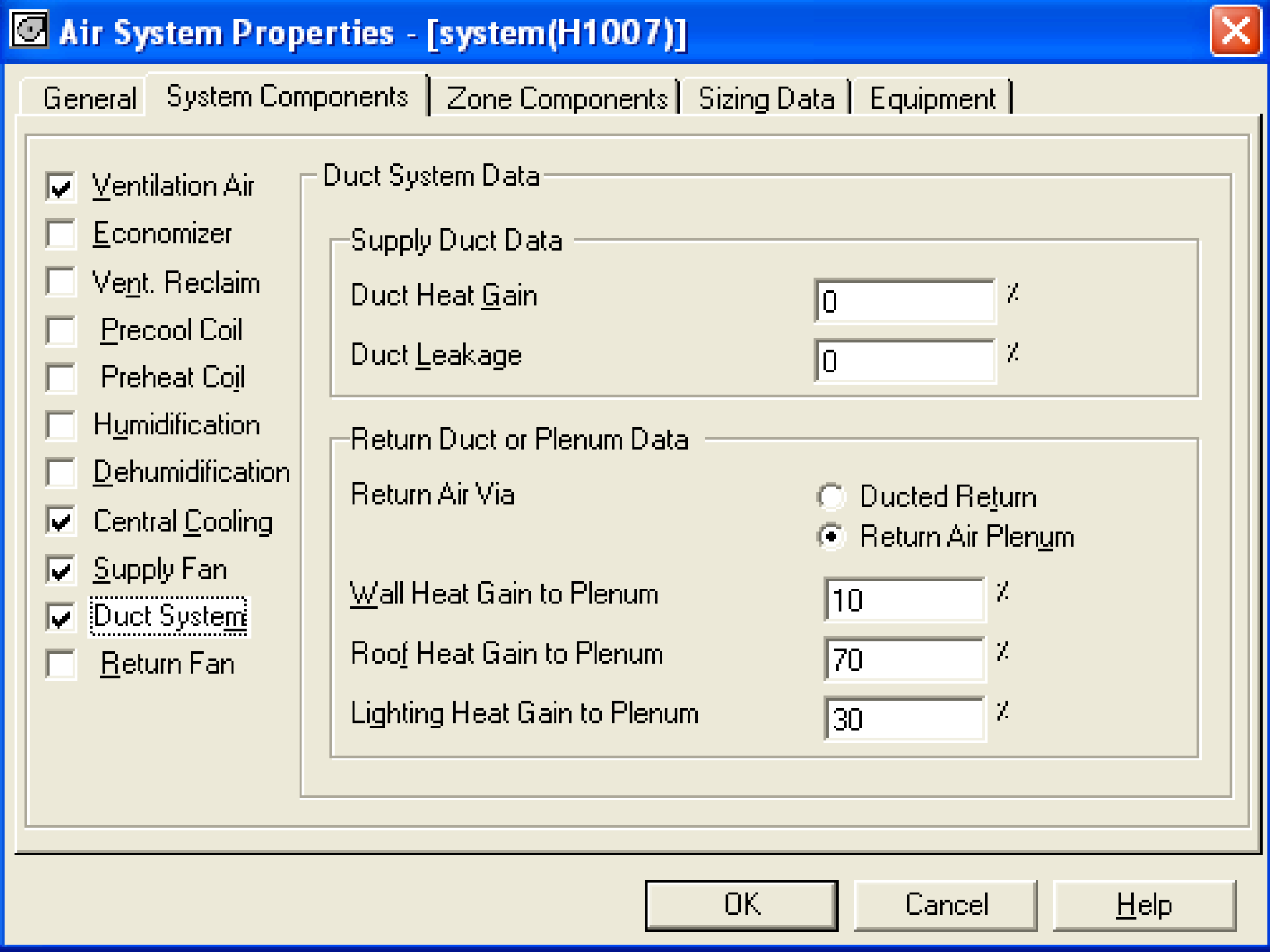

Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Ventilation Air
Economizer
Vent. Reclaim
Precool Coil
Preheat Coil
Humidification
Dehumidification
Central Cooling
Supply Fan
Duct System
Return Fan
Central Cooling Data
Supply Temp.
12.8
°C
Coil Bypass Factor
0.100
Cooling Source
Chilled Water
Schedule
Capacity Control
Constant Temp, Fan On
Max Supply Temperature
18.3
°C
OAT for Min Supply Temp
35.0
°C
OAT for Max Supply Temp
-1.1
°C
OK
Cancel
Help

