Proyecto Armenia
HVAC Load Analysis

for

Ing. Oswaldo Zuñiga Cardenas



Prepared By:

Emilio Ballestas
Diseños E Ingeniería

Cartagena, Bolívar, Colombia

miércoles, 26 de mayo de 2021

General Project Data Input

General Project Information

Project file name:	CHVAC - Carga termica - Proyecto Armenia - 2021-05-25.CH8
Project title:	Proyecto Armenia
Project city, state, ZIP:	Armenia, Quindio, Colombia
Designed by:	Emilio Ballestas
Project date:	miércoles, 26 de mayo de 2021
Weather reference city:	ARMENIA, QUINDIO, COLOMBIA
Client name:	Ing. Oswaldo Zuñiga Cardenas
Client phone:	311 704 9525
Client e-mail address:	ozc313@gmail.com
Company name:	Diseños E Ingeniería
Company representative:	Emilio Ballestas
Company city:	Cartagena, Bolívar, Colombia
Company e-mail address:	eballenett@hotmail.com

Barometric pressure:	25,033	in.Hg.
Altitude:	4854	feet
Latitude:	4	Degrees
Mean daily temperature range:	20,5	Degrees
Starting & ending time for HVAC load calculations:	1am - 12am	
Number of unique rooms in this project:	6	

Building Default Values

Calculations performed:	Cooling loads only	
Lighting requirements:	1,50	Watts per square foot
Equipment requirements:	3,00	Watts per square foot
People sensible load multiplier:	250	Btuh per person
People latent load multiplier:	200	Btuh per person
Room sensible safety factor:	0	%
Room latent safety factor:	0	%
Room heating safety factor:	0	%
People diversity factor:	100	%
Lighting profile number:	0	
Equipment profile number:	0	
People profile number:	0	
Building default ceiling height:	10,50	feet
Building default wall height:	10,50	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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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	87	70	50%	72	34,83	-2
February	87	70	50%	72	34,83	-2
March	87	70	50%	72	34,83	-2
April	87	70	50%	72	34,83	-2
May	87	70	50%	72	34,83	-2
June	87	70	50%	72	34,83	-2
July	87	70	50%	72	34,83	-2
August	87	70	50%	72	34,83	-2
September	87	70	50%	72	34,83	-2
October	87	70	50%	72	34,83	-2
November	87	70	50%	72	34,83	-2
December	87	70	50%	72	34,83	-2
Winter	64			72		

Master Roofs

Roof No.	ASHRAE Roof#	Roof U-Fac	Dark Color	Susp. Ceil
1	12	0,285	No	Yes

Roof #1 Description: Flat roof, 8" heavy weight concrete deck + 1" cement mortar template + 0,125" Ceramic Tile + 10" air space + 0,5" gypsum board suspended ceiling

Master Walls

Wall No.	ASHRAE Group	Wall U-Fac	Wall Color
1	D	0,393	M

Wall #1 Description: Block wall, 4" clay tile, hollow, 1 cell deep + 1" cement plaster exterior + 0,25" plastic stucco exterior finish + 1" cement plaster interior + 0,25" plastic stucco interior finish

Master Partitions

Partition No.	Partition U-Factor	Cool T-D	Heat T-D
1	0,336	10	0

Partition #1 Description: Partition. Block wall, 4" clay tile, hollow, 1 cell deep + 1" cement plaster exterior + 0,25" plastic stucco exterior finish + 1" cement plaster interior + 0,25" plastic stucco interior finish

Master Glass

Glass No.	Summer U-Factor	Winter U-Factor	Glass Shd.Coef.	Interior Shading	Interior Shd.Coef
1	0,920	1,020	0,670	2	0,000

Glass #1 Description: Single pane, non-laminated glass 6mm Gray glass

Air Handler Input

Air Handler Number 1 Input Data

Name:	Auditorio
Terminal type:	Constant Volume
Method for CV	Proportion
Supply fan type:	Draw-thru fan
Calculations performed:	Cooling loads only
Excess supply air:	Reserve
Occurrences:	1
People profile number:	0
Lighting profile number:	0
Equipment profile number:	0
Exhaust may not exceed supply air:	No
Leaving heating coil temp (deg.F):	92,0
Leaving cooling coil temp (deg.F):	55,0
Cooling coil CFM	0
Misc. Btuh gain - supply side:	0
Misc. Btuh gain - return side:	0
Combined fan & motor efficiency:	0
Static pressure across fan (in.wg.):	0,00
Summer supply duct temp rise (deg.F):	1,000
Summer return duct temp rise (deg.F):	0,250
Winter supply duct temp drop (deg.F):	0,000
Winter return duct temp drop (deg.F):	0,000
Chilled water temp difference (deg.F):	0,000
Hot water temp difference (deg.F):	0,000
Cooling ventilation:	5 CFM/Pr, 0,06 CFM/sq.ft
Cooling infiltration:	0 AC/Hr
Heating ventilation:	0 CFM/Pr
Heating infiltration:	0 AC/Hr
Pretreated outside air:	none
Pretreated air Summer DB (deg.F):	0
Pretreated air Summer WB (deg.F):	0
Pretreated air Winter DB (deg.F):	0

Design Month	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Diff	In/Outdoor Correction
January	87	70	50%	72	34,83	-2
February	87	70	50%	72	34,83	-2
March	87	70	50%	72	34,83	-2
April	87	70	50%	72	34,83	-2
May	87	70	50%	72	34,83	-2
June	87	70	50%	72	34,83	-2
July	87	70	50%	72	34,83	-2
August	87	70	50%	72	34,83	-2
September	87	70	50%	72	34,83	-2
October	87	70	50%	72	34,83	-2
November	87	70	50%	72	34,83	-2
December	87	70	50%	72	34,83	-2
Winter	64			72		

Air Handler Number 2 Input Data

Name:	Lobby Ingreso Auditorio
Terminal type:	Constant Volume
Method for CV	Proportion
Supply fan type:	Draw-thru fan
Calculations performed:	Cooling loads only
Excess supply air:	Reserve
Occurrences:	1
People profile number:	0
Lighting profile number:	0

Air Handler Input (cont'd)

Air Handler Number 2 Input Data

Equipment profile number:	0
Exhaust may not exceed supply air:	No
Leaving heating coil temp (deg.F):	92,0
Leaving cooling coil temp (deg.F):	55,0
Cooling coil CFM	0
Misc. Btuh gain - supply side:	0
Misc. Btuh gain - return side:	0
Combined fan & motor efficiency:	0
Static pressure across fan (in.wg.):	0,00
Summer supply duct temp rise (deg.F):	1,000
Summer return duct temp rise (deg.F):	0,250
Winter supply duct temp drop (deg.F):	0,000
Winter return duct temp drop (deg.F):	0,000
Chilled water temp difference (deg.F):	0,000
Hot water temp difference (deg.F):	0,000
Cooling ventilation:	5 CFM/Pr, 0,06 CFM/sq.ft
Cooling infiltration:	0 AC/Hr
Heating ventilation:	0 CFM/Pr
Heating infiltration:	0 AC/Hr
Pretreated outside air:	none
Pretreated air Summer DB (deg.F):	0
Pretreated air Summer WB (deg.F):	0
Pretreated air Winter DB (deg.F):	0

Design Month	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Diff	In/Outdoor Correction
January	87	70	50%	72	34,83	-2
February	87	70	50%	72	34,83	-2
March	87	70	50%	72	34,83	-2
April	87	70	50%	72	34,83	-2
May	87	70	50%	72	34,83	-2
June	87	70	50%	72	34,83	-2
July	87	70	50%	72	34,83	-2
August	87	70	50%	72	34,83	-2
September	87	70	50%	72	34,83	-2
October	87	70	50%	72	34,83	-2
November	87	70	50%	72	34,83	-2
December	87	70	50%	72	34,83	-2
Winter	64			72		

Air Handler Number 3 Input Data

Name:	Salon 1
Terminal type:	Constant Volume
Method for CV	Proportion
Supply fan type:	Draw-thru fan
Calculations performed:	Cooling loads only
Excess supply air:	Reserve
Occurrences:	1
People profile number:	0
Lighting profile number:	0
Equipment profile number:	0
Exhaust may not exceed supply air:	No
Leaving heating coil temp (deg.F):	92,0
Leaving cooling coil temp (deg.F):	55,0
Cooling coil CFM	0
Misc. Btuh gain - supply side:	0
Misc. Btuh gain - return side:	0
Combined fan & motor efficiency:	0
Static pressure across fan (in.wg.):	0,00

Air Handler Input (cont'd)

Air Handler Number 3 Input Data

Summer supply duct temp rise (deg.F):	1,000
Summer return duct temp rise (deg.F):	0,250
Winter supply duct temp drop (deg.F):	0,000
Winter return duct temp drop (deg.F):	0,000
Chilled water temp difference (deg.F):	0,000
Hot water temp difference (deg.F):	0,000
Cooling ventilation:	5 CFM/Pr, 0,06 CFM/sq.ft
Cooling infiltration:	0 AC/Hr
Heating ventilation:	0 CFM/Pr
Heating infiltration:	0 AC/Hr
Pretreated outside air:	none
Pretreated air Summer DB (deg.F):	0
Pretreated air Summer WB (deg.F):	0
Pretreated air Winter DB (deg.F):	0

Design Month	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Diff	In/Outdoor Correction
January	87	70	50%	72	34,83	-2
February	87	70	50%	72	34,83	-2
March	87	70	50%	72	34,83	-2
April	87	70	50%	72	34,83	-2
May	87	70	50%	72	34,83	-2
June	87	70	50%	72	34,83	-2
July	87	70	50%	72	34,83	-2
August	87	70	50%	72	34,83	-2
September	87	70	50%	72	34,83	-2
October	87	70	50%	72	34,83	-2
November	87	70	50%	72	34,83	-2
December	87	70	50%	72	34,83	-2
Winter	64			72		

Air Handler Number 4 Input Data

Name:	Salon 2
Terminal type:	Constant Volume
Method for CV	Proportion
Supply fan type:	Draw-thru fan
Calculations performed:	Cooling loads only
Excess supply air:	Reserve
Occurrences:	1
People profile number:	0
Lighting profile number:	0
Equipment profile number:	0
Exhaust may not exceed supply air:	No
Leaving heating coil temp (deg.F):	92,0
Leaving cooling coil temp (deg.F):	55,0
Cooling coil CFM	0
Misc. Btuh gain - supply side:	0
Misc. Btuh gain - return side:	0
Combined fan & motor efficiency:	0
Static pressure across fan (in.wg.):	0,00
Summer supply duct temp rise (deg.F):	1,000
Summer return duct temp rise (deg.F):	0,250
Winter supply duct temp drop (deg.F):	0,000
Winter return duct temp drop (deg.F):	0,000
Chilled water temp difference (deg.F):	0,000
Hot water temp difference (deg.F):	0,000
Cooling ventilation:	5 CFM/Pr, 0,06 CFM/sq.ft
Cooling infiltration:	0 AC/Hr
Heating ventilation:	0 CFM/Pr

Air Handler Input (cont'd)

Air Handler Number 4 Input Data

Heating infiltration:	0 AC/Hr
Pretreated outside air:	none
Pretreated air Summer DB (deg.F):	0
Pretreated air Summer WB (deg.F):	0
Pretreated air Winter DB (deg.F):	0

Design Month	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Diff	In/Outdoor Correction
January	87	70	50%	72	34,83	-2
February	87	70	50%	72	34,83	-2
March	87	70	50%	72	34,83	-2
April	87	70	50%	72	34,83	-2
May	87	70	50%	72	34,83	-2
June	87	70	50%	72	34,83	-2
July	87	70	50%	72	34,83	-2
August	87	70	50%	72	34,83	-2
September	87	70	50%	72	34,83	-2
October	87	70	50%	72	34,83	-2
November	87	70	50%	72	34,83	-2
December	87	70	50%	72	34,83	-2
Winter	64			72		

Air Handler Number 5 Input Data

Name:	Bodega Papeleria
Terminal type:	Constant Volume
Method for CV	Proportion
Supply fan type:	Draw-thru fan
Calculations performed:	Cooling loads only
Excess supply air:	Reserve
Occurrences:	1
People profile number:	0
Lighting profile number:	0
Equipment profile number:	0
Exhaust may not exceed supply air:	No
Leaving heating coil temp (deg.F):	92,0
Leaving cooling coil temp (deg.F):	55,0
Cooling coil CFM	0
Misc. Btuh gain - supply side:	0
Misc. Btuh gain - return side:	0
Combined fan & motor efficiency:	0
Static pressure across fan (in.wg.):	0,00
Summer supply duct temp rise (deg.F):	1,000
Summer return duct temp rise (deg.F):	0,250
Winter supply duct temp drop (deg.F):	0,000
Winter return duct temp drop (deg.F):	0,000
Chilled water temp difference (deg.F):	0,000
Hot water temp difference (deg.F):	0,000
Cooling ventilation:	5 CFM/Pr, 0,06 CFM/sq.ft
Cooling infiltration:	0 AC/Hr
Heating ventilation:	0 CFM/Pr
Heating infiltration:	0 AC/Hr
Pretreated outside air:	none
Pretreated air Summer DB (deg.F):	0
Pretreated air Summer WB (deg.F):	0
Pretreated air Winter DB (deg.F):	0

Design Month	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Diff	In/Outdoor Correction

Air Handler Input (cont'd)

Air Handler Number 5 Input Data

January	87	70	50%	72	34,83	-2
February	87	70	50%	72	34,83	-2
March	87	70	50%	72	34,83	-2
April	87	70	50%	72	34,83	-2
May	87	70	50%	72	34,83	-2
June	87	70	50%	72	34,83	-2
July	87	70	50%	72	34,83	-2
August	87	70	50%	72	34,83	-2
September	87	70	50%	72	34,83	-2
October	87	70	50%	72	34,83	-2
November	87	70	50%	72	34,83	-2
December	87	70	50%	72	34,83	-2
Winter	64			72		

Air Handler Number 6 Input Data

Name:	Salon 3
Terminal type:	Constant Volume
Method for CV	Proportion
Supply fan type:	Draw-thru fan
Calculations performed:	Cooling loads only
Excess supply air:	Reserve
Occurrences:	1
People profile number:	0
Lighting profile number:	0
Equipment profile number:	0
Exhaust may not exceed supply air:	No
Leaving heating coil temp (deg.F):	92,0
Leaving cooling coil temp (deg.F):	55,0
Cooling coil CFM	0
Misc. Btuh gain - supply side:	0
Misc. Btuh gain - return side:	0
Combined fan & motor efficiency:	0
Static pressure across fan (in.wg.):	0,00
Summer supply duct temp rise (deg.F):	1,000
Summer return duct temp rise (deg.F):	0,250
Winter supply duct temp drop (deg.F):	0,000
Winter return duct temp drop (deg.F):	0,000
Chilled water temp difference (deg.F):	0,000
Hot water temp difference (deg.F):	0,000
Cooling ventilation:	5 CFM/Pr, 0,06 CFM/sq.ft
Cooling infiltration:	0 AC/Hr
Heating ventilation:	0 CFM/Pr
Heating infiltration:	0 AC/Hr
Pretreated outside air:	none
Pretreated air Summer DB (deg.F):	0
Pretreated air Summer WB (deg.F):	0
Pretreated air Winter DB (deg.F):	0

Design Month	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Diff	In/Outdoor Correction
January	87	70	50%	72	34,83	-2
February	87	70	50%	72	34,83	-2
March	87	70	50%	72	34,83	-2
April	87	70	50%	72	34,83	-2
May	87	70	50%	72	34,83	-2
June	87	70	50%	72	34,83	-2
July	87	70	50%	72	34,83	-2
August	87	70	50%	72	34,83	-2
September	87	70	50%	72	34,83	-2

Air Handler Input (cont'd)

Air Handler Number 6 Input Data						
October	87	70	50%	72	34,83	-2
November	87	70	50%	72	34,83	-2
December	87	70	50%	72	34,83	-2
Winter	64			72		

Room Input

Room 1: Auditorio (1705,3 sq.ft) (Zone 0)

Air Handler number:	1	Room occurrences:	1
Room length: (feet)	1.705,30	Room width (feet):	1,00
Lighting Watts:	2.558	Equipment Watts:	5.116
Number of people in room:	171	People profile number:	0
Lighting profile number:	0	Equipment profile number:	0
Ceiling height (feet):	11,50	Heating safety factor (%):	0
Sensible safety factor (%):	0	Latent safety factor (%):	0
Sensible heat per person (Btuh):	250	Latent heat per person (Btuh):	200
Cooling ventilation method:	CFM/Pr & CFM/sq.ft	Cooling ventilation value:	5,000 0,060
Cooling infiltration method:	AC/Hr	Cooling infiltration value:	0,000
Heating ventilation method:	CFM/Pr	Heating ventilation value:	0,000
Heating infiltration method:	AC/Hr	Heating infiltration value:	0,000
Winter exhaust air CFM:	0	Summer exhaust air CFM:	0
Minimum supply CFM:	0	Latent Btuh equipment load:	0
Ceil. exposed to plenum (sq.ft):	1.705	Exposed floor slab perimeter (ft):	0

Cooling loads only are calculated for this room.

Roof	Type	ASHRAE#	U-Factor	Dark	Length	Width	Area	Susp.Ceil
1	1	12	0,285	No	1.705,30	1,00	1.705,3	Yes

Part	Type	U-Factor	Cool TD	Heat TD	Height	Width	Area
1	1	0,3356	10,000	0,000	11,50	28,60	328,9
2	1	0,3356	10,000	0,000	11,50	22,90	263,4
5	1	0,3356	10,000	0,000	11,50	18,60	213,9
6	1	0,3356	10,000	0,000	11,50	4,80	55,2
7	1	0,3356	10,000	0,000	11,50	13,40	154,1
8	1	0,3356	10,000	0,000	11,50	5,70	65,6
9	1	0,3356	10,000	0,000	11,50	26,60	305,9

Wall	Type	ASHRAE#	U-Factor	Color	Height	Width	Area	Direction
3	1	D	0,393	M	11,50	35,70	410,6	0
4	1	D	0,393	M	11,50	27,10	311,7	90

Glass	Type	S.U-F.	Shd C.	Height	Width	Occur.	Area	Shade	Tilt	Ref
1	1	0,920	0,670	5,00	3,10	1	15,5	0	90	2
2	1	0,920	0,670	5,00	6,10	1	30,5	0	90	2
3	1	0,920	0,670	10,00	5,10	1	51,0	0	90	3
4	1	0,920	0,670	10,00	6,60	1	66,0	0	90	7

Room 2: Lobby Ingreso Auditorio (448,7 sq.ft) (Zone 0)

Air Handler number:	2	Room occurrences:	1
Room length: (feet)	448,70	Room width (feet):	1,00
Lighting Watts:	673	Equipment Watts:	1.346
Number of people in room:	9	People profile number:	0
Lighting profile number:	0	Equipment profile number:	0
Ceiling height (feet):	12,80	Heating safety factor (%):	0
Sensible safety factor (%):	0	Latent safety factor (%):	0
Sensible heat per person (Btuh):	250	Latent heat per person (Btuh):	200
Cooling ventilation method:	CFM/Pr & CFM/sq.ft	Cooling ventilation value:	5,000 0,060
Cooling infiltration method:	AC/Hr	Cooling infiltration value:	0,000
Heating ventilation method:	CFM/Pr	Heating ventilation value:	0,000
Heating infiltration method:	AC/Hr	Heating infiltration value:	0,000
Winter exhaust air CFM:	0	Summer exhaust air CFM:	0
Minimum supply CFM:	0	Latent Btuh equipment load:	0
Ceil. exposed to plenum (sq.ft):	449	Exposed floor slab perimeter (ft):	0

Cooling loads only are calculated for this room.

Room Input (cont'd)

Room 2: Lobby Ingreso Auditorio (448,7 sq.ft) (Zone 0)

Roof	Type	ASHRAE#	U-Factor	Dark	Length	Width	Area	Susp.Ceil
1	1	12	0,285	No	448,70	1,00	448,7	Yes

Part	Type	U-Factor	Cool TD	Heat TD	Height	Width	Area
1	1	0,3356	10,000	0,000	12,80	33,90	433,9
2	1	0,3356	10,000	0,000	12,80	13,40	171,5
3	1	0,3356	10,000	0,000	12,80	33,90	433,9
4	1	0,3356	10,000	0,000	12,80	13,60	174,1

Glass	Type	S.U-F.	Shd C.	Height	Width	Occur.	Area	Shade	Tilt	Ref
1	1	0,920	0,670	10,00	6,60	1	66,0	0	90	3
2	1	0,920	0,670	10,00	9,80	1	98,0	0	90	4

Room 3: Salon 1 (358,9 sq.ft) (Zone 0)

Air Handler number:	3	Room occurrences:	1
Room length: (feet)	358,90	Room width (feet):	1,00
Lighting Watts:	538	Equipment Watts:	1.077
Number of people in room:	9	People profile number:	0
Lighting profile number:	0	Equipment profile number:	0
Ceiling height (feet):	10,50	Heating safety factor (%):	0
Sensible safety factor (%):	0	Latent safety factor (%):	0
Sensible heat per person (Btuh):	250	Latent heat per person (Btuh):	200
Cooling ventilation method:	CFM/Pr & CFM/sq.ft	Cooling ventilation value:	5,000 0,060
Cooling infiltration method:	AC/Hr	Cooling infiltration value:	0,000
Heating ventilation method:	CFM/Pr	Heating ventilation value:	0,000
Heating infiltration method:	AC/Hr	Heating infiltration value:	0,000
Winter exhaust air CFM:	0	Summer exhaust air CFM:	0
Minimum supply CFM:	0	Latent Btuh equipment load:	0
Ceil. exposed to plenum (sq.ft):	359	Exposed floor slab perimeter (ft):	0

Cooling loads only are calculated for this room.

Roof	Type	ASHRAE#	U-Factor	Dark	Length	Width	Area	Susp.Ceil
1	1	12	0,285	No	358,90	1,00	358,9	Yes

Part	Type	U-Factor	Cool TD	Heat TD	Height	Width	Area
1	1	0,3356	10,000	0,000	10,50	19,10	200,6
2	1	0,3356	10,000	0,000	10,50	18,90	198,5
4	1	0,3356	10,000	0,000	10,50	18,90	198,5

Wall	Type	ASHRAE#	U-Factor	Color	Height	Width	Area	Direction
3	1	D	0,393	M	10,50	19,00	199,5	90

Glass	Type	S.U-F.	Shd C.	Height	Width	Occur.	Area	Shade	Tilt	Ref
1	1	0,920	0,670	5,00	19,00	1	95,0	0	90	3

Room 4: Salon 2 (368,7 sq.ft) (Zone 0)

Air Handler number:	4	Room occurrences:	1
Room length: (feet)	368,70	Room width (feet):	1,00
Lighting Watts:	553	Equipment Watts:	1.106
Number of people in room:	10	People profile number:	0
Lighting profile number:	0	Equipment profile number:	0
Ceiling height (feet):	10,50	Heating safety factor (%):	0
Sensible safety factor (%):	0	Latent safety factor (%):	0
Sensible heat per person (Btuh):	250	Latent heat per person (Btuh):	200
Cooling ventilation method:	CFM/Pr & CFM/sq.ft	Cooling ventilation value:	5,000 0,060

Room Input (cont'd)

Room 4: Salon 2 (368,7 sq.ft) (Zone 0)

Cooling infiltration method:	AC/Hr	Cooling infiltration value:	0,000
Heating ventilation method:	CFM/Pr	Heating ventilation value:	