Institución Educativa 26 de Marzo
HVAC Load Analysis

for

Probci

Responsable:
Dir. Ingeniería.

Prepared By:

Jair Cuesta
JAG Ingeniería & Refrigeración S.A.S
Calle 87 No. 42B1 - 203
Barranquilla, Atlántico

viernes, 10 de mayo de 2024

General Project Data Input

General Project Information

Project file name:	Institución Educativa 26 de Marzo - Barrancabermeja - Primer piso - Administración.CH8
Project title:	Institución Educativa 26 de Marzo
Project city, state, ZIP:	Barrancabermeja, Santander
Designed by:	César Nucci
Project date:	miércoles, 10 de abril de 2024
Weather reference city:	BARRANCABERMEJA, COLOMBIA
Client name:	Probci
Company name:	JAG Ingeniería & Refrigeración S.A.S
Company representative:	Jair Cuesta
Company address:	Calle 87 No. 42B1 - 203
Company city:	Barranquilla, Atlántico

Barometric pressure:	29,477	in.Hg.
Altitude:	413	feet
Latitude:	7	Degrees
Mean daily temperature range:	18	Degrees
Starting & ending time for HVAC load calculations:	7am - 6pm	
Number of unique rooms in this project:	7	

Building Default Values

Calculations performed:	Cooling loads only	
Lighting requirements:	0,00	Watts per square foot
Equipment requirements:	1,50	Watts per square foot
People sensible load multiplier:	0	Btuh per person
People latent load multiplier:	0	Btuh per person
Room sensible safety factor:	10	%
Room latent safety factor:	10	%
Room heating safety factor:	10	%
People diversity factor:	100	%
Lighting profile number:	2	
Equipment profile number:	3	
People profile number:	1	
Building default ceiling height:	12,00	feet
Building default wall height:	12,00	feet

Internal Operating Load Profiles (C = 100)

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

General Project Data Input (cont'd)

Building-Level Design Conditions

Design Month	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Diff	In/Outdoor Correction
January	96	85	50%	73	107,36	7
February	96	85	50%	73	107,36	7
March	96	85	50%	73	107,36	7
April	96	85	50%	73	107,36	7
May	96	85	50%	73	107,36	7
June	96	85	50%	73	107,36	7
July	96	85	50%	73	107,36	7
August	96	85	50%	73	107,36	7
September	96	85	50%	73	107,36	7
October	96	85	50%	73	107,36	7
November	96	85	50%	73	107,36	7
December	96	85	50%	73	107,36	7
Winter	0			0		

Master Walls

Wall No.	ASHRAE Group	Wall U-Fac	Wall Color
1	E	0,290	D

Master Partitions

Partition No.	Partition U-Factor	Cool T-D	Heat T-D
1	0,290	0	0
2	0,290	5	0
3	0,290	10	0
4	0,290	15	0

Master Glass

Glass No.	Summer U-Factor	Winter U-Factor	Glass Shd.Coef.	Interior Shading	Interior Shd.Coef
1	1,144	1,100	0,950	2	0,000

Master Shading Devices

Shade No.	Dist Horiz Overh Projects	Dist Beyond Right W.Edge	Dist Beyond Left W.Edge	Dist Overh Above Wind	Dist Right Fin Proj	Dist R-Fin Beyond W.Edge	Ht Of Right Fin	Dist Left Fin Proj	Dist L-Fin Beyond W.Edge	Ht Of Left Fin
1	3,25	0,00	0,00	0,00	3,25	0,00	10,00	3,25	0,00	10,00

Building Summary Loads

Building peaks in June at 5pm.

Bldg Load Descriptions	Area Quan	Sen Loss	%Tot Loss	Lat Gain	Sen Gain	Net Gain	%Net Gain
Roof	0	0	0,00	0	0	0	0,00
Wall	1.168	0	0,00	0	13.327	13.327	11,56
Glass	293	0	0,00	0	17.444	17.444	15,13
Floor Slab	0	0	0,00	0	0	0	0,00
Skin Loads		0	0,00	0	30.771	30.771	26,69
Lighting	1.376	0	0,00	0	5.825	5.825	5,05
Equipment	3.730	0	0,00	0	13.992	13.992	12,13
Pool Latent	0	0	0,00	0	0	0	0,00
People	56	0	0,00	12.320	15.400	27.720	24,04
Partition	3.311	0	0,00	0	6.262	6.262	5,43
Cool. Pret.	0	0	0,00	0	0	0	0,00
Heat. Pret.	0	0	0,00	0	0	0	0,00
Cool. Vent.	0	0	0,00	0	0	0	0,00
Heat. Vent.	0	0	0,00	0	0	0	0,00
Cool. Infil.	280	0	0,00	22.771	7.076	29.847	25,88
Heat. Infil.	0	0	0,00	0	0	0	0,00
Draw-Thru Fan	0	0	0,00	0	893	893	0,77
Blow-Thru Fan	0	0	0,00	0	0	0	0,00
Reserve Cap.	0	0	0,00	0	0	0	0,00
Reheat Cap.	0	0	0,00	0	0	0	0,00
Supply Duct	0	0	0,00	0	0	0	0,00
Return Duct	0	0	0,00	0	0	0	0,00
Misc. Supply	0	0	0,00	0	0	0	0,00
Misc. Return	0	0	0,00	0	0	0	0,00
Building Totals		0	0,00	35.091	80.218	115.309	100,00

Building Summary	Sen Loss	%Tot Loss	Lat Gain	Sen Gain	Net Gain	%Net Gain
Ventilation	0	0,00	0	0	0	0,00
Infiltration	0	0,00	22.771	7.076	29.847	25,88
Pretreated Air	0	0,00	0	0	0	0,00
Room Loads	0	0,00	12.320	72.250	84.570	73,34
Plenum Loads	0	0,00	0	0	0	0,00
Fan/Duct/Misc Loads	0	0,00	0	893	893	0,77
Building Totals	0	0,00	35.091	80.218	115.309	100,00

Check Figures

Total Building Supply Air (based on a 20° TD):	3.782	CFM
Total Building Vent. Air (0,00% of Supply):	0	CFM
Total Conditioned Air Space:	1.386	Sq.ft
Supply Air Per Unit Area:	2,7281	CFM/Sq.ft
Area Per Cooling Capacity:	144,3	Sq.ft/Ton
Cooling Capacity Per Area:	0,0069	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	9,61	Tons

Air Handler #1 - Área Administrativa - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
1	Área Administrativa	771	0	40.050	18.387	None	None
	6pm June	30	0	1.868	0	0	0
		9.252	0,00	2,42	0	0	0
	Room Peak Totals:	771	0	40.050	18.387		
	Total Rooms: 1	30	0	1.868	0	0	0
	Unique Rooms: 1	9.252	0,00	2,42	0	0	0

Air Handler #1 - Área Administrativa - Total Load Summary

Air Handler Description:	Área Administrativa Constant Volume - Sum of Peaks
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,18 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,68

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	5pm in December.
Outdoor Conditions:	Clg: 94° DB, 85° WB, 171,68 grains
Indoor Conditions:	Clg: 73° DB, 50% RH

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,985 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	35.959 Btuh		
Infiltration sensible gain:	3.791 Btuh		
Draw-thru fan sensible gain:	441 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			40.190 Btuh
Cooling Supply Air: 40.491 / (,985 X 1,1 X 20) =		1.868 CFM	
Summer Vent Outside Air (0,0% of supply) =		0 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	0 Btuh	0 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			0 Btuh
Total sensible gain on air handling system:			40.190 Btuh
Room space latent gain:	6.600 Btuh		
Infiltration latent gain:	12.199 Btuh		
Outside air latent gain:	0 Btuh		
Total latent gain on air handling system:			18.799 Btuh
Total system sensible and latent gain:			58.989 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	1.868	CFM
Total Air Handler Vent. Air (0,00% of Supply):	0	CFM
Total Conditioned Air Space:	771	Sq.ft
Supply Air Per Unit Area:	2,4230	CFM/Sq.ft
Area Per Cooling Capacity:	156,8	Sq.ft/Ton
Cooling Capacity Per Area:	0,0064	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	4,92	Tons

Air Handler #2 - Dirección General No. 1 - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
2	Dirección General No. 1 6pm June	96 2 1.153	0 0 0,00	5.574 260 2,71	1.226 0 0	None 0 0	None 0 0
	Room Peak Totals: Total Rooms: 1 Unique Rooms: 1	96 2 1.153	0 0 0,00	5.574 260 2,71	1.226 0 0	0 0	0 0

Air Handler #2 - Dirección General No. 1 - Total Load Summary

Air Handler Description:	Dirección General No. 1 Constant Volume - Sum of Peaks
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,02 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,82

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	6pm in June.
Outdoor Conditions:	Clg: 92° DB, 84° WB, 167,96 grains
Indoor Conditions:	Clg: 73° DB, 50% RH

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,985 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	5.345 Btuh		
Infiltration sensible gain:	229 Btuh		
Draw-thru fan sensible gain:	61 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			5.636 Btuh
Cooling Supply Air: 5.636 / (,985 X 1,1 X 20) =		260 CFM	
Summer Vent Outside Air (0,0% of supply) =		0 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	0 Btuh	0 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			0 Btuh
Total sensible gain on air handling system:			5.636 Btuh
Room space latent gain:	440 Btuh		
Infiltration latent gain:	786 Btuh		
Outside air latent gain:	0 Btuh		
Total latent gain on air handling system:			1.226 Btuh
Total system sensible and latent gain:			6.861 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	260 CFM
Total Air Handler Vent. Air (0,00% of Supply):	0 CFM
Total Conditioned Air Space:	96 Sq.ft
Supply Air Per Unit Area:	2,7065 CFM/Sq.ft
Area Per Cooling Capacity:	168,0 Sq.ft/Ton
Cooling Capacity Per Area:	0,0060 Tons/Sq.ft
Heating Capacity Per Area:	0,00 Btuh/Sq.ft
Total Heating Required With Outside Air:	0 Btuh
Total Cooling Required With Outside Air:	0,57 Tons

Air Handler #3 - Dirección General No. 2 - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
3	Dirección General No. 2 3pm June	124 3 1.487	0 0 0,00	6.965 325 2,62	1.847 0 0	None 0 0	None 0 0
	Room Peak Totals: Total Rooms: 1 Unique Rooms: 1	124 3 1.487	0 0 0,00	6.965 325 2,62	1.847 0 0	0 0	0 0

Air Handler #3 - Dirección General No. 2 - Total Load Summary

Air Handler Description:	Dirección General No. 2 Constant Volume - Sum of Peaks
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,03 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,79

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	2pm in June.
Outdoor Conditions:	Clg: 95° DB, 85° WB, 169,58 grains
Indoor Conditions:	Clg: 73° DB, 50% RH

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0	Btuh		
Infiltration sensible loss:	0	Btuh	0	CFM
Outside Air sensible loss:	0	Btuh	0	CFM
Supply Duct sensible loss:	0	Btuh		
Return Duct sensible loss:	0	Btuh		
Return Plenum sensible loss:	0	Btuh		
Total System sensible loss:				0 Btuh
Heating Supply Air: 0 / (,985 X 1,08 X 0) =			0	CFM
Winter Vent Outside Air (0,0% of supply) =			0	CFM
Room space sensible gain:	6.554	Btuh		
Infiltration sensible gain:	402	Btuh		
Draw-thru fan sensible gain:	77	Btuh		
Supply duct sensible gain:	0	Btuh		
Reserve sensible gain:	0	Btuh		
Total sensible gain on supply side of coil:				7.033 Btuh
Cooling Supply Air: 7.041 / (,985 X 1,1 X 20) =			325	CFM
Summer Vent Outside Air (0,0% of supply) =			0	CFM
Return duct sensible gain:	0	Btuh		
Return plenum sensible gain:	0	Btuh		
Outside air sensible gain:	0	Btuh	0	CFM
Blow-thru fan sensible gain:	0	Btuh		
Total sensible gain on return side of coil:				0 Btuh
Total sensible gain on air handling system:				7.033 Btuh
Room space latent gain:	660	Btuh		
Infiltration latent gain:	1.197	Btuh		
Outside air latent gain:	0	Btuh		
Total latent gain on air handling system:				1.857 Btuh
Total system sensible and latent gain:				8.889 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	325	CFM
Total Air Handler Vent. Air (0,00% of Supply):	0	CFM
Total Conditioned Air Space:	124	Sq.ft
Supply Air Per Unit Area:	2,6221	CFM/Sq.ft
Area Per Cooling Capacity:	167,2	Sq.ft/Ton
Cooling Capacity Per Area:	0,0060	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	0,74	Tons

Air Handler #4 - Juntas - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
4	Juntas	136	0	11.434	6.156	None	None
	3pm June	10	0	533	0	0	0
		1.630	0,00	3,93	0	0	0
	Room Peak Totals:	136	0	11.434	6.156		
	Total Rooms: 1	10	0	533	0	0	0
	Unique Rooms: 1	1.630	0,00	3,93	0	0	0

Air Handler #4 - Juntas - Total Load Summary

Air Handler Description:	Juntas Constant Volume - Sum of Peaks
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,05 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,65

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	3pm in June.
Outdoor Conditions:	Clg: 96° DB, 85° WB, 168,68 grains
Indoor Conditions:	Clg: 73° DB, 50% RH

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,985 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	10.063 Btuh		
Infiltration sensible gain:	1.371 Btuh		
Draw-thru fan sensible gain:	126 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			11.560 Btuh
Cooling Supply Air: 11.560 / (,985 X 1,1 X 20) =		533 CFM	
Summer Vent Outside Air (0,0% of supply) =		0 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	0 Btuh	0 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			0 Btuh
Total sensible gain on air handling system:			11.560 Btuh
Room space latent gain:	2.200 Btuh		
Infiltration latent gain:	3.956 Btuh		
Outside air latent gain:	0 Btuh		
Total latent gain on air handling system:			6.156 Btuh
Total system sensible and latent gain:			17.715 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	533	CFM
Total Air Handler Vent. Air (0,00% of Supply):	0	CFM
Total Conditioned Air Space:	136	Sq.ft
Supply Air Per Unit Area:	3,9270	CFM/Sq.ft
Area Per Cooling Capacity:	92,0	Sq.ft/Ton
Cooling Capacity Per Area:	0,0109	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	1,48	Tons

Air Handler #5 - Dirección General No.3 - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
5	Dirección General No. 3 2pm June	86 2 1.034	0 0 0,00	5.977 279 3,24	1.238 0 0	None 0 0	None 0 0
	Room Peak Totals: Total Rooms: 1 Unique Rooms: 1	86 2 1.034	0 0 0,00	5.977 279 3,24	1.238 0 0	0 0	0 0

Air Handler #5 - Dirección General No.3 - Total Load Summary

Air Handler Description:	Dirección General No.3 Constant Volume - Sum of Peaks
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,03 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,83

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	2pm in June.
Outdoor Conditions:	Clg: 95° DB, 85° WB, 169,58 grains
Indoor Conditions:	Clg: 73° DB, 50% RH

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0	Btuh		
Infiltration sensible loss:	0	Btuh	0	CFM
Outside Air sensible loss:	0	Btuh	0	CFM
Supply Duct sensible loss:	0	Btuh		
Return Duct sensible loss:	0	Btuh		
Return Plenum sensible loss:	0	Btuh		
Total System sensible loss:				0 Btuh
Heating Supply Air: 0 / (,985 X 1,08 X 0) =			0	CFM
Winter Vent Outside Air (0,0% of supply) =			0	CFM
Room space sensible gain:	5.709	Btuh		
Infiltration sensible gain:	268	Btuh		
Draw-thru fan sensible gain:	66	Btuh		
Supply duct sensible gain:	0	Btuh		
Reserve sensible gain:	0	Btuh		
Total sensible gain on supply side of coil:				6.042 Btuh
Cooling Supply Air: 6.042 / (,985 X 1,1 X 20) =			279	CFM
Summer Vent Outside Air (0,0% of supply) =			0	CFM
Return duct sensible gain:	0	Btuh		
Return plenum sensible gain:	0	Btuh		
Outside air sensible gain:	0	Btuh	0	CFM
Blow-thru fan sensible gain:	0	Btuh		
Total sensible gain on return side of coil:				0 Btuh
Total sensible gain on air handling system:				6.042 Btuh
Room space latent gain:	440	Btuh		
Infiltration latent gain:	798	Btuh		
Outside air latent gain:	0	Btuh		
Total latent gain on air handling system:				1.238 Btuh
Total system sensible and latent gain:				7.280 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	279	CFM
Total Air Handler Vent. Air (0,00% of Supply):	0	CFM
Total Conditioned Air Space:	86	Sq.ft
Supply Air Per Unit Area:	3,2366	CFM/Sq.ft
Area Per Cooling Capacity:	142,0	Sq.ft/Ton
Cooling Capacity Per Area:	0,0070	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	0,61	Tons

Air Handler #6 - Juntas Familia - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
6	Juntas Familia	82	0	7.813	3.693	None	None
	3pm June	6	0	364	0	0	0
		983	0,00	4,45	0	0	0
	Room Peak Totals:	82	0	7.813	3.693		
	Total Rooms: 1	6	0	364	0	0	0
	Unique Rooms: 1	983	0,00	4,45	0	0	0

Air Handler #6 - Juntas Familia - Total Load Summary

Air Handler Description:	Juntas Familia Constant Volume - Sum of Peaks
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,03 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,68

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	2pm in June.
Outdoor Conditions:	Clg: 95° DB, 85° WB, 169,58 grains
Indoor Conditions:	Clg: 73° DB, 50% RH

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,985 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	6.992 Btuh		
Infiltration sensible gain:	803 Btuh		
Draw-thru fan sensible gain:	86 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			7.881 Btuh
Cooling Supply Air: 7.899 / (,985 X 1,1 X 20) =		364 CFM	
Summer Vent Outside Air (0,0% of supply) =		0 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	0 Btuh	0 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			0 Btuh
Total sensible gain on air handling system:			7.881 Btuh
Room space latent gain:	1.320 Btuh		
Infiltration latent gain:	2.393 Btuh		
Outside air latent gain:	0 Btuh		
Total latent gain on air handling system:			3.713 Btuh
Total system sensible and latent gain:			11.595 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	364	CFM
Total Air Handler Vent. Air (0,00% of Supply):	0	CFM
Total Conditioned Air Space:	82	Sq.ft
Supply Air Per Unit Area:	4,4498	CFM/Sq.ft
Area Per Cooling Capacity:	84,8	Sq.ft/Ton
Cooling Capacity Per Area:	0,0118	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	0,97	Tons

Air Handler #7 - Psicología - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
7	Psicología	92	0	3.269	1.847	None	None
	3pm December	3	0	152	0	0	0
		1.098	0,00	1,67	0	0	0
	Room Peak Totals:	92	0	3.269	1.847		
	Total Rooms: 1	3	0	152	0	0	0
	Unique Rooms: 1	1.098	0,00	1,67	0	0	0

Air Handler #7 - Psicología - Total Load Summary

Air Handler Description:	Psicología Constant Volume - Sum of Peaks
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,01 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,63

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	1pm in December.
Outdoor Conditions:	Clg: 94° DB, 85° WB, 171,98 grains
Indoor Conditions:	Clg: 73° DB, 50% RH

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,985 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	2.857 Btuh		
Infiltration sensible gain:	376 Btuh		
Draw-thru fan sensible gain:	36 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			3.269 Btuh
Cooling Supply Air: 3.305 / (,985 X 1,1 X 20) =		152 CFM	
Summer Vent Outside Air (0,0% of supply) =		0 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	0 Btuh	0 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			0 Btuh
Total sensible gain on air handling system:			3.269 Btuh
Room space latent gain:	660 Btuh		
Infiltration latent gain:	1.223 Btuh		
Outside air latent gain:	0 Btuh		
Total latent gain on air handling system:			1.883 Btuh
Total system sensible and latent gain:			5.152 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	152 CFM
Total Air Handler Vent. Air (0,00% of Supply):	0 CFM
Total Conditioned Air Space:	92 Sq.ft
Supply Air Per Unit Area:	1,6661 CFM/Sq.ft
Area Per Cooling Capacity:	213,1 Sq.ft/Ton
Cooling Capacity Per Area:	0,0047 Tons/Sq.ft
Heating Capacity Per Area:	0,00 Btuh/Sq.ft
Total Heating Required With Outside Air:	0 Btuh
Total Cooling Required With Outside Air:	0,43 Tons

Room Detailed Loads (At Room Peak Times)

Load Description	Unit Quan	-SC- CFAC	CLTD SHGF	U.Fac -CLF-	Sen. Gain	Lat. Gain	Htg. Mult.	Htg. Loss
Room 1-Área Administrativa peaks (sensible) in June at 6pm, Air Handler 1 (Área Administrativa), Zone 0, 771,0 x 1,0, Construction Type: 10 (Medium)								
Wall-1-291-E-D	159	1	45,3	0,290	2.087		0,000	0
Wall-11-21-E-D	20	1	36,3	0,290	206		0,000	0
Wall-17-201-E-D	516	1	35,6	0,290	5.331		0,000	0
Partition-2-2	15,6		5/0	0,290	23		0,000	0
Partition door-3-2	35,4		5/0	0,290	51		0,000	0
Partition-4-2	46,8		5/0	0,290	68		0,000	0
Partition door-5-2	35,4		5/0	0,290	51		0,000	0
Partition-6-2	46,8		5/0	0,290	68		0,000	0
Partition door-7-2	35,4		5/0	0,290	51		0,000	0
Partition-8-2	99		5/0	0,290	144		0,000	0
Partition-9-2	94,80001		5/0	0,290	137		0,000	0
Partition door-10-2	35,4		5/0	0,290	51		0,000	0
Partition-12-2	168,6		5/0	0,290	244		0,000	0
Partition door-13-2	35,4		5/0	0,290	51		0,000	0
Partition-14-2	129		5/0	0,290	187		0,000	0
Partition-15-3	48,6		10/0	0,290	141		0,000	0
Partition door-16-3	35,4		10/0	0,290	103		0,000	0
Partition-18-4	116,4		15/0	0,290	506		0,000	0
Partition door-19-4	35,4		15/0	0,290	154		0,000	0
Gls-21°-1-90-Tran	1,0	1,000	19	1,144	21		0,000	0
99%S-1-NS-Solar	1,0	0,950	95	0,315	28			
SGls-21°-1-90-Tran	96,5	1,000	19	1,144	2.098		0,000	0
99%S-1-NS-Solar	96,5	0,950	46	0,790	3.332			
Lights-Prof=2	771	1,000			2.894			
Equipment-Prof=3	2.273	1,000			7.757	0		
People-Prof=1	30,0	1,000			7.500	6.000		
Cool. Infil.CFM/person	150				3.124	10.716		
Heat. Infil.AC/hr	0						0,000	0
Sub-total					36.409	16.716		0
Safety factors:					+10%	+10%		+10%
Total w/ safety factors:					40.050	18.387		0

Equipment Cooling Loads

Item Name	Nominal Output Sensible	Quantity Type Sensible	Nominal Output Latent	Quantity Type Latent	Sensible Load (Btuh)	Latent Load (Btuh)
Desktop computer, Manufacturer A (model C) 2.3 GHz processor, 3 GB RAM	97	watts	0	watts	3.641	0
Flat-panel monitor, Manufacturer X (model A) 30 in. screen	90	watts	0	watts	3.378	0
Multifunction (copy, print, scan): Medium, desktop type	135	watts	0	Btuh	115	0
Multifunction (copy, print, scan): Small, desktop type	30	watts	0	Btuh	26	0
Water cooler, 32 qt/h	350	watts	0	Btuh	597	0
Total					7.757	0

Lighting Cooling Loads

Room Detailed Loads (At Room Peak Times) (cont'd)

Item Name	Quantity	Quantity Type	Special Allowance Factor	Space Fraction	Occur-rences	Usage Factor	Load (Btuh)
Office-enclosed	1,1	watts/sq.ft.	1	1	1	1	2.894
Miscellaneous Lighting	-77,10004	watts	1	0	1	1	0
Total							2.894

Room 2-Dirección General No. 1 peaks (sensible) in June at 6pm, Air Handler 2 (Dirección General No. 1), Zone 0, 13,3 x 7,3, Construction Type: 22 (Medium)

Wall-1-291-E-D	159	1	45,3	0,290	2.087		0,000	0
Wall-2-21-E-D	87	1	36,3	0,290	917		0,000	0
Partition-3-2	159		5/0	0,290	231		0,000	0
Partition-4-2	51,6		5/0	0,290	75		0,000	0
Partition door-5-2	35,4		5/0	0,290	51		0,000	0
Lights-Prof=2	85	1,000			361			
Equipment-Prof=3	187	1,000			638	0		
People-Prof=1	2,0	1,000			500	400		
Cool. Infil.CFM/person	10				208	714		
Heat. Infil.AC/hr	0						0,000	0
Sub-total					5.068	1.114		0
Safety factors:					+10%	+10%		+10%
Total w/ safety factors:					5.574	1.226		0

Equipment Cooling Loads

Item Name	Nominal Output Sensible	Quantity Type Sensible	Nominal Output Latent	Quantity Type Latent	Sensible Load (Btuh)	Latent Load (Btuh)
Desktop computer, Manufacturer A (model C) 2.3 GHz processor, 3 GB RAM	97	watts	0	watts	331	0
Flat-panel monitor, Manufacturer X (model A) 30 in. screen	90	watts	0	watts	307	0
Total					638	0

Lighting Cooling Loads

Item Name	Quantity	Quantity Type	Special Allowance Factor	Space Fraction	Occur-rences	Usage Factor	Load (Btuh)
Office-enclosed	1,1	watts/sq.ft.	1	1	1	1	361
Miscellaneous Lighting	-20,66875	watts	1	0	1	1	0
Total							361

Room 3-Dirección General No. 2 peaks (sensible) in June at 3pm, Air Handler 3 (Dirección General No. 2), Zone 0, 13,3 x 9,4, Construction Type: 10 (Medium)

Wall-2-21-E-D	63	1	34,1	0,290	627		0,000	0
Partition-1-2	159		5/0	0,290	231		0,000	0
Partition-3-2	123,6		5/0	0,290	179		0,000	0
Partition door-4-2	35,4		5/0	0,290	51		0,000	0
Partition-5-2	76,8		5/0	0,290	111		0,000	0
Partition door-6-2	35,4		5/0	0,290	51		0,000	0
Gls-21°-1-90-Tran	48,8	1,000	21	1,144	1.171		0,000	0

Room Detailed Loads (At Room Peak Times) (cont'd)

Load Description	Unit Quan	-SC- CFAC	CLTD SHGF	U.Fac -CLF-	Sen. Gain	Lat. Gain	Htg. Mult.	Htg. Loss
0%S-0-NS-Solar	48,8	0,950	95	0,377	1.657			
Lights-Prof=2	124	1,000			465			
Equipment-Prof=3	195	1,000			664	0		
People-Prof=1	3,0	1,000			750	600		
Cool. Infil.CFM/person	15				374	1.079		
Heat. Infil.AC/hr	0						0,000	0
Sub-total					6.332	1.679		0
Safety factors:					+10%	+10%		+10%
Total w/ safety factors:					6.965	1.847		0

Equipment Cooling Loads

Item Name	Nominal Output Sensible	Quantity Type Sensible	Nominal Output Latent	Quantity Type Latent	Sensible Load (Btuh)	Latent Load (Btuh)
Desktop computer, Manufacturer A (model C) 2.3 GHz processor, 3 GB RAM	97	watts	0	watts	331	0
Flat-panel monitor, Manufacturer X (model A) 30 in. screen	90	watts	0	watts	307	0
Multifunction (copy, print, scan): Small, desktop type	30	watts	0	Btuh	26	0
Total					664	0

Lighting Cooling Loads

Item Name	Quantity	Quantity Type	Special Allowance Factor	Space Fraction	Occur-rences	Usage Factor	Load (Btuh)
Office-enclosed	1,1	watts/sq.ft.	1	1	1	1	465
Miscellaneous Lighting	-12,27626	watts	1	0	1	1	0
Total							465

Room 4-Juntas peaks (sensible) in June at 3pm, Air Handler 4 (Juntas), Zone 0, 13,3 x 10,3, Construction Type: 10 (Medium)

Wall-3-21-E-D	74	1	34,1	0,290	734		0,000	0
Partition-1-2	123,6		5/0	0,290	179		0,000	0
Partition door-2-2	35,4		5/0	0,290	51		0,000	0
Partition-4-2	123,6		5/0	0,290	179		0,000	0
Partition door-5-2	35,4		5/0	0,290	51		0,000	0
Partition-6-2	87,6		5/0	0,290	127		0,000	0
Partition door-7-2	35,4		5/0	0,290	51		0,000	0
Gls-21°-1-90-Tran	48,8	1,000	21	1,144	1.171		0,000	0
0%S-0-NS-Solar	48,8	0,950	95	0,377	1.657			
Lights-Prof=2	136	1,000			602			
Equipment-Prof=3	541	1,000			1.844	0		
People-Prof=1	10,0	1,000			2.500	2.000		
Cool. Infil.CFM/person	50				1.246	3.596		
Heat. Infil.AC/hr	0						0,000	0
Sub-total					10.394	5.596		0
Safety factors:					+10%	+10%		+10%
Total w/ safety factors:					11.434	6.156		0

Room Detailed Loads (At Room Peak Times) (cont'd)

Load Description	Unit Quan	-SC- CFAC	CLTD SHGF	U.Fac -CLF-	Sen. Gain	Lat. Gain	Htg. Mult.	Htg. Loss

Equipment Cooling Loads

Item Name	Nominal Output Sensible	Quantity Type Sensible	Nominal Output Latent	Quantity Type Latent	Sensible Load (Btuh)	Latent Load (Btuh)
TV	215	watts	0	watts	367	0
Laptop computer, Manufacturer 1						
2.0 GHz processor, 2 GB RAM, 17 in. screen	36	watts	0	watts	1.228	0
Video Beam	146	watts	0	watts	249	0
Total					1.844	0

Lighting Cooling Loads

Item Name	Quantity	Quantity Type	Special Allowance Factor	Space Fraction	Occur-rences	Usage Factor	Load (Btuh)
Conference/meeting/multipurpose	1,3	watts/sq.ft.	1	1	1	1	602
Miscellaneous Lighting	-40,55624	watts	1	0	1	1	0
Total							602

Room 5-Dirección General No. 3 peaks (sensible) in June at 2pm, Air Handler 5 (Dirección General No.3), Zone 0, 13,3 x 6,5, Construction Type: 10 (Medium)

Wall-3-21-E-D	29	1	33,0	0,290	280		0,000	0
Partition-1-2	123,6		5/0	0,290	179		0,000	0
Partition door-2-2	35,4		5/0	0,290	51		0,000	0
Partition-4-2	123,6		5/0	0,290	179		0,000	0
Partition door-5-2	35,4		5/0	0,290	51		0,000	0
Partition-6-2	78		5/0	0,290	113		0,000	0
Gls-21°-1-90-Tran	48,8	1,000	20	1,144	1.116		0,000	0
0%S-0-NS-Solar	48,8	0,950	95	0,394	1.733			
Lights-Prof=2	86	1,000			323			
Equipment-Prof=3	195	1,000			664	0		
People-Prof=1	2,0	1,000			500	400		
Cool. Infil.CFM/person	10				243	725		
Heat. Infil.AC/hr	0						0,000	0
Sub-total					5.433	1.125		0
Safety factors:					+10%	+10%		+10%
Total w/ safety factors:					5.977	1.238		0

Equipment Cooling Loads

Item Name	Nominal Output Sensible	Quantity Type Sensible	Nominal Output Latent	Quantity Type Latent	Sensible Load (Btuh)	Latent Load (Btuh)
Desktop computer, Manufacturer A (model C)						
2.3 GHz processor, 3 GB RAM	97	watts	0	watts	331	0
Flat-panel monitor, Manufacturer X (model A)						

Room Detailed Loads (At Room Peak Times) (cont'd)

Item Name	Nominal Output Sensible	Quantity Type Sensible	Nominal Output Latent	Quantity Type Latent	Sensible Load (Btuh)	Latent Load (Btuh)
30 in. screen	90	watts	0	watts	307	0
Multifunction (copy, print, scan): Small, desktop type	30	watts	0	Btuh	26	0
Total					664	0

Lighting Cooling Loads

Item Name	Quantity	Quantity Type	Special Allowance Factor	Space Fraction	Occur-rences	Usage Factor	Load (Btuh)
Office-enclosed	1,1	watts/sq.ft.	1	1	1	1	323
Miscellaneous Lighting	-8,737503	watts	1	0	1	1	0
Total							323

Room 6-Juntas Familia peaks (sensible) in June at 3pm, Air Handler 6 (Juntas Familia), Zone 0, 9,0 x 9,2, Construction Type: 10 (Medium)

Wall-2-21-E-D	61	1	34,1	0,290	603		0,000	0
Partition-1-2	107,4		5/0	0,290	156		0,000	0
Partition-3-3	107,4		10/0	0,290	311		0,000	0
Partition-4-2	74,39999		5/0	0,290	108		0,000	0
Partition door-5-2	35,4		5/0	0,290	51		0,000	0
Gls-21°-1-90-Tran	48,8	1,000	21	1,144	1.171		0,000	0
0%S-0-NS-Solar	48,8	0,950	95	0,377	1.657			
Lights-Prof=2	82	1,000			307			
Equipment-Prof=3	144	1,000			490	0		
People-Prof=1	6,0	1,000			1.500	1.200		
Cool. Infil.CFM/person	30				748	2.158		
Heat. Infil.AC/hr	0						0,000	0
Sub-total					7.103	3.358		0
Safety factors:					+10%	+10%		+10%
Total w/ safety factors:					7.813	3.693		0

Equipment Cooling Loads

Item Name	Nominal Output Sensible	Quantity Type Sensible	Nominal Output Latent	Quantity Type Latent	Sensible Load (Btuh)	Latent Load (Btuh)
Laptop computer, Manufacturer 1						
2.0 GHz processor, 2 GB RAM, 17 in. screen	36	watts	0	watts	123	0
TV	215	watts	0	watts	367	0
Total					490	0

Lighting Cooling Loads

Item Name	Quantity	Quantity Type	Special Allowance Factor	Space Fraction	Occur-rences	Usage Factor	Load (Btuh)
Office-enclosed	1,1	watts/sq.ft.	1	1	1	1	307
Miscellaneous Lighting	-8,081749	watts	1	0	1	1	0
Total							307

Room Detailed Loads (At Room Peak Times) (cont'd)

Item Name	Quantity	Quantity Type	Special Allowance Factor	Space Fraction	Occur-rences	Usage Factor	Load (Btuh)
Room 7-Psicología peaks (sensible) in December at 3pm, Air Handler 7 (Psicología), Zone 0, 10,0 x 9,2, Construction Type: 22 (Medium)							
Partition-1-2	84,6		5/0	0,290	123	0,000	0
Partition door-2-2	35,4		5/0	0,290	51	0,000	0
Partition-3-2	74,39999		5/0	0,290	108	0,000	0
Partition door-4-2	35,4		5/0	0,290	51	0,000	0
Partition-5-3	84,6		10/0	0,290	245	0,000	0
Partition door-6-3	35,4		10/0	0,290	103	0,000	0
Partition-7-2	109,8		5/0	0,290	159	0,000	0
Lights-Prof=2	92	1,000			343		
Equipment-Prof=3	195	1,000			664	0	
People-Prof=1	3,0	1,000			750	600	
Cool. Infil.CFM/person	15				374	1.079	
Heat. Infil.AC/hr	0					0,000	0
Sub-total					2.971	1.679	0
Safety factors:					+10%	+10%	+10%
Total w/ safety factors:					3.269	1.847	0

Equipment Cooling Loads

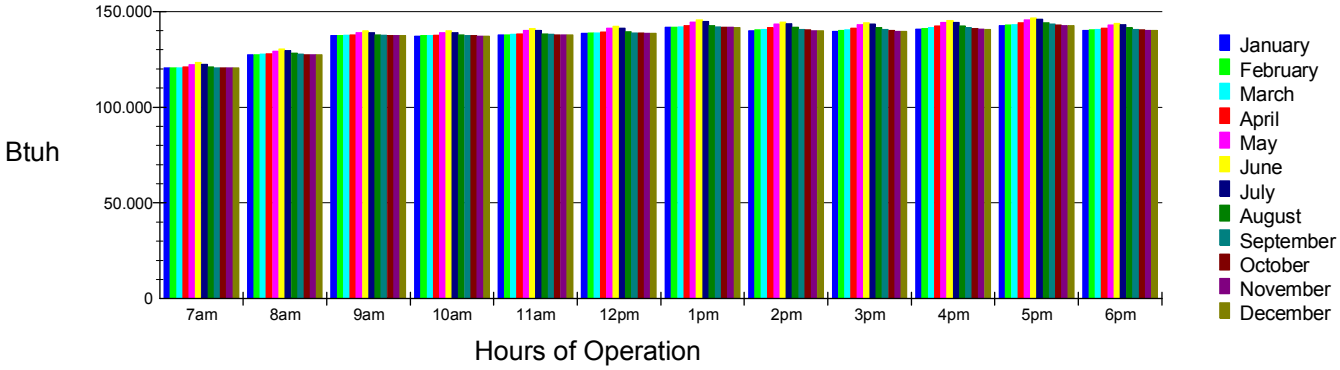
Item Name	Nominal Output Sensible	Quantity Type Sensible	Nominal Output Latent	Quantity Type Latent	Sensible Load (Btuh)	Latent Load (Btuh)
Desktop computer, Manufacturer A (model C) 2.3 GHz processor, 3 GB RAM	97	watts	0	watts	331	0
Flat-panel monitor, Manufacturer X (model A) 30 in. screen	90	watts	0	watts	307	0
Multifunction (copy, print, scan): Small, desktop type	30	watts	0	Btuh	26	0
Total					664	0

Lighting Cooling Loads

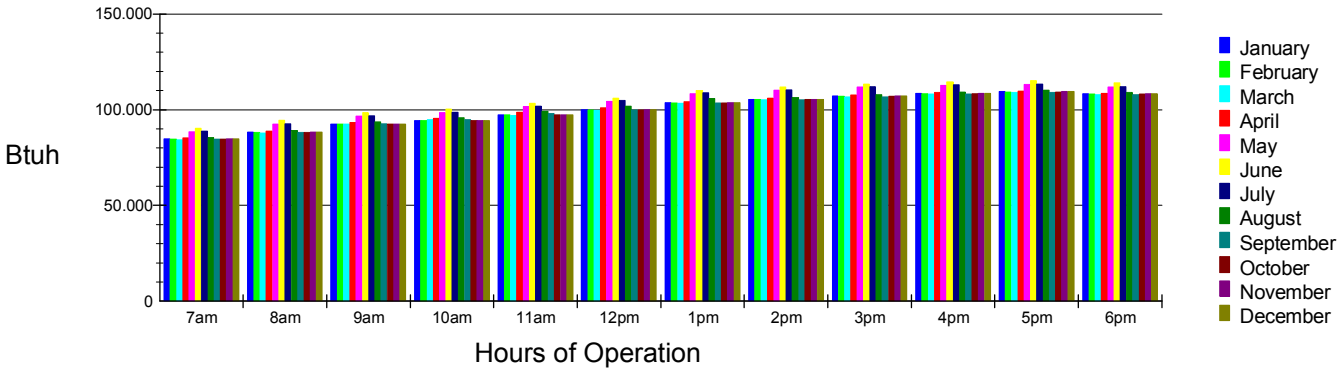
Item Name	Quantity	Quantity Type	Special Allowance Factor	Space Fraction	Occur-rences	Usage Factor	Load (Btuh)
Office-enclosed	1,1	watts/sq.ft.	1	1	1	1	343
Miscellaneous Lighting	-8,650002	watts	1	0	1	1	0
Total							343

Building Profile Graphs

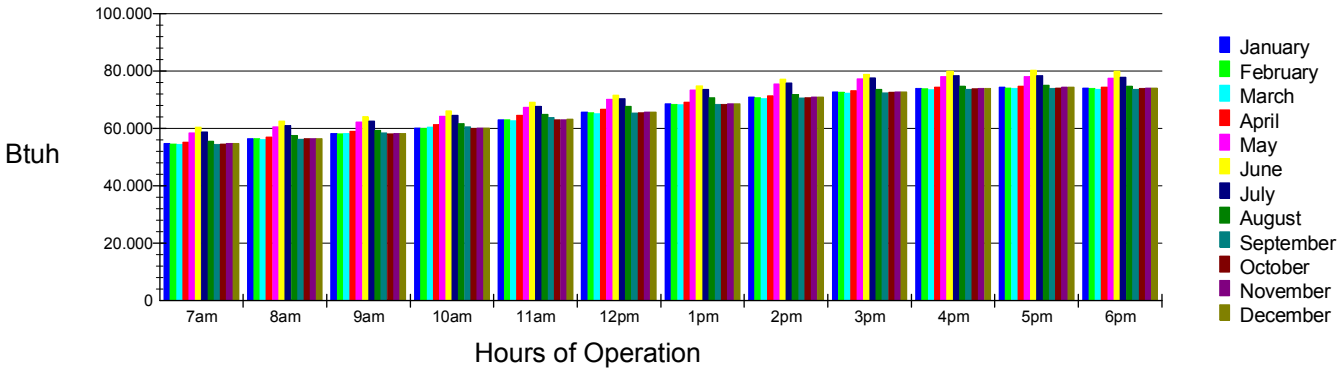
Building Adjusted Load



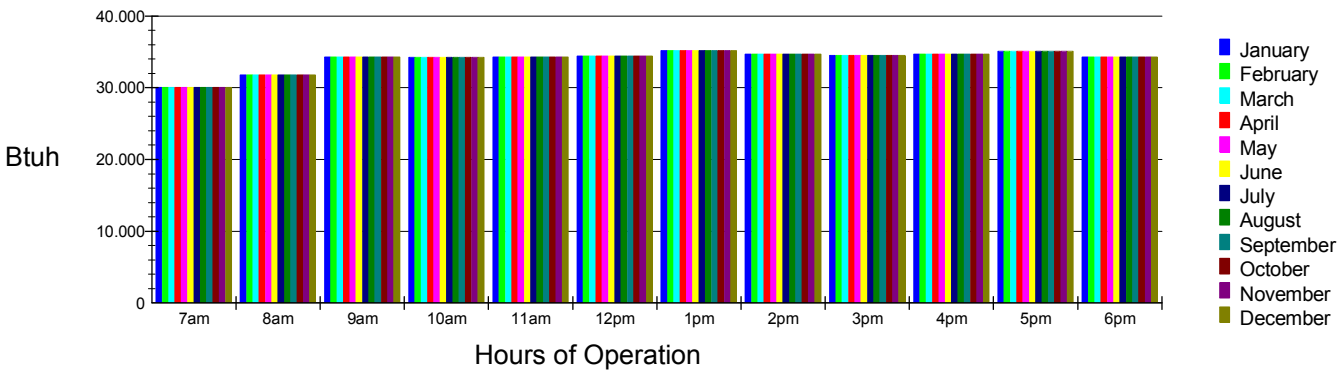
Building Net Load



Building Sensible Load



Building Latent Load



Air System #1 (Área Administrativa) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		46,128		53,000	
Draw-Thru Fan			441	0,218	20
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			0	0,000	0
Room Loads	18.799	15,021	40.050	19,783	1.848
Sensible Reserve			0	0,000	0
Room Condition	18.799	61,149	40.491	73,000	1.868
Return Air Duct			0	0,000	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 0 CFM	0	0,000	0	0,000	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	18.799	61,149	40.491	73,000	1.868

General Psychrometric Equations Used In Analysis:

PR = (Barometric pressure of site / Standard ASHRAE pressure of 29,921)
TSH = PR x 1,10 x CFM x (DB entering - DB leaving)
TLH = PR x 0,68 x CFM x (Grains entering - Grains leaving)
GTH = PR x 4,50 x CFM x (Enthalpy entering - Enthalpy leaving)

TSH	=	0,985	x	1,10	x	1.868	x (	73,0	-	53,0	) =	40.490 Btuh
TLH	=	0,985	x	0,68	x	1.868	x (	61,1	-	46,1	) =	18.799 Btuh
SUM	=											59.288 Btuh
GTH	=	0,985	x	4,50	x	1.868	x (	27,1	-	19,9	) =	59.674 Btuh
Total System Load											=	58.989 Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM =	59.674	/ (	10,00	x	500	) =	11,9 GPM
Heating GPM =	0	/ (	0,00	x	500	) =	0,0 GPM
Steam Req. =	0	/	970			=	0,0 lb./hr

Entering Cooling Coil Conditions

Dry bulb temperature:	73,00	
Wet bulb temperature:	60,80	
Relative humidity:	49,87	
Enthalpy:	27,07	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	53,00	
Wet bulb temperature:	49,08	
Relative humidity:	76,29	
Enthalpy:	19,87	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	,00

Air System #2 (Dirección General No. 1) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		54,196		53,000	
Draw-Thru Fan			61	0,218	3
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			0	0,000	0
Room Loads	1.226	7,038	5.574	19,785	257
Sensible Reserve			0	0,000	0
Room Condition	1.226	61,234	5.636	73,000	260
Return Air Duct			0	0,000	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 0 CFM	0	0,000	0	0,000	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	1.226	61,234	5.636	73,000	260

General Psychrometric Equations Used In Analysis:

PR = (Barometric pressure of site / Standard ASHRAE pressure of 29,921)
TSH = PR x 1,10 x CFM x (DB entering - DB leaving)
TLH = PR x 0,68 x CFM x (Grains entering - Grains leaving)
GTH = PR x 4,50 x CFM x (Enthalpy entering - Enthalpy leaving)

TSH	=	0,985	x	1,10	x	260	x (73,0	-	53,0	) =	5.635	Btuh
TLH	=	0,985	x	0,68	x	260	x (61,2	-	54,2	) =	1.226	Btuh
SUM	=										6.861	Btuh
GTH	=	0,985	x	4,50	x	260	x (27,1	-	21,1	) =	6.879	Btuh
Total System Load										=	6.861	Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM =	6.879	/ (	10,00	x	500	) =	1,4 GPM
Heating GPM =	0	/ (	0,00	x	500	) =	0,0 GPM
Steam Req. =	0	/	970			=	0,0 lb./hr

Entering Cooling Coil Conditions

Dry bulb temperature:	73,00	
Wet bulb temperature:	60,82	
Relative humidity:	49,94	
Enthalpy:	27,09	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	53,00	
Wet bulb temperature:	51,29	
Relative humidity:	89,45	
Enthalpy:	21,12	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	,00

Air System #3 (Dirección General No. 2) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		52,688		53,000	
Draw-Thru Fan			77	0,218	3
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			0	0,000	0
Room Loads	1.857	8,532	6.965	19,785	321
Sensible Reserve			0	0,000	0
Room Condition	1.857	61,220	7.041	73,000	325
Return Air Duct			0	0,000	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 0 CFM	0	0,000	0	0,000	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	1.857	61,220	7.041	73,000	325

General Psychrometric Equations Used In Analysis:

PR = (Barometric pressure of site / Standard ASHRAE pressure of 29,921)
TSH = PR x 1,10 x CFM x (DB entering - DB leaving)
TLH = PR x 0,68 x CFM x (Grains entering - Grains leaving)
GTH = PR x 4,50 x CFM x (Enthalpy entering - Enthalpy leaving)

TSH	=	0,985	x	1,10	x	325	x (73,0	-	53,0	) =	7.041	Btuh
TLH	=	0,985	x	0,68	x	325	x (61,2	-	52,7	) =	1.857	Btuh
SUM	=										8.897	Btuh
GTH	=	0,985	x	4,50	x	325	x (27,1	-	20,9	) =	8.928	Btuh
Total System Load										=	8.889	Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM =	8.928	/ (	10,00	x	500	)	=	1,8 GPM
Heating GPM =	0	/ (	0,00	x	500	)	=	0,0 GPM
Steam Req. =	0	/	970				=	0,0 lb./hr

Entering Cooling Coil Conditions

Dry bulb temperature:	73,00	
Wet bulb temperature:	60,82	
Relative humidity:	49,93	
Enthalpy:	27,08	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	53,00	
Wet bulb temperature:	50,89	
Relative humidity:	87,00	
Enthalpy:	20,88	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	,00

Air System #4 (Juntas) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		43,901		53,000	
Draw-Thru Fan			126	0,218	6
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			0	0,000	0
Room Loads	6.156	17,229	11.434	19,783	528
Sensible Reserve			0	0,000	0
Room Condition	6.156	61,130	11.560	73,000	533
Return Air Duct			0	0,000	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 0 CFM	0	0,000	0	0,000	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	6.156	61,130	11.560	73,000	533

General Psychrometric Equations Used In Analysis:

PR = (Barometric pressure of site / Standard ASHRAE pressure of 29,921)
TSH = PR x 1,10 x CFM x (DB entering - DB leaving)
TLH = PR x 0,68 x CFM x (Grains entering - Grains leaving)
GTH = PR x 4,50 x CFM x (Enthalpy entering - Enthalpy leaving)

TSH	=	0,985	x	1,10	x	533	x (	73,0	-	53,0	) =	11.559 Btuh
TLH	=	0,985	x	0,68	x	533	x (	61,1	-	43,9	) =	6.156 Btuh
SUM	=											17.715 Btuh
GTH	=	0,985	x	4,50	x	533	x (	27,1	-	19,5	) =	17.845 Btuh
Total System Load											=	17.715 Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM =	17.845	/ (	10,00	x	500	) =	3,6 GPM
Heating GPM =	0	/ (	0,00	x	500	) =	0,0 GPM
Steam Req. =	0	/	970			=	0,0 lb./hr

Entering Cooling Coil Conditions

Dry bulb temperature:	73,00	
Wet bulb temperature:	60,80	
Relative humidity:	49,85	
Enthalpy:	27,07	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	53,00	
Wet bulb temperature:	48,45	
Relative humidity:	72,61	
Enthalpy:	19,52	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	,00

Air System #5 (Dirección General No.3) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		54,613		53,000	
Draw-Thru Fan			66	0,218	3
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			0	0,000	0
Room Loads	1.238	6,628	5.977	19,785	276
Sensible Reserve			0	0,000	0
Room Condition	1.238	61,242	6.042	73,000	279
Return Air Duct			0	0,000	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 0 CFM	0	0,000	0	0,000	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	1.238	61,242	6.042	73,000	279

General Psychrometric Equations Used In Analysis:

PR = (Barometric pressure of site / Standard ASHRAE pressure of 29,921)
TSH = PR x 1,10 x CFM x (DB entering - DB leaving)
TLH = PR x 0,68 x CFM x (Grains entering - Grains leaving)
GTH = PR x 4,50 x CFM x (Enthalpy entering - Enthalpy leaving)

TSH	=	0,985	x	1,10	x	279	x (	73,0	-	53,0	) =	6.042 Btuh
TLH	=	0,985	x	0,68	x	279	x (	61,2	-	54,6	) =	1.238 Btuh
SUM	=											7.279 Btuh
GTH	=	0,985	x	4,50	x	279	x (	27,1	-	21,2	) =	7.297 Btuh
Total System Load											=	7.280 Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM =	7.297	/ (	10,00	x	500	)	= 1,5 GPM
Heating GPM =	0	/ (	0,00	x	500	)	= 0,0 GPM
Steam Req. =	0	/	970				= 0,0 lb./hr

Entering Cooling Coil Conditions

Dry bulb temperature:	73,00
Wet bulb temperature:	60,82
Relative humidity:	49,94
Enthalpy:	27,09 Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	53,00
Wet bulb temperature:	51,41
Relative humidity:	90,15
Enthalpy:	21,18 Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	,00

Air System #6 (Juntas Familia) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		45,938		53,000	
Draw-Thru Fan			86	0,218	4
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			0	0,000	0
Room Loads	3.713	15,211	7.813	19,785	360
Sensible Reserve			0	0,000	0
Room Condition	3.713	61,149	7.899	73,000	364
Return Air Duct			0	0,000	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 0 CFM	0	0,000	0	0,000	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	3.713	61,149	7.899	73,000	364

General Psychrometric Equations Used In Analysis:

PR = (Barometric pressure of site / Standard ASHRAE pressure of 29,921)
TSH = PR x 1,10 x CFM x (DB entering - DB leaving)
TLH = PR x 0,68 x CFM x (Grains entering - Grains leaving)
GTH = PR x 4,50 x CFM x (Enthalpy entering - Enthalpy leaving)

TSH	=	0,985	x	1,10	x	364	x (	73,0	-	53,0	) =	7.898 Btuh
TLH	=	0,985	x	0,68	x	364	x (	61,1	-	45,9	) =	3.713 Btuh
SUM	=											11.611 Btuh
GTH	=	0,985	x	4,50	x	364	x (	27,1	-	19,8	) =	11.688 Btuh
Total System Load											=	11.595 Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM =	11.688	/ (	10,00	x	500	) =	2,3 GPM
Heating GPM =	0	/ (	0,00	x	500	) =	0,0 GPM
Steam Req. =	0	/	970			=	0,0 lb./hr

Entering Cooling Coil Conditions

Dry bulb temperature:	73,00	
Wet bulb temperature:	60,80	
Relative humidity:	49,87	
Enthalpy:	27,07	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	53,00	
Wet bulb temperature:	49,03	
Relative humidity:	75,99	
Enthalpy:	19,84	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	,00

Air System #7 (Psicología) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		42,675		53,000	
Draw-Thru Fan			36	0,218	2
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			0	0,000	0
Room Loads	1.883	18,440	3.269	19,785	151
Sensible Reserve			0	0,000	0
Room Condition	1.883	61,114	3.305	73,000	152
Return Air Duct			0	0,000	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 0 CFM	0	0,000	0	0,000	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	1.883	61,114	3.305	73,000	152

General Psychrometric Equations Used In Analysis:

PR = (Barometric pressure of site / Standard ASHRAE pressure of 29,921)
TSH = PR x 1,10 x CFM x (DB entering - DB leaving)
TLH = PR x 0,68 x CFM x (Grains entering - Grains leaving)
GTH = PR x 4,50 x CFM x (Enthalpy entering - Enthalpy leaving)

TSH	=	0,985	x	1,10	x	152	x (	73,0	-	53,0	) =	3.304 Btuh
TLH	=	0,985	x	0,68	x	152	x (	61,1	-	42,7	) =	1.883 Btuh
SUM	=											5.187 Btuh
GTH	=	0,985	x	4,50	x	152	x (	27,1	-	19,3	) =	5.228 Btuh
Total System Load											=	5.152 Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM =	5.228	/ (	10,00	x	500	)	= 1,0 GPM
Heating GPM =	0	/ (	0,00	x	500	)	= 0,0 GPM
Steam Req. =	0	/	970				= 0,0 lb./hr

Entering Cooling Coil Conditions

Dry bulb temperature:	73,00	
Wet bulb temperature:	60,80	
Relative humidity:	49,85	
Enthalpy:	27,07	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	,00

Leaving Cooling Coil Conditions

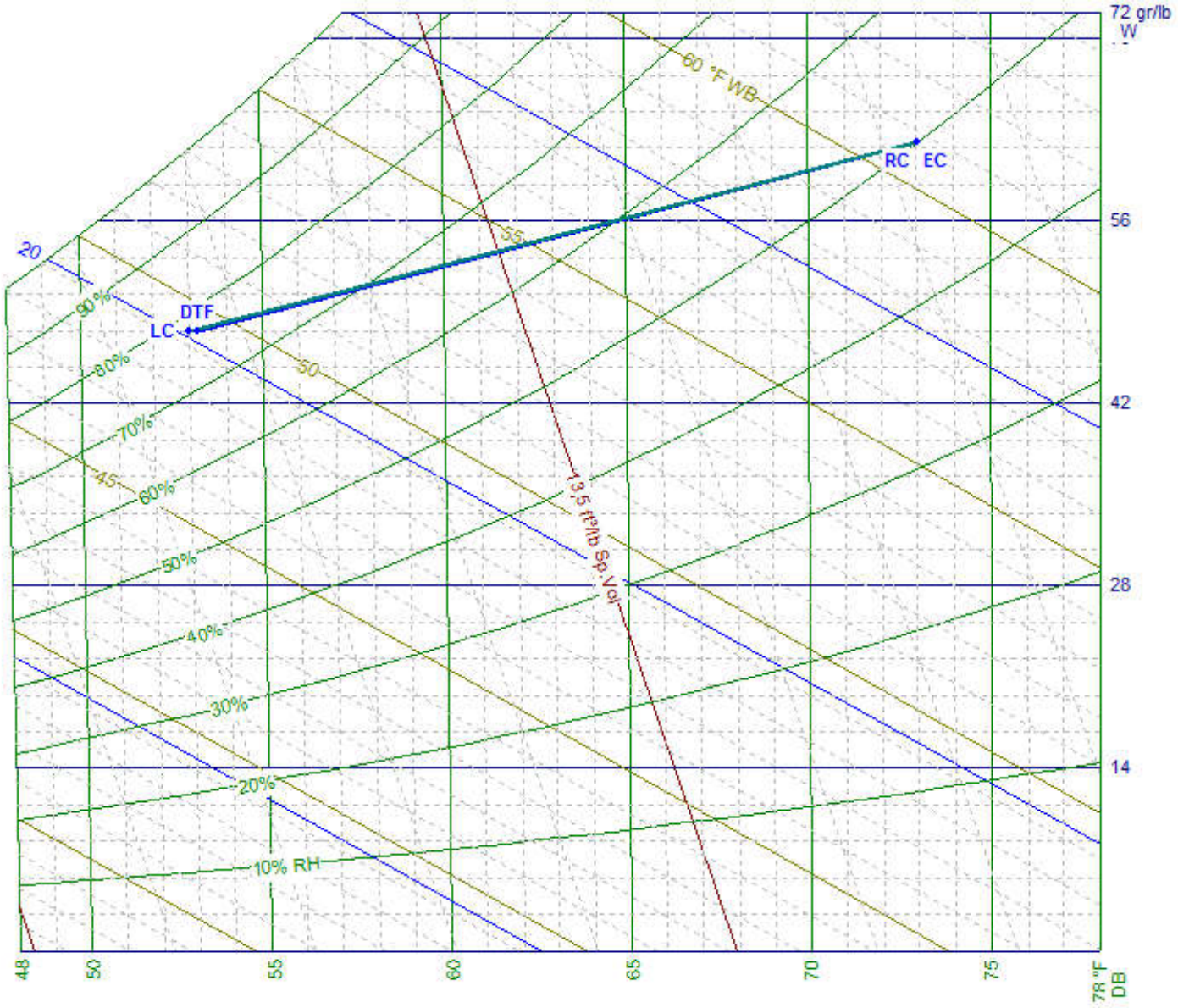
Dry bulb temperature:	53,00	
Wet bulb temperature:	48,11	
Relative humidity:	70,65	
Enthalpy:	19,33	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	,00

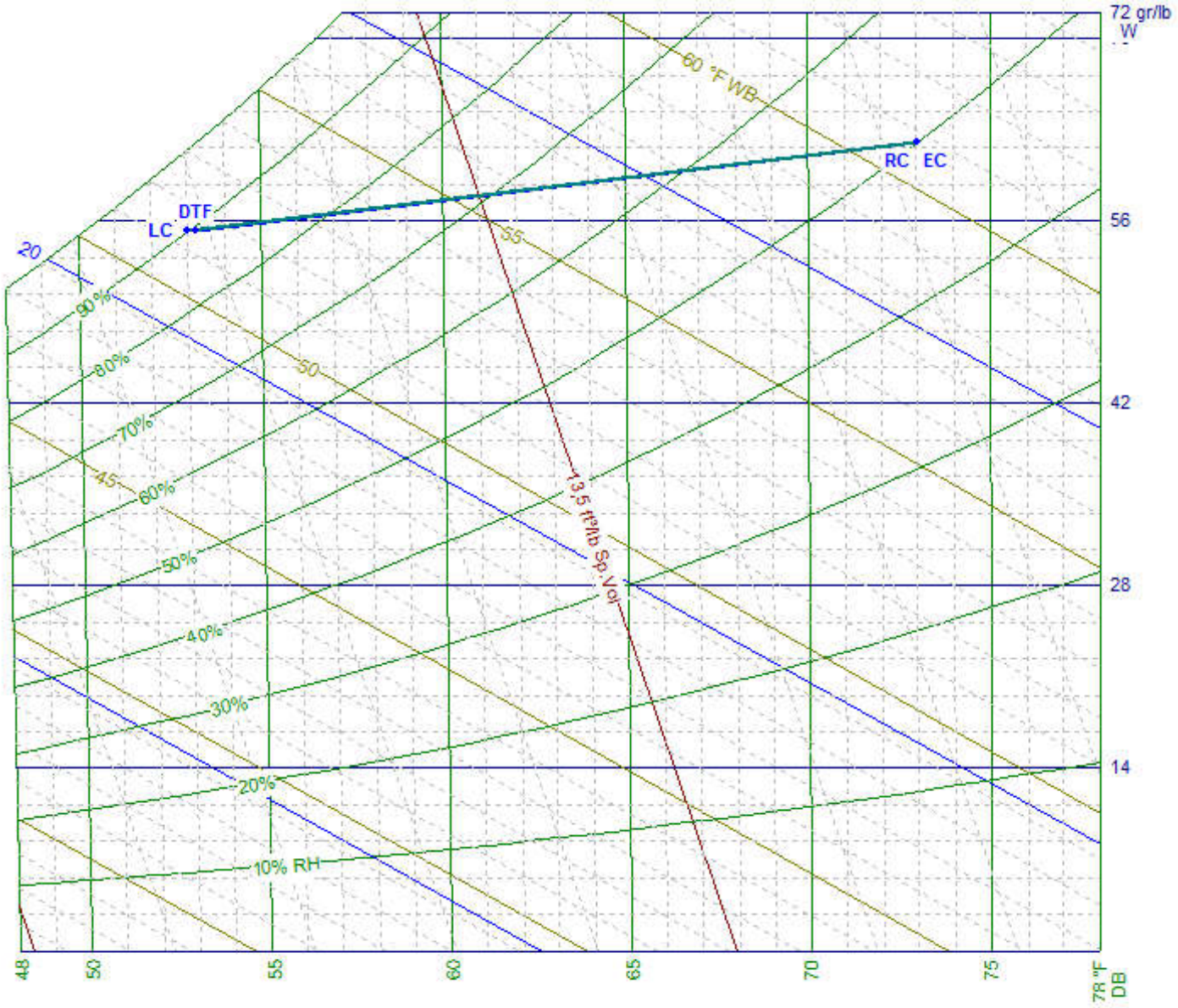
Air System #1 (Área Administrativa) Psychrometric Chart

RC	Room Condition	OC	Outdoor Condition
LC	Leaving Coil Condition	EC	Entering Coil Condition
SD	Supply Duct Temperature Rise	RD	Return Duct Temperature Rise
DTF	Draw Through Fan Sensible Gain	BTF	Blow Through Fan Sensible Gain
RE	Reserve or Reheat Sensible Gain	PL	Return Air Plenum Sensible Gain
SM	Supply Side Miscellaneous Sensible Gain	MR	Return Side Miscellaneous Gain
PRE	Pretreated Air Condition	HRV	Heat Recovery Ventilator Condition
MIX	Mixed Air Condition	RML	Return Miscellaneous Latent Gain



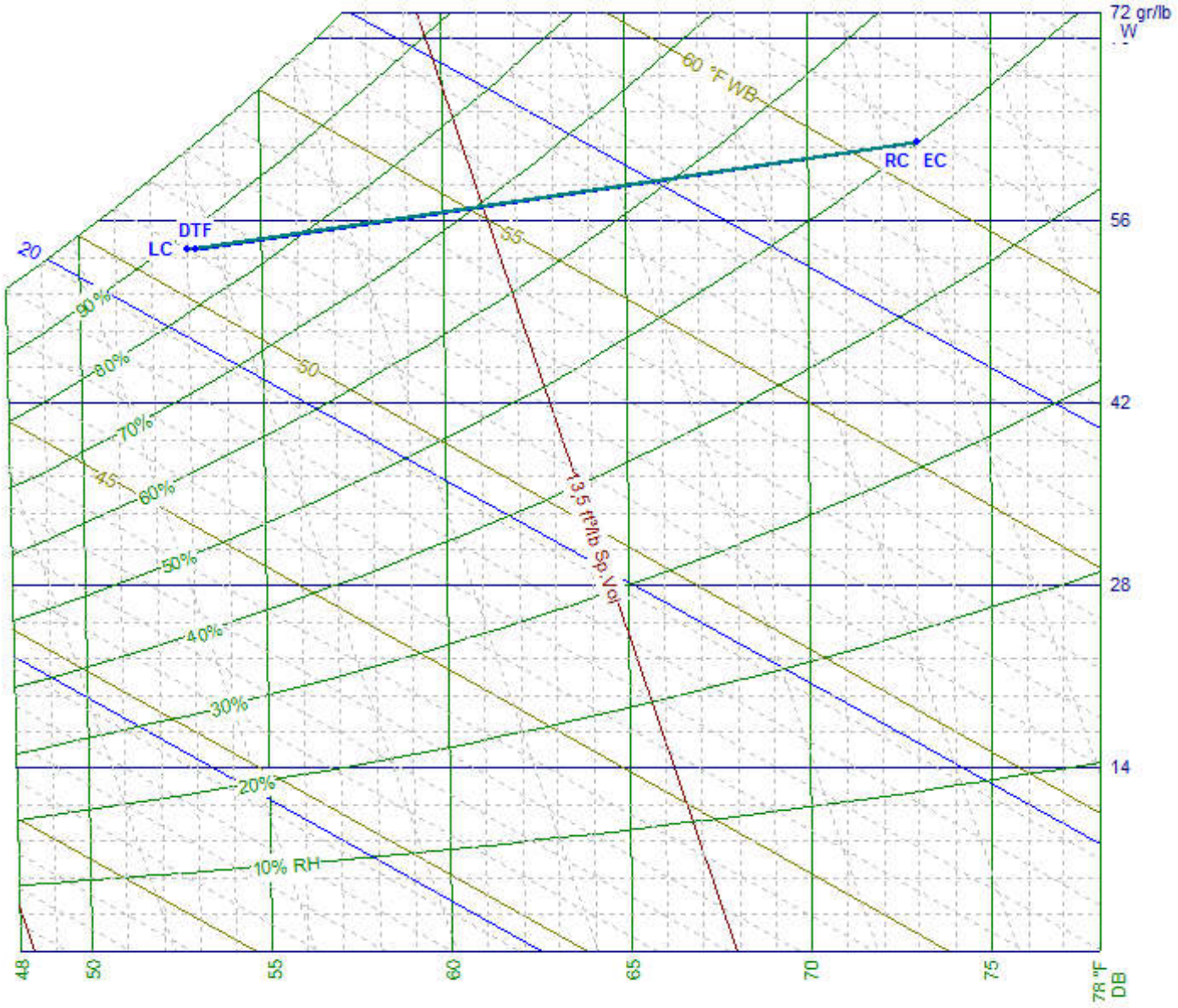
Air System #2 (Dirección General No. 1) Psychrometric Chart

RC	Room Condition	OC	Outdoor Condition
LC	Leaving Coil Condition	EC	Entering Coil Condition
SD	Supply Duct Temperature Rise	RD	Return Duct Temperature Rise
DTF	Draw Through Fan Sensible Gain	BTF	Blow Through Fan Sensible Gain
RE	Reserve or Reheat Sensible Gain	PL	Return Air Plenum Sensible Gain
SM	Supply Side Miscellaneous Sensible Gain	MR	Return Side Miscellaneous Gain
PRE	Pretreated Air Condition	HRV	Heat Recovery Ventilator Condition
MIX	Mixed Air Condition	RML	Return Miscellaneous Latent Gain



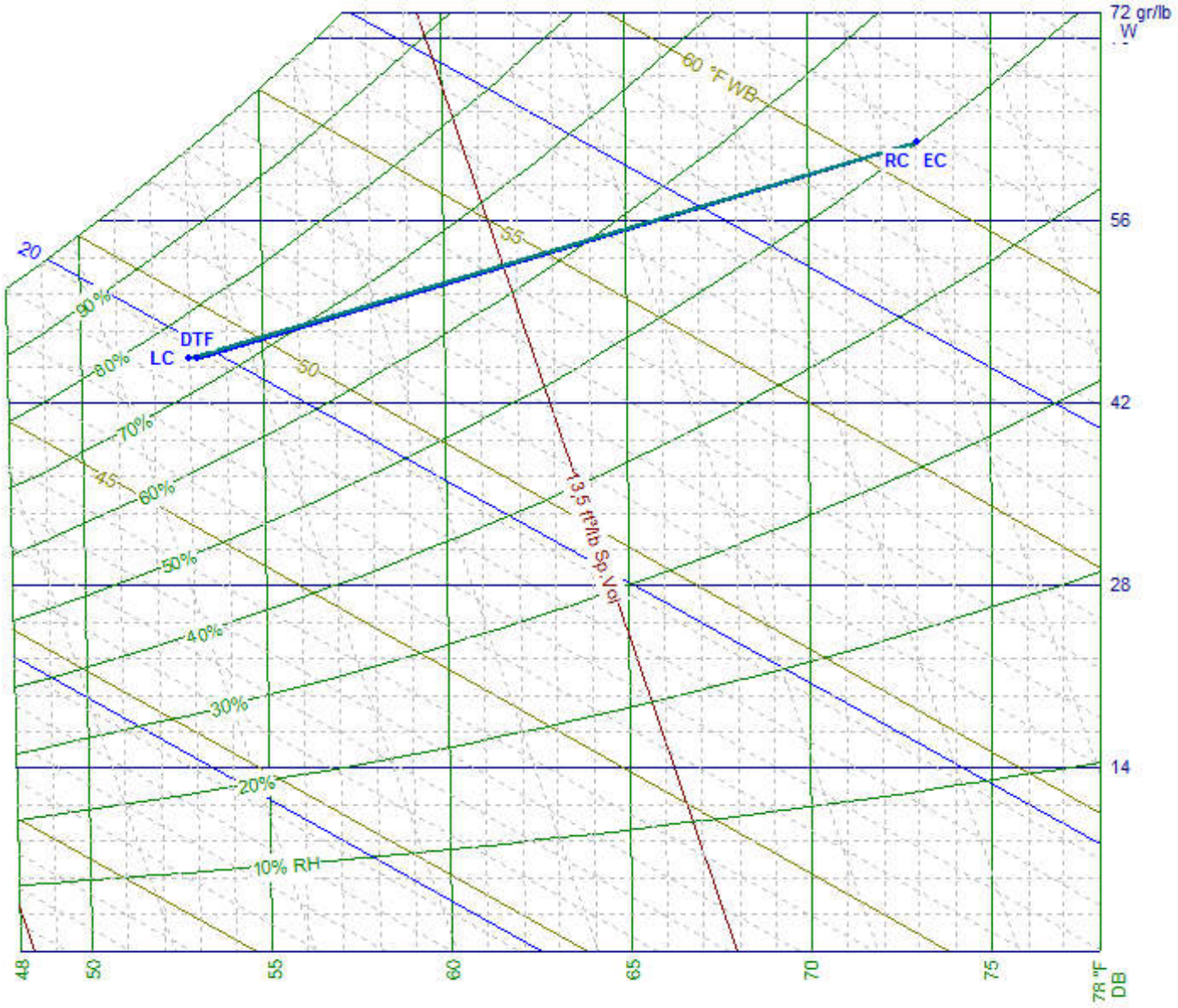
Air System #3 (Dirección General No. 2) Psychrometric Chart

RC	Room Condition	OC	Outdoor Condition
LC	Leaving Coil Condition	EC	Entering Coil Condition
SD	Supply Duct Temperature Rise	RD	Return Duct Temperature Rise
DTF	Draw Through Fan Sensible Gain	BTF	Blow Through Fan Sensible Gain
RE	Reserve or Reheat Sensible Gain	PL	Return Air Plenum Sensible Gain
SM	Supply Side Miscellaneous Sensible Gain	MR	Return Side Miscellaneous Gain
PRE	Pretreated Air Condition	HRV	Heat Recovery Ventilator Condition
MIX	Mixed Air Condition	RML	Return Miscellaneous Latent Gain



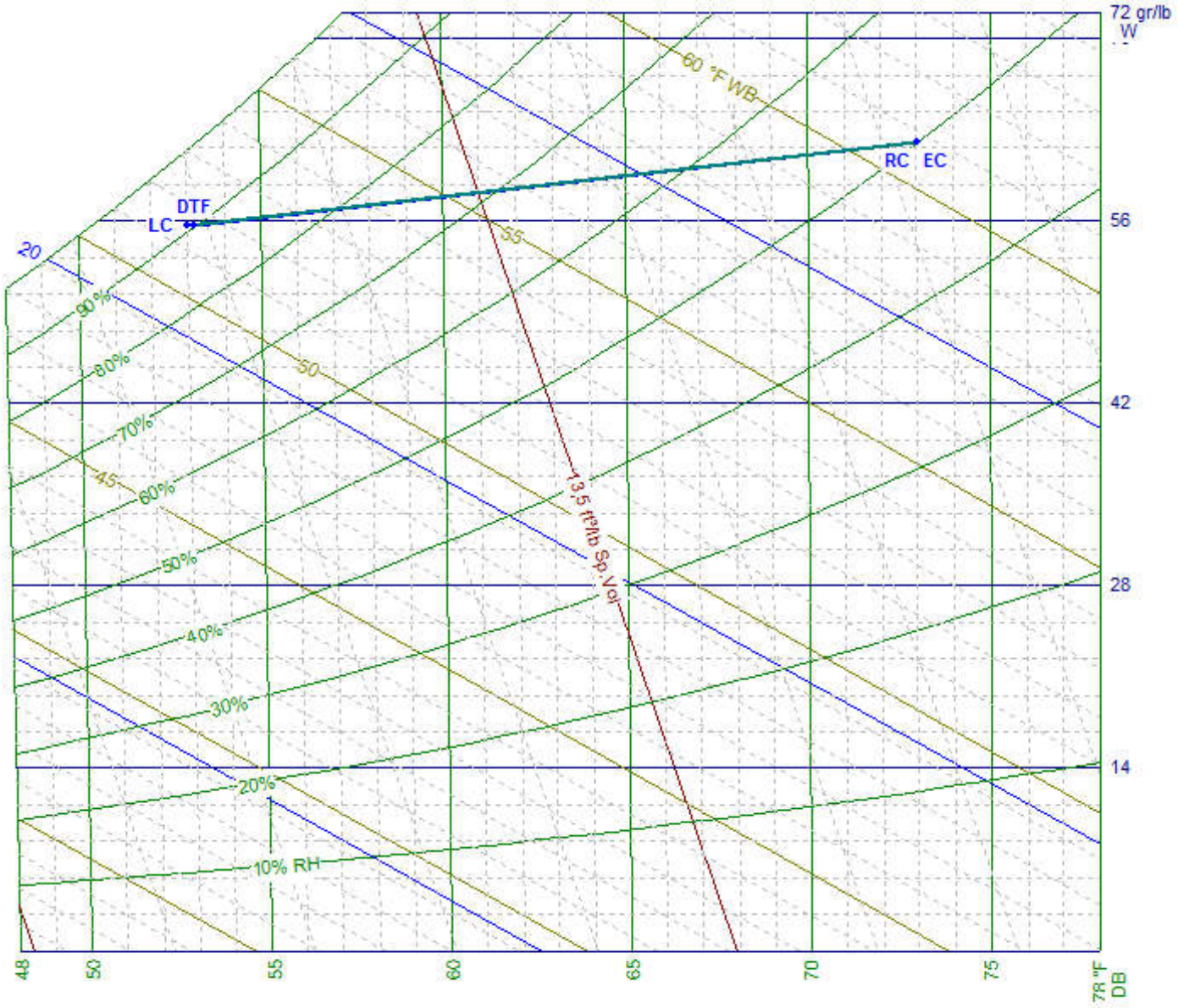
Air System #4 (Juntas) Psychrometric Chart

RC	Room Condition	OC	Outdoor Condition
LC	Leaving Coil Condition	EC	Entering Coil Condition
SD	Supply Duct Temperature Rise	RD	Return Duct Temperature Rise
DTF	Draw Through Fan Sensible Gain	BTF	Blow Through Fan Sensible Gain
RE	Reserve or Reheat Sensible Gain	PL	Return Air Plenum Sensible Gain
SM	Supply Side Miscellaneous Sensible Gain	MR	Return Side Miscellaneous Gain
PRE	Pretreated Air Condition	HRV	Heat Recovery Ventilator Condition
MIX	Mixed Air Condition	RML	Return Miscellaneous Latent Gain



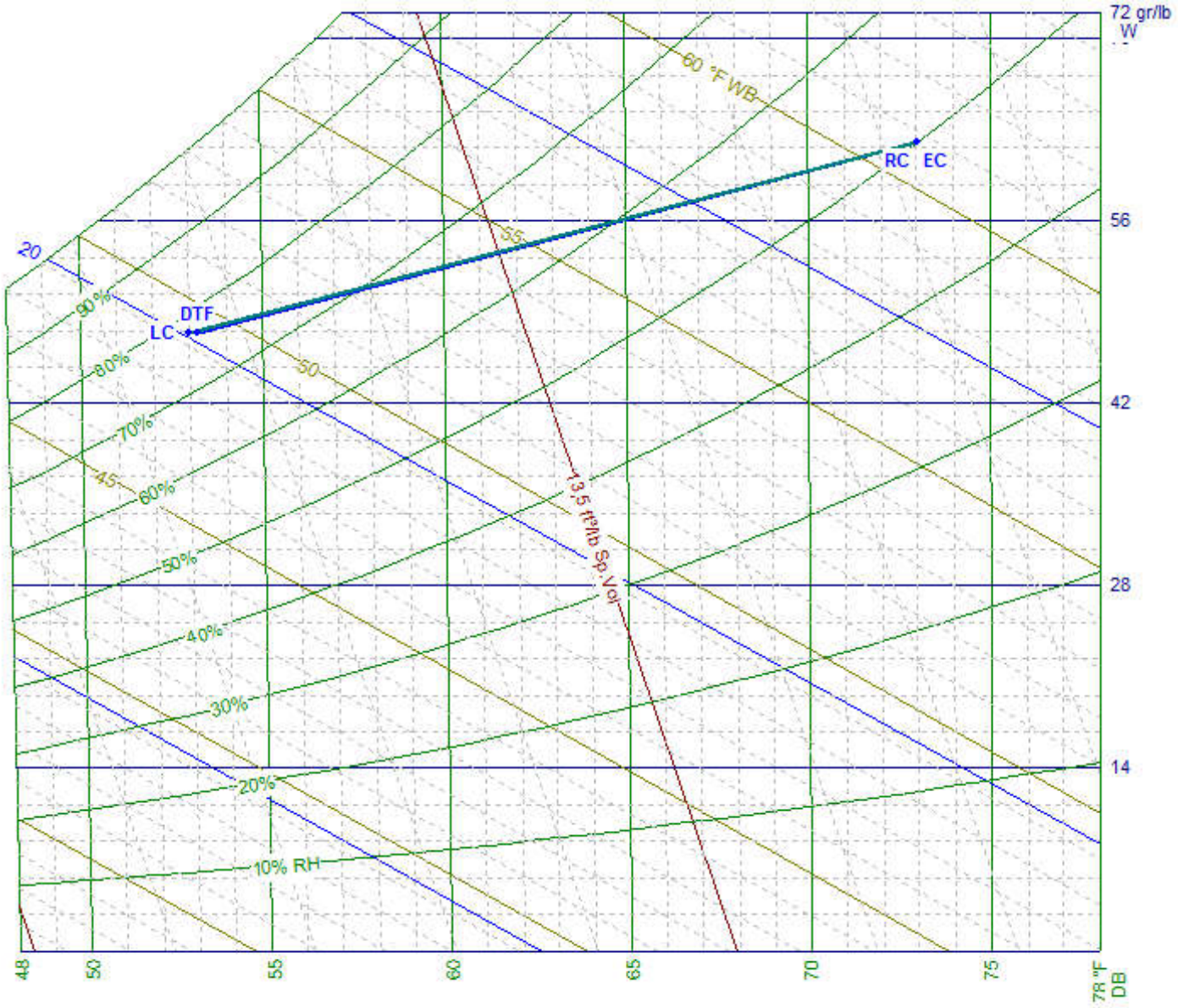
Air System #5 (Dirección General No.3) Psychrometric Chart

RC	Room Condition	OC	Outdoor Condition
LC	Leaving Coil Condition	EC	Entering Coil Condition
SD	Supply Duct Temperature Rise	RD	Return Duct Temperature Rise
DTF	Draw Through Fan Sensible Gain	BTF	Blow Through Fan Sensible Gain
RE	Reserve or Reheat Sensible Gain	PL	Return Air Plenum Sensible Gain
SM	Supply Side Miscellaneous Sensible Gain	MR	Return Side Miscellaneous Gain
PRE	Pretreated Air Condition	HRV	Heat Recovery Ventilator Condition
MIX	Mixed Air Condition	RML	Return Miscellaneous Latent Gain



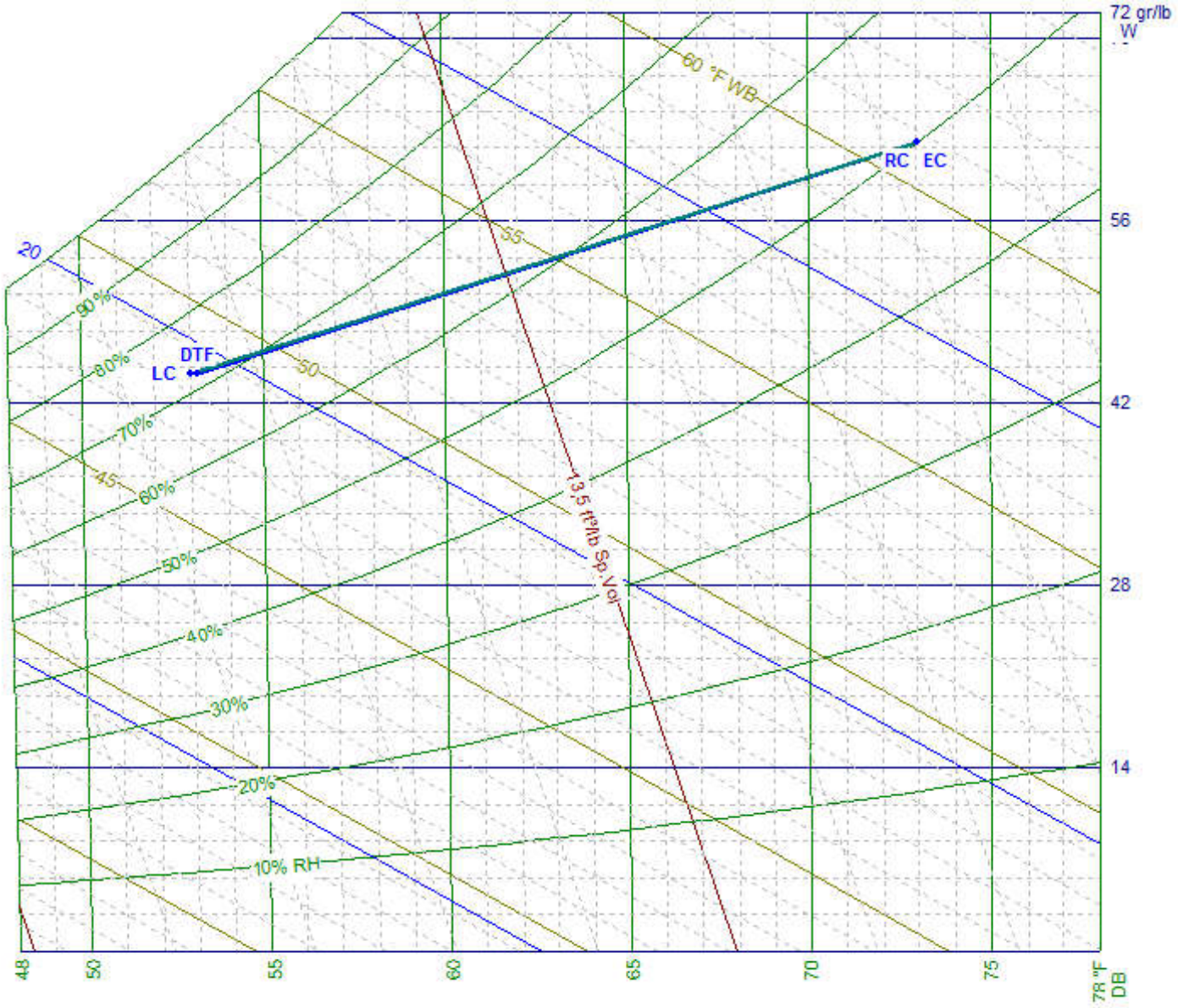
Air System #6 (Juntas Familia) Psychrometric Chart

RC	Room Condition	OC	Outdoor Condition
LC	Leaving Coil Condition	EC	Entering Coil Condition
SD	Supply Duct Temperature Rise	RD	Return Duct Temperature Rise
DTF	Draw Through Fan Sensible Gain	BTF	Blow Through Fan Sensible Gain
RE	Reserve or Reheat Sensible Gain	PL	Return Air Plenum Sensible Gain
SM	Supply Side Miscellaneous Sensible Gain	MR	Return Side Miscellaneous Gain
PRE	Pretreated Air Condition	HRV	Heat Recovery Ventilator Condition
MIX	Mixed Air Condition	RML	Return Miscellaneous Latent Gain



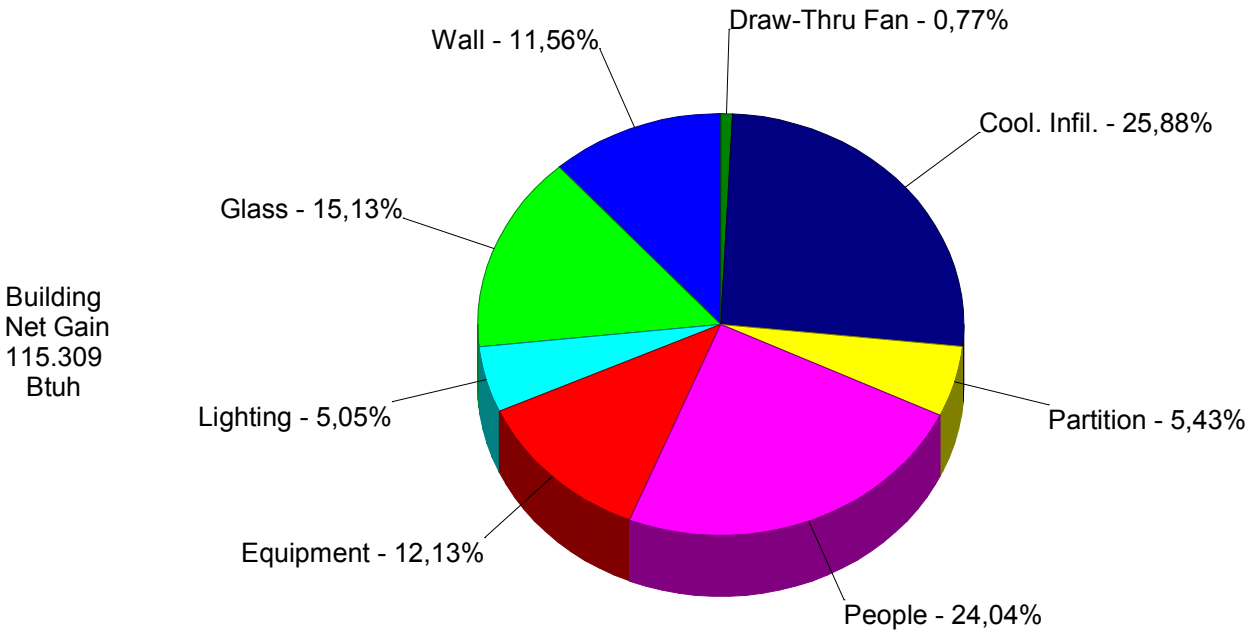
Air System #7 (Psicología) Psychrometric Chart

RC	Room Condition	OC	Outdoor Condition
LC	Leaving Coil Condition	EC	Entering Coil Condition
SD	Supply Duct Temperature Rise	RD	Return Duct Temperature Rise
DTF	Draw Through Fan Sensible Gain	BTF	Blow Through Fan Sensible Gain
RE	Reserve or Reheat Sensible Gain	PL	Return Air Plenum Sensible Gain
SM	Supply Side Miscellaneous Sensible Gain	MR	Return Side Miscellaneous Gain
PRE	Pretreated Air Condition	HRV	Heat Recovery Ventilator Condition
MIX	Mixed Air Condition	RML	Return Miscellaneous Latent Gain



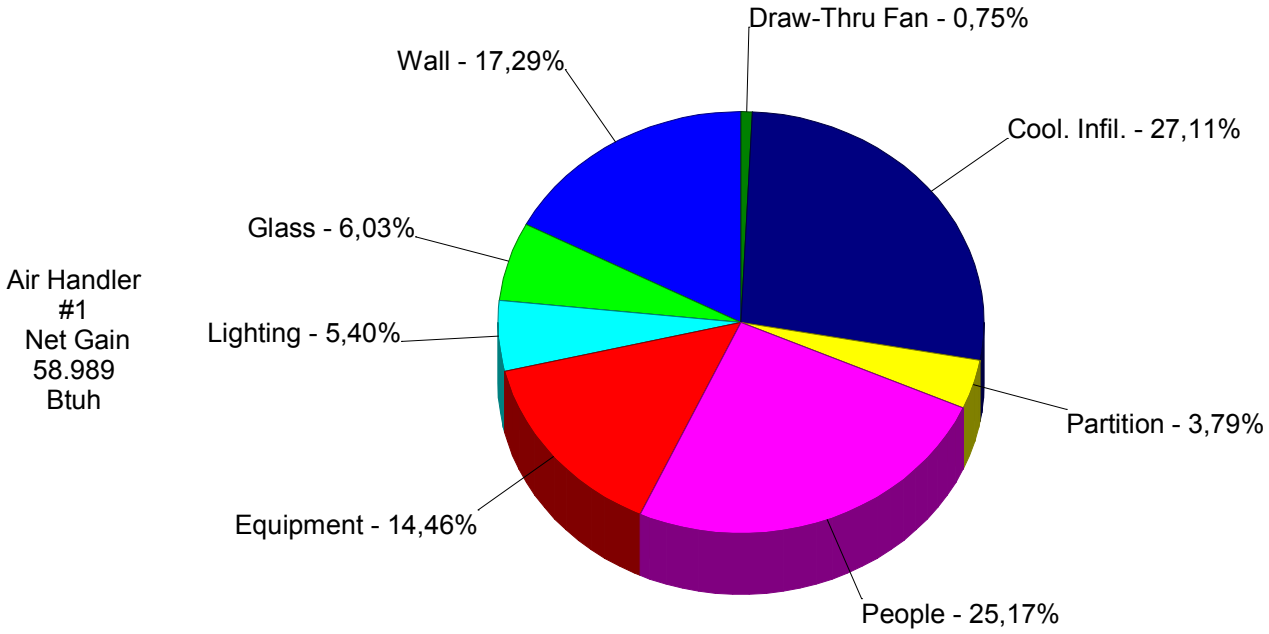
Building Pie Charts

Building peaks in June at 5pm.



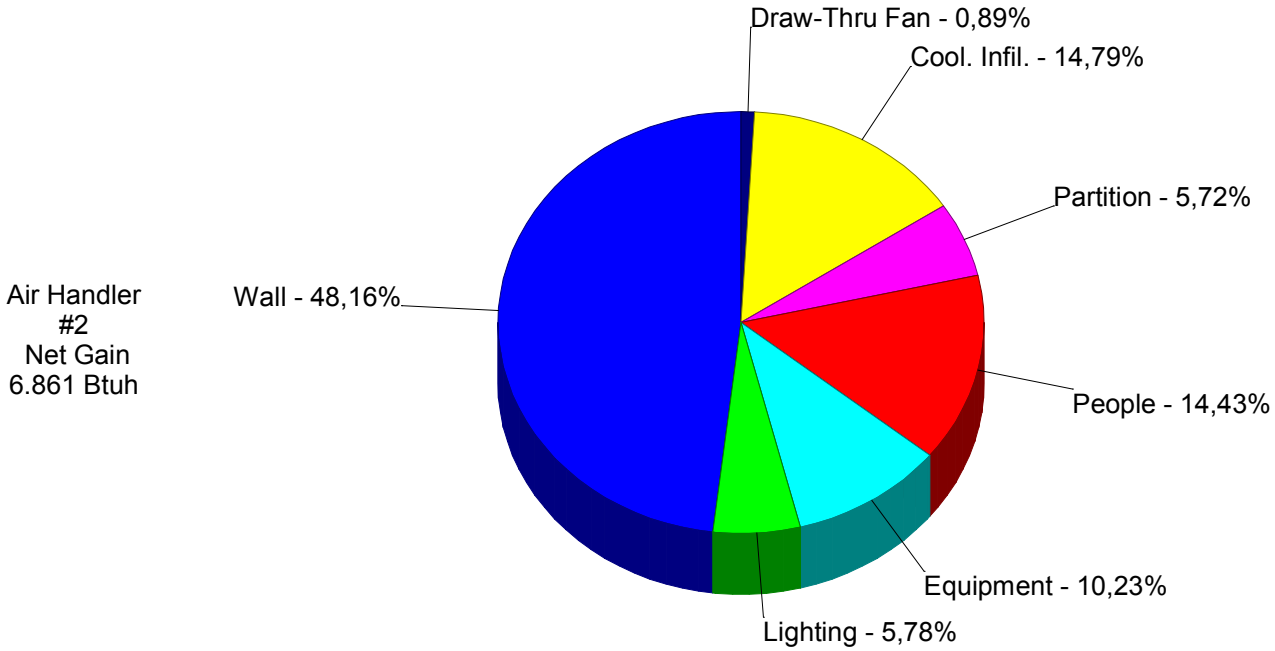
Air Handler #1 - Área Administrativa - Pie Charts

Air Handler #1 peaks in December at 5pm.



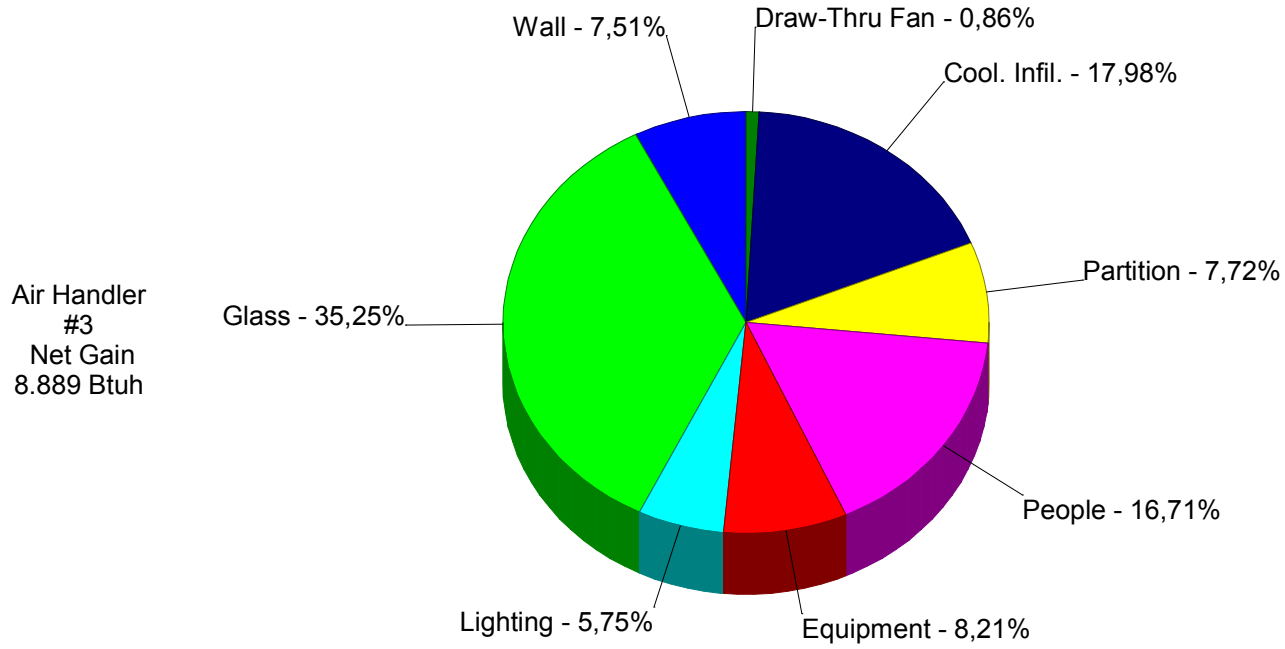
Air Handler #2 - Dirección General No. 1 - Pie Charts

Air Handler #2 peaks in June at 6pm.



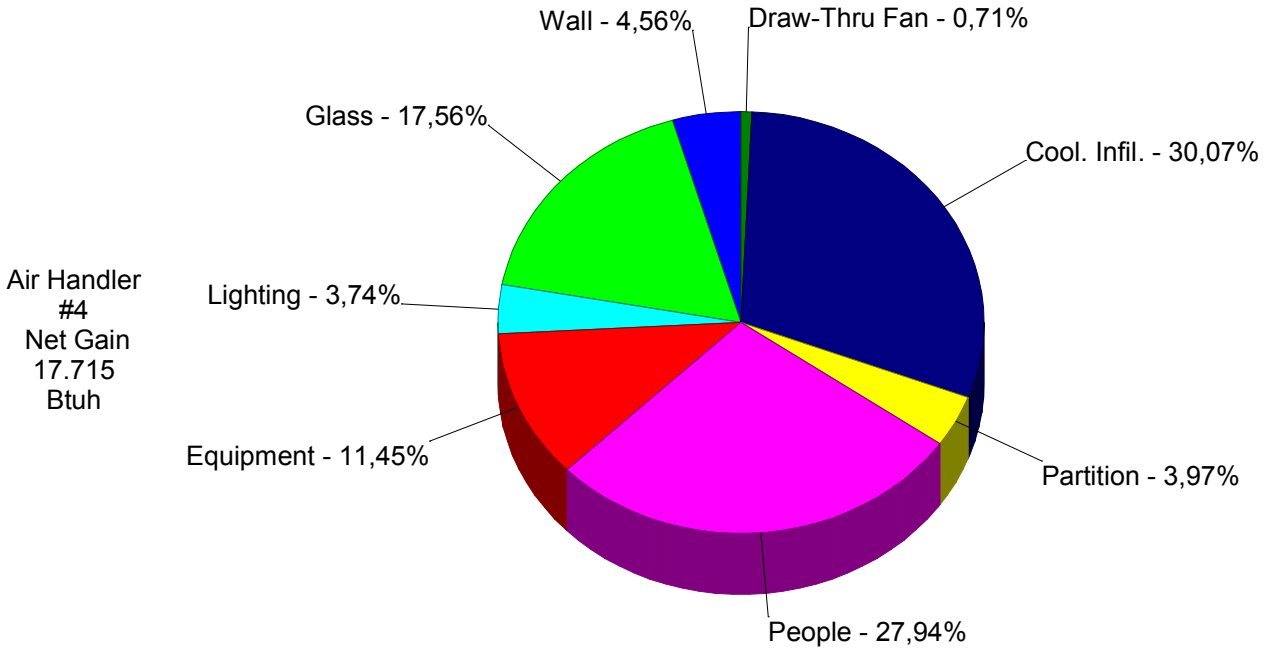
Air Handler #3 - Dirección General No. 2 - Pie Charts

Air Handler #3 peaks in June at 2pm.



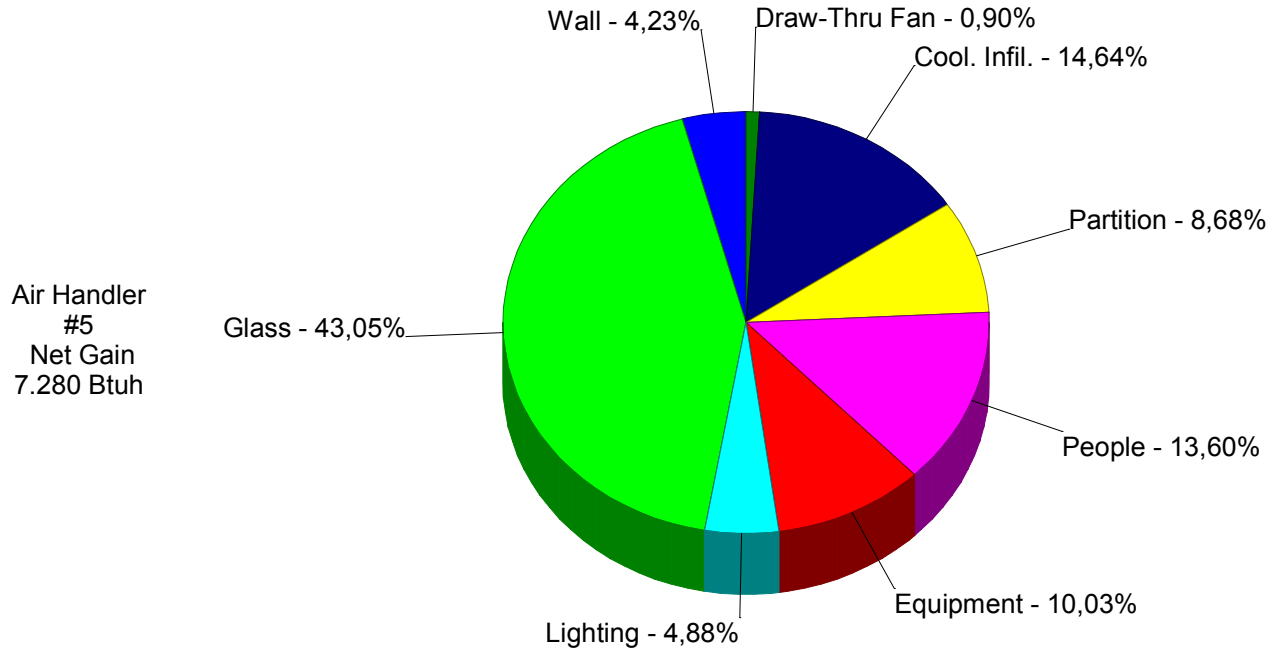
Air Handler #4 - Juntas - Pie Charts

Air Handler #4 peaks in June at 3pm.



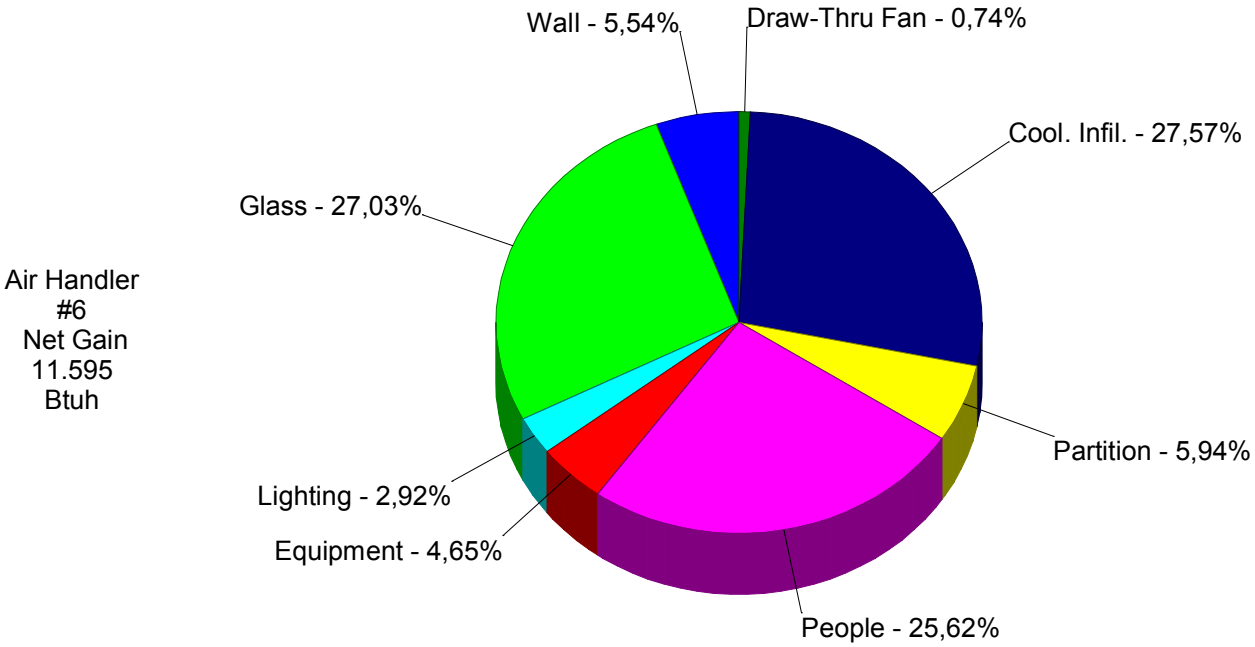
Air Handler #5 - Dirección General No.3 - Pie Charts

Air Handler #5 peaks in June at 2pm.



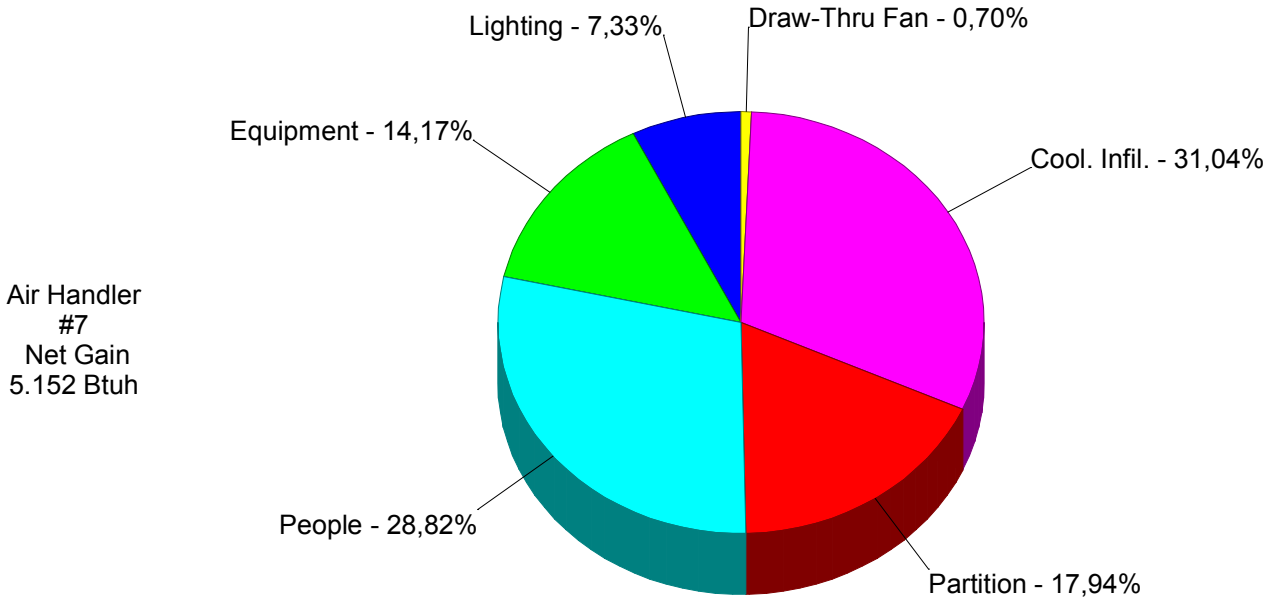
Air Handler #6 - Juntas Familia - Pie Charts

Air Handler #6 peaks in June at 2pm.



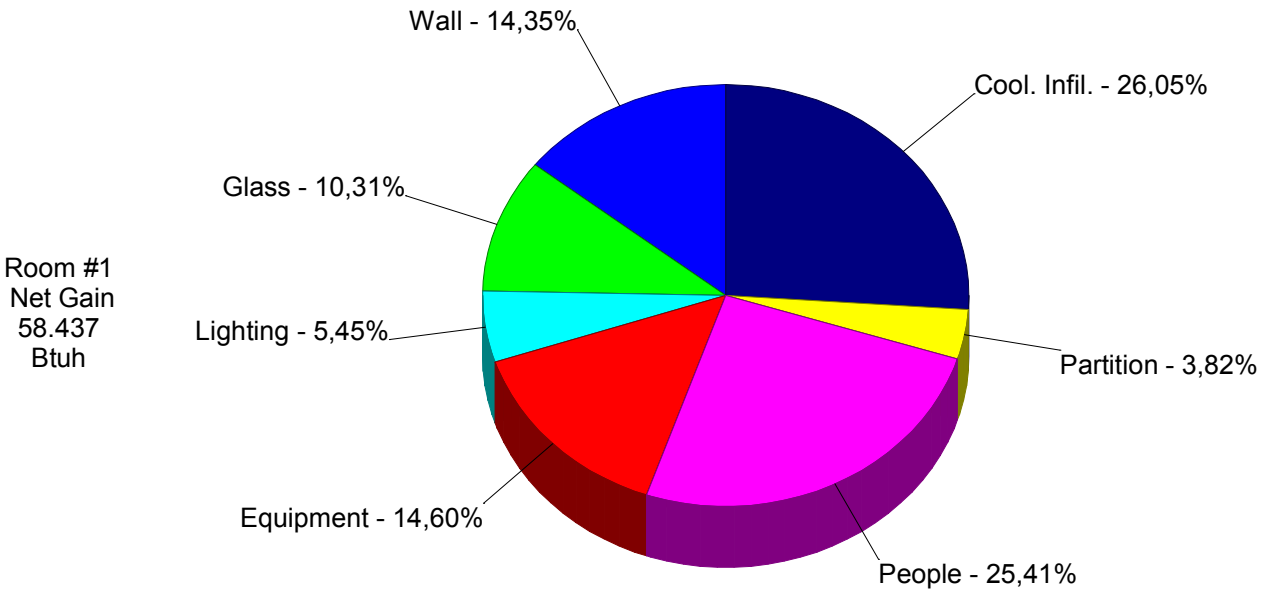
Air Handler #7 - Psicología - Pie Charts

Air Handler #7 peaks in December at 1pm.



Room #1 - Área Administrativa - Pie Charts

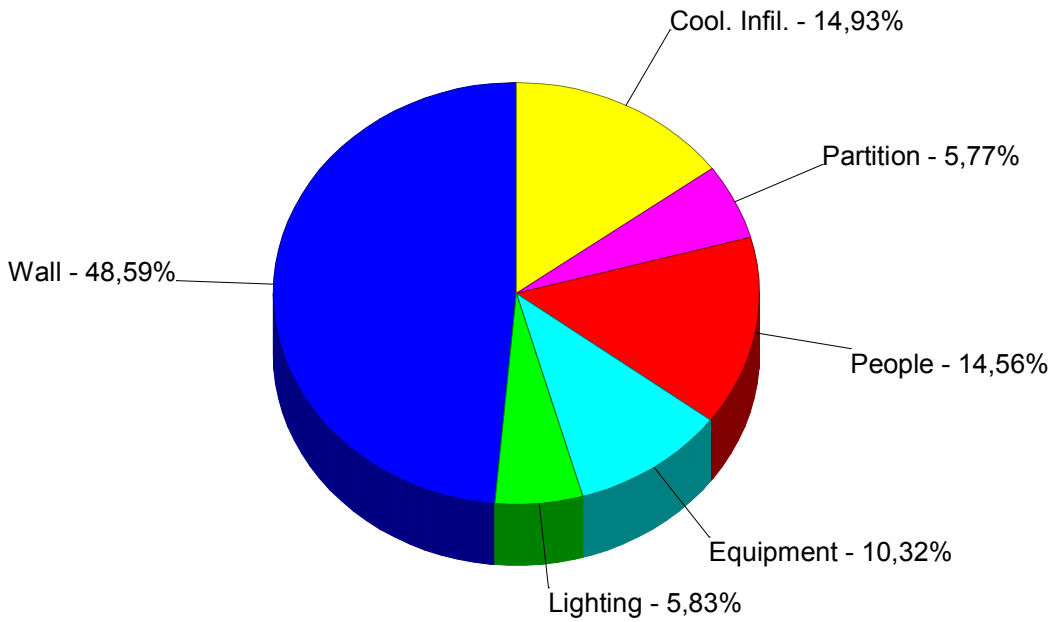
Room #1 peaks in June at 6pm



Room #2 - Dirección General No. 1 - Pie Charts

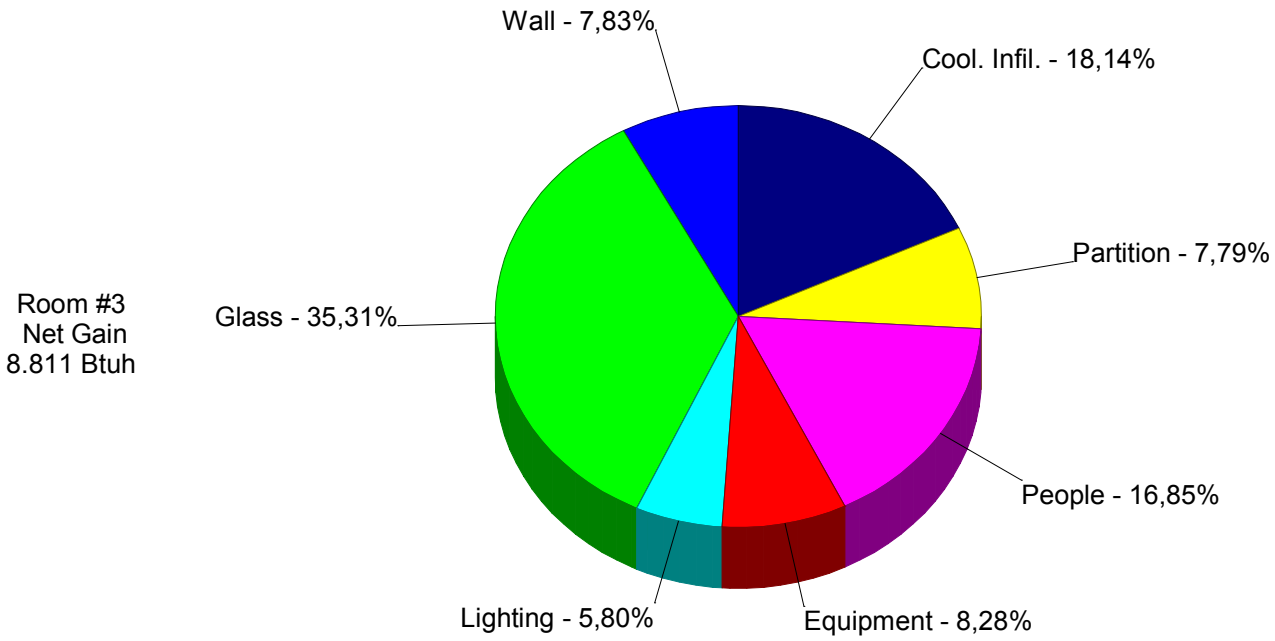
Room #2 peaks in June at 6pm

Room #2
Net Gain
6.800 Btuh



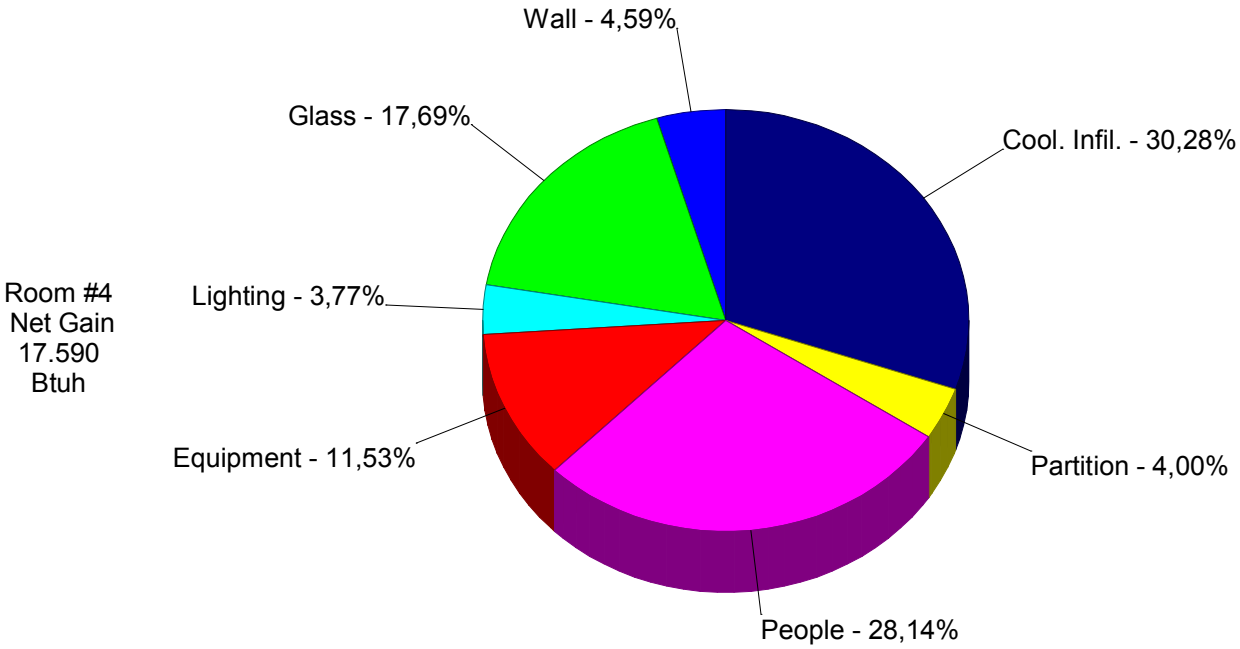
Room #3 - Dirección General No. 2 - Pie Charts

Room #3 peaks in June at 3pm



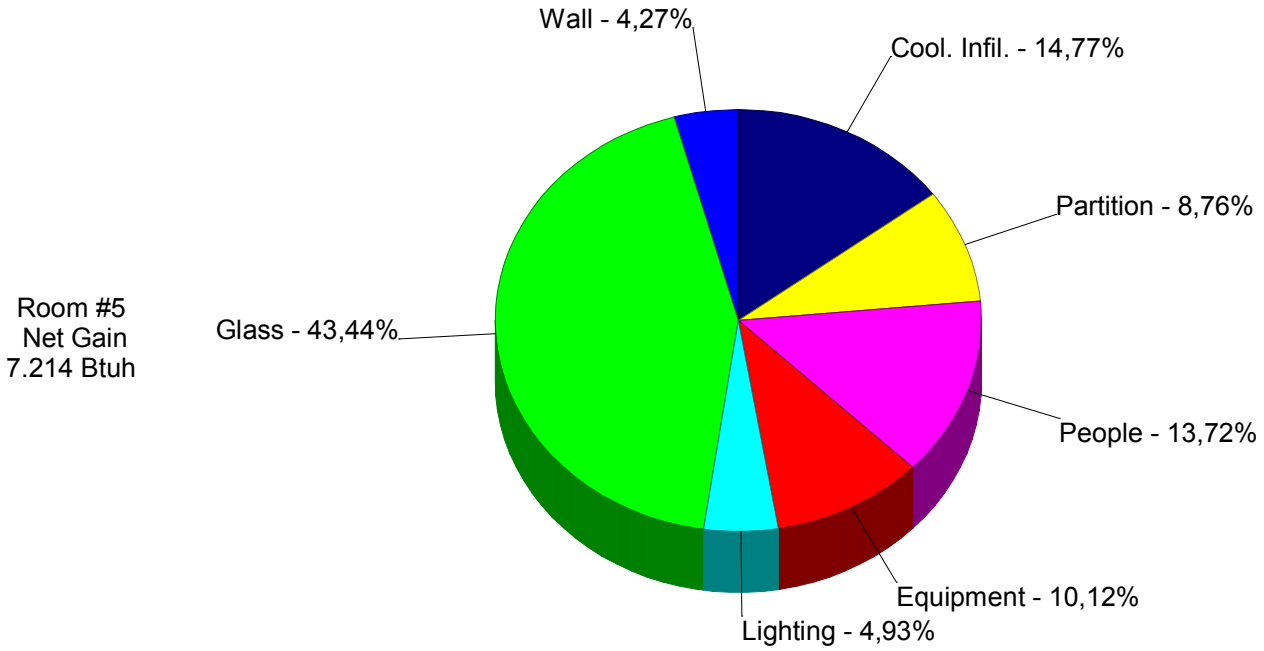
Room #4 - Juntas - Pie Charts

Room #4 peaks in June at 3pm



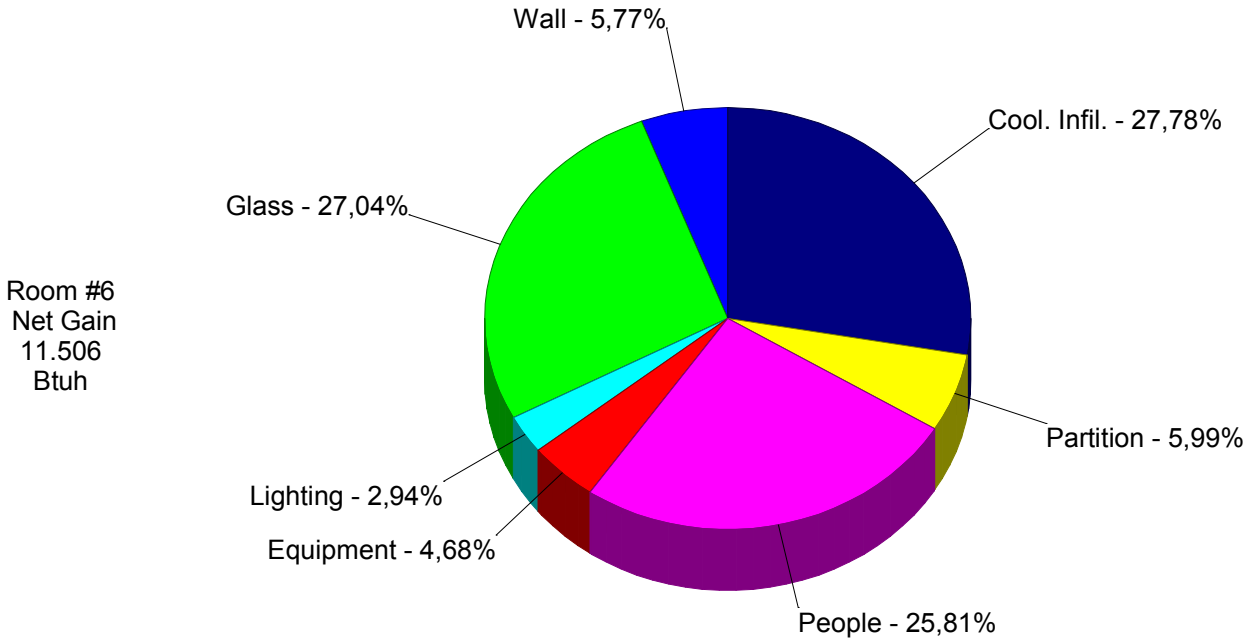
Room #5 - Dirección General No. 3 - Pie Charts

Room #5 peaks in June at 2pm



Room #6 - Juntas Familia - Pie Charts

Room #6 peaks in June at 3pm



Room #7 - Psicología - Pie Charts

Room #7 peaks in December at 3pm