SUPPLY FAN

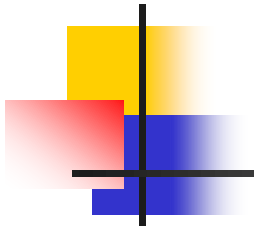

Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Ventilation Air
Economizer
Vent. Reclaim
Precool Coil
Preheat Coil
Humidification
Dehumidification
Central Cooling
Supply Fan
Duct System
Return Fan
Supply Fan
Fan Type
Forward Curved
Configuration
Draw-Thru
Blow-Thru
Total Static
0
Pa
Overall Efficiency
54
%
% Airflow
100
80
60
40
20
0
%KW
100
81
61
46
33
21
OK
Cancel
Help



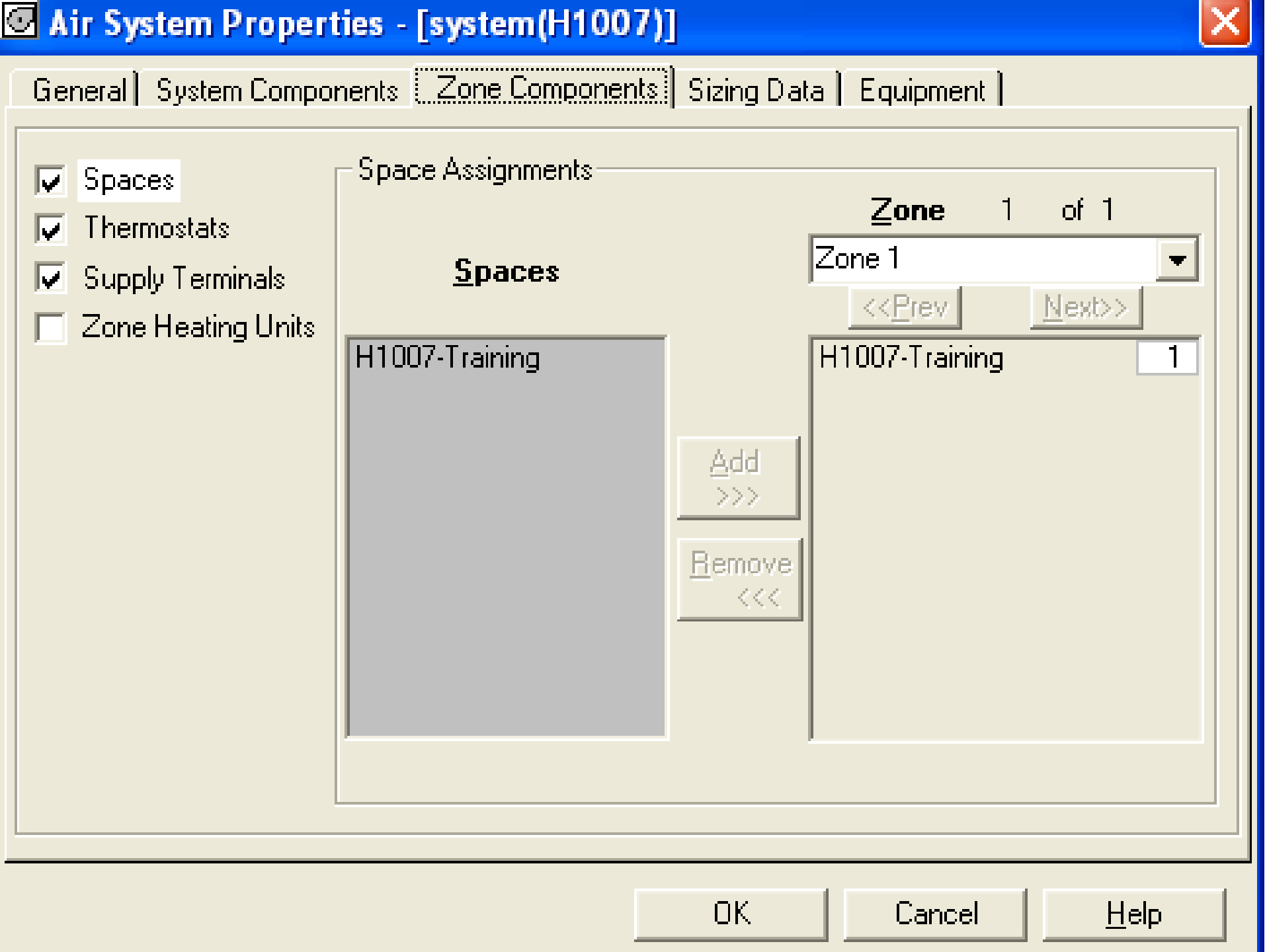
Duct System Data

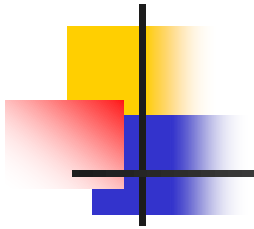

Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Ventilation Air
Economizer
Vent. Reclaim
Precool Coil
Preheat Coil
Humidification
Dehumidification
Central Cooling
Supply Fan
Duct System
Return Fan
Duct System Data
Supply Duct Data
Duct Heat Gain
0
%
Duct Leakage
0
%
Return Duct or Plenum Data
Return Air Via
Ducted Return
Return Air Plenum
Wall Heat Gain to Plenum
10
%
Roof Heat Gain to Plenum
70
%
Lighting Heat Gain to Plenum
30
%
OK
Cancel
Help

Zone Components

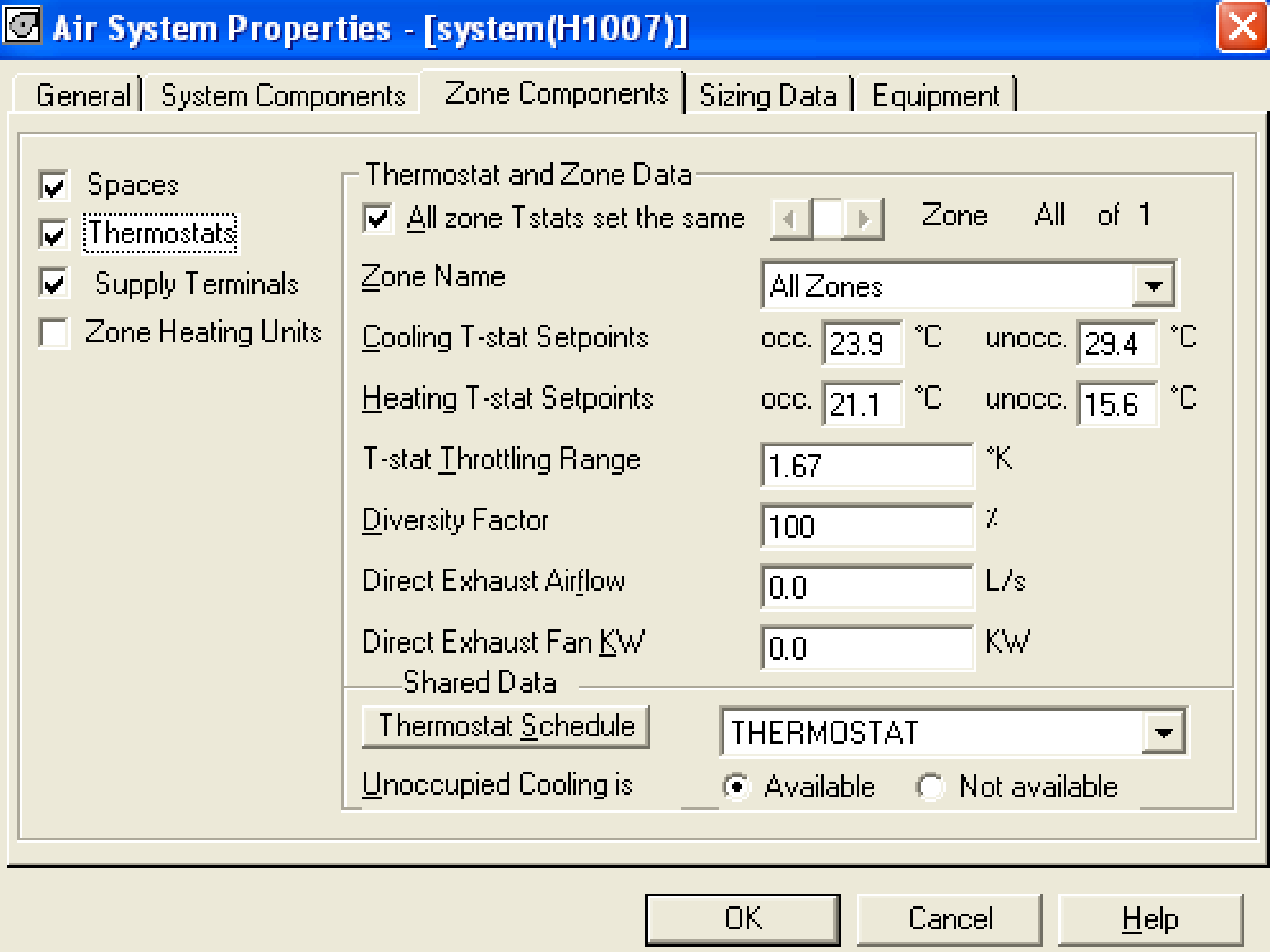


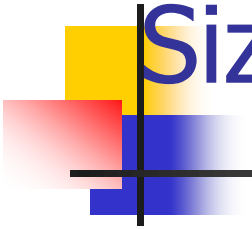
Space Assignments


Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Spaces
Thermostats
Supply Terminals
Zone Heating Units
Space Assignments
Zone 1 of 1
Spaces
Zone 1
<<Prev
Next>>
H1007-Training
H1007-Training 1
Add >>>
Remove <<<
OK
Cancel
Help



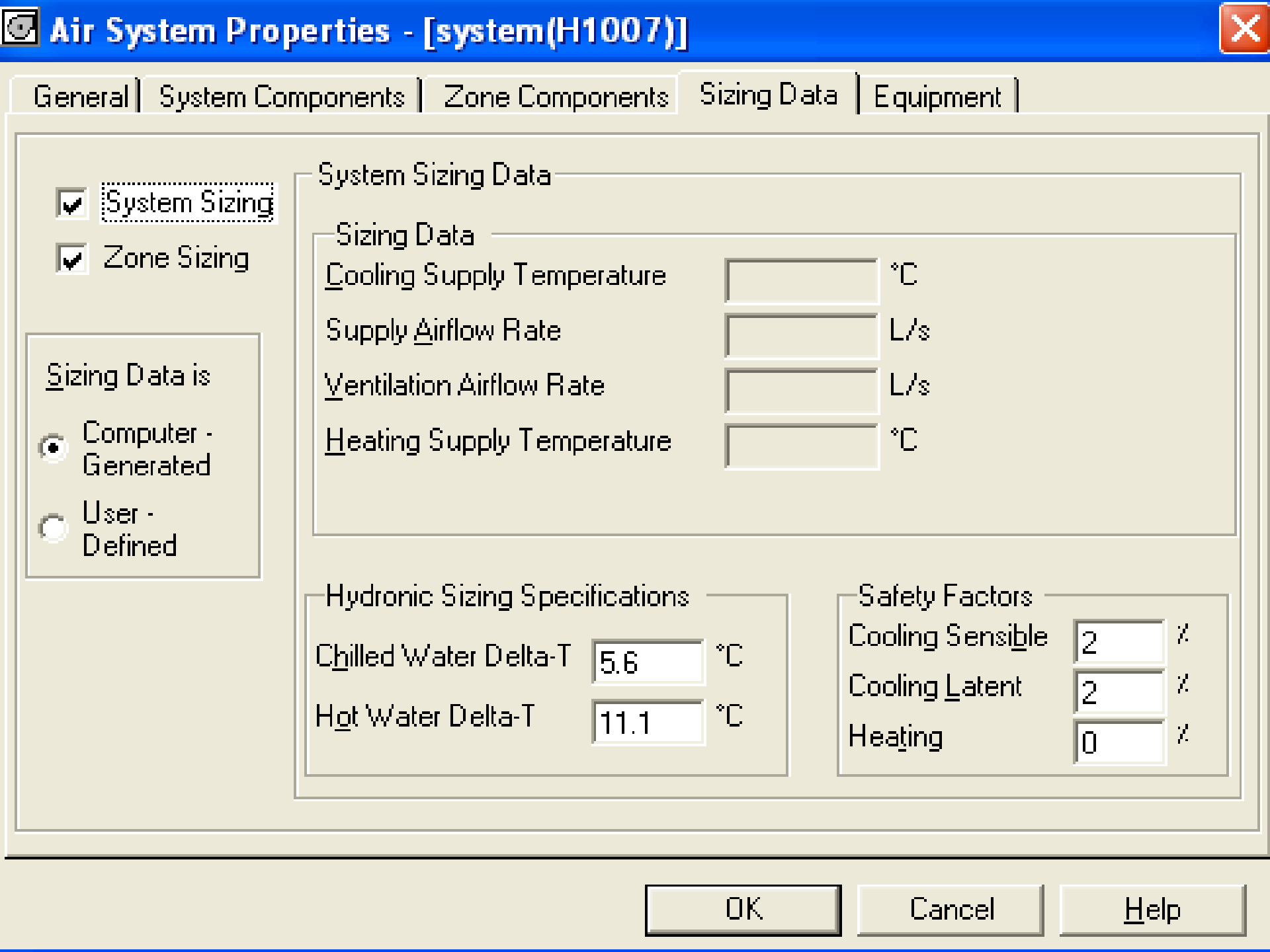
THERMOSTATS

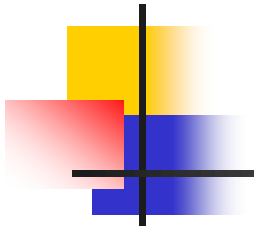

Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
Spaces
Thermostats
Supply Terminals
Zone Heating Units
Thermostat and Zone Data
All zone Tstats set the same
Zone All of 1
Zone Name
All Zones
Cooling T-stat Setpoints
occ. 23.9 °C
unocc. 29.4 °C
Heating T-stat Setpoints
occ. 21.1 °C
unocc. 15.6 °C
T-stat Throttling Range
1.67
°K
Diversity Factor
100
%
Direct Exhaust Airflow
0.0
L/s
Direct Exhaust Fan KW
0.0
KW
Shared Data
Thermostat Schedule
THERMOSTAT
Unoccupied Cooling is
Available
Not available
OK
Cancel
Help



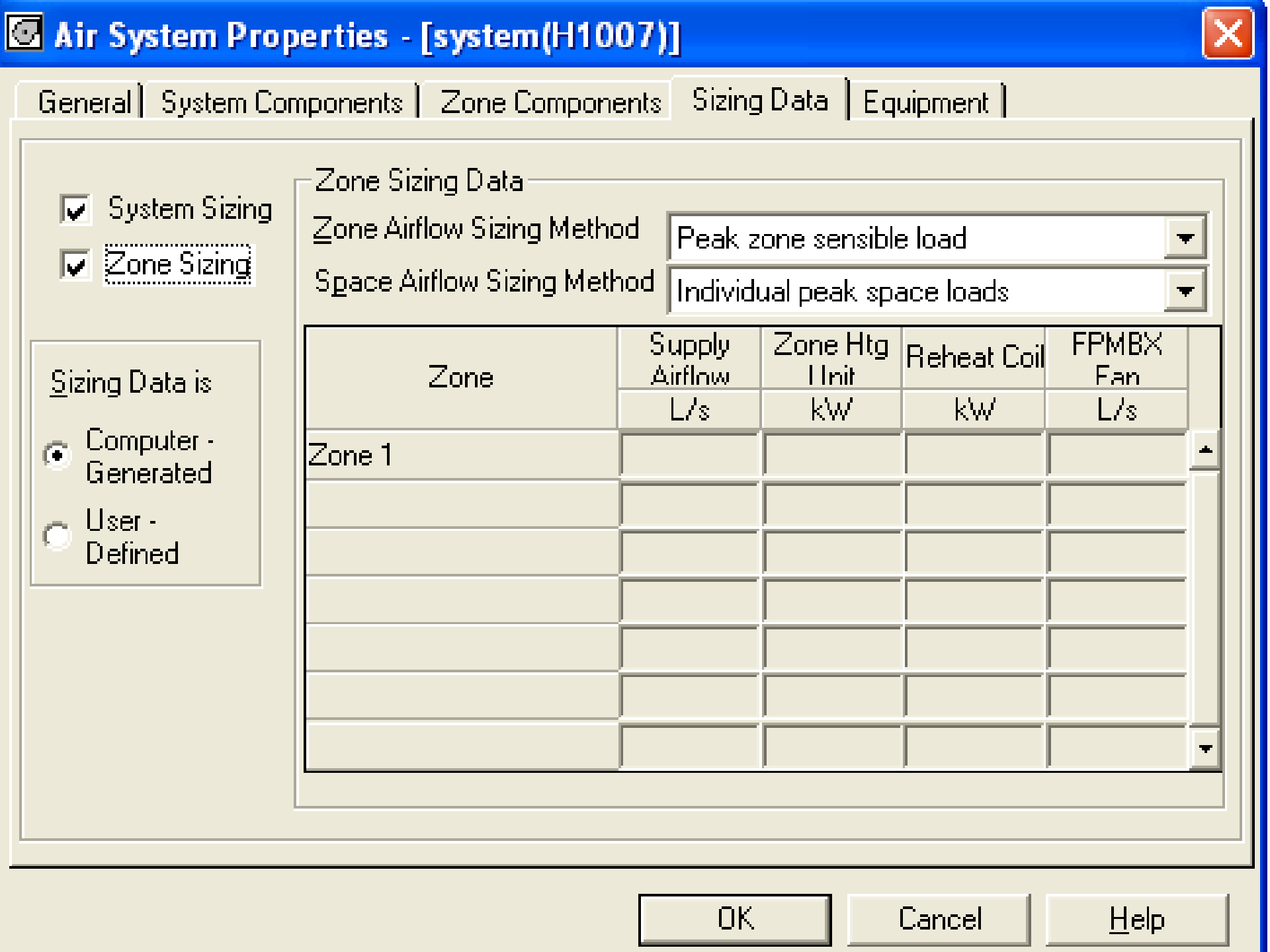
Sizing Data

Sizing Specification


Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
System Sizing
Zone Sizing
Sizing Data is
Computer - Generated
User - Defined
System Sizing Data
Sizing Data
Cooling Supply Temperature
°C
Supply Airflow Rate
L/s
Ventilation Airflow Rate
L/s
Heating Supply Temperature
°C
Hydronic Sizing Specifications
Chilled Water Delta-T
5.6
°C
Hot Water Delta-T
11.1
°C
Safety Factors
Cooling Sensible
2
%
Cooling Latent
2
%
Heating
0
%
OK
Cancel
Help

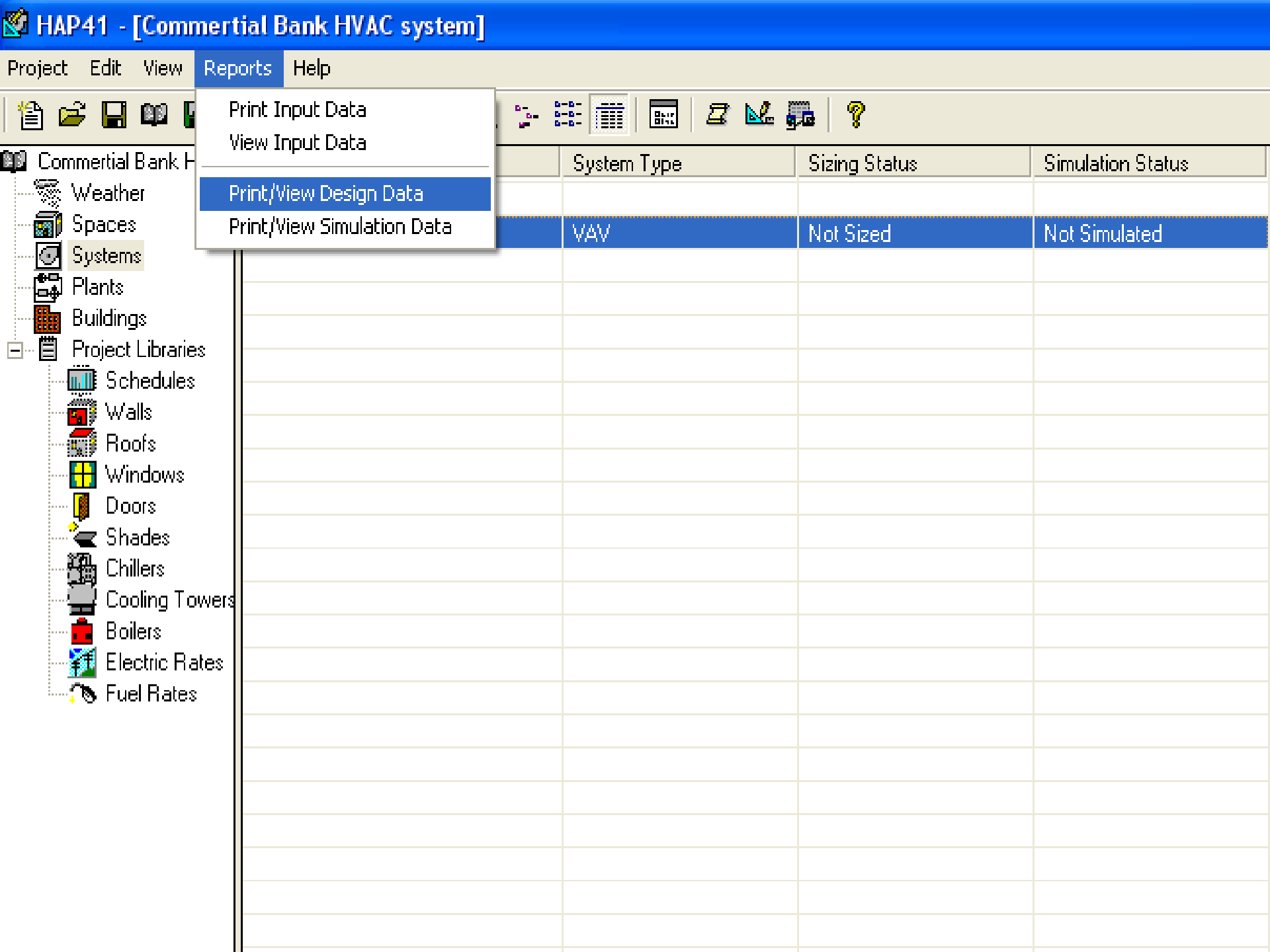


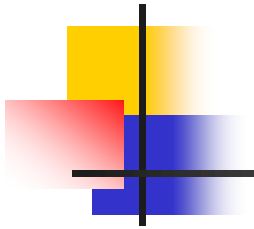
ZONE SIZING


Air System Properties - [system(H1007)]
General
System Components
Zone Components
Sizing Data
Equipment
System Sizing
Zone Sizing
Sizing Data is
Computer - Generated
User - Defined
Zone Sizing Data
Zone Airflow Sizing Method
Peak zone sensible load
Space Airflow Sizing Method
Individual peak space loads
Zone
Supply Airflow
L/s
Zone Htg Unit
kW
Reheat Coil
kW
FPMBX Fan
L/s
Zone 1
OK
Cancel
Help

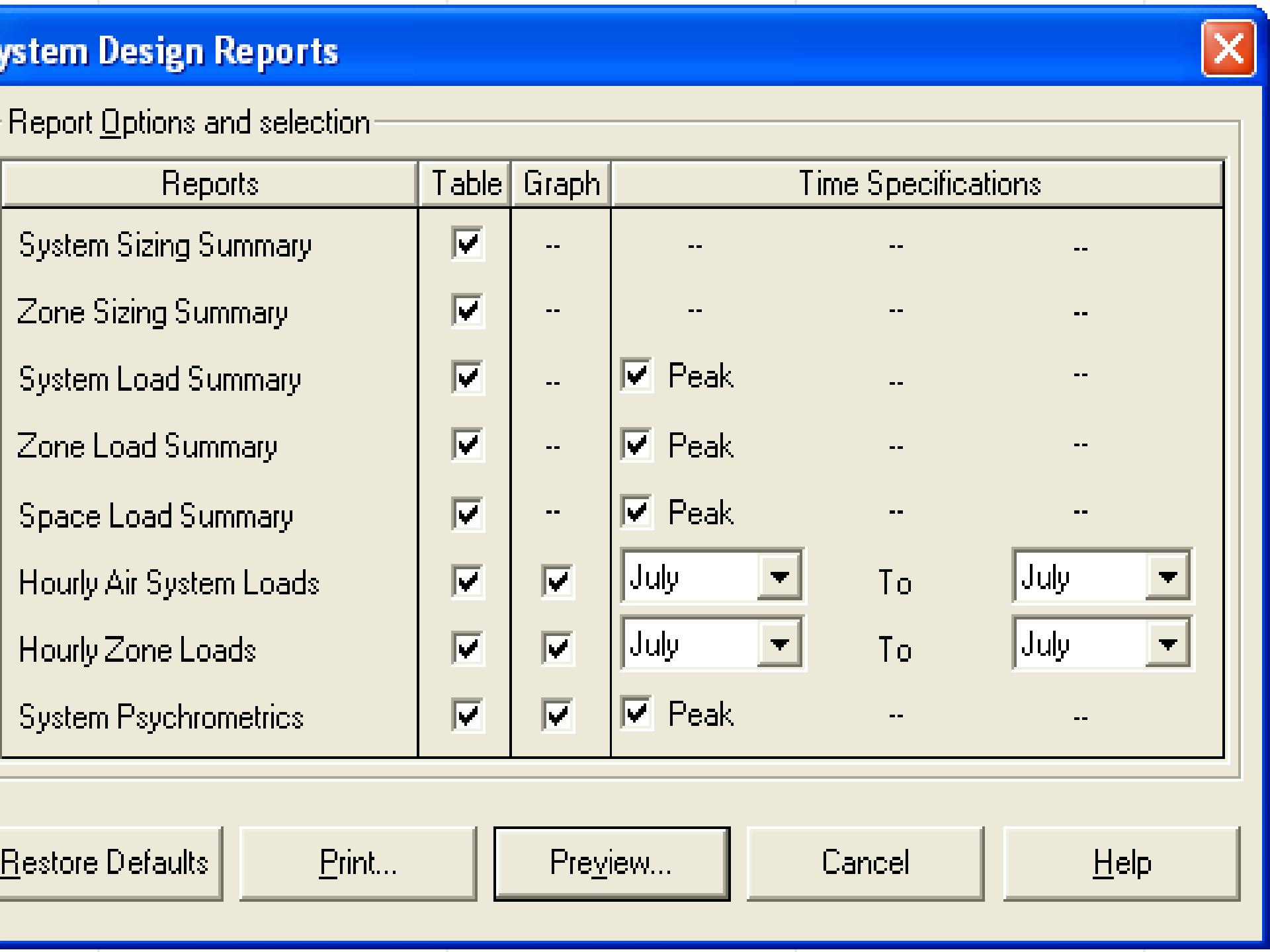
TO PREVIEW OUTPUT REPORT

From Reports menu choose (Print/View Design Data)


HAP41 - [Commertial Bank HVAC system]
Project
Edit
View
Reports
Help
Print Input Data
View Input Data
Print/View Design Data
Print/View Simulation Data
Commertial Bank H
Weather
Spaces
Systems
Plants
Buildings
Project Libraries
Schedules
Walls
Roofs
Windows
Doors
Shades
Chillers
Cooling Towers
Boilers
Electric Rates
Fuel Rates
System Type
Sizing Status
Simulation Status
VAV
Not Sized
Not Simulated



The output Reports window will appear and we choose any output data


ystem Design Reports
Report Options and selection
Reports
Table
Graph
Time Specifications
System Sizing Summary
Zone Sizing Summary
System Load Summary
Peak
Zone Load Summary
Peak
Space Load Summary
Peak
Hourly Air System Loads
July
To
July
Hourly Zone Loads
July
To
July
System Psychrometrics
Peak
Restore Defaults
Print...
Preview...
Cancel
Help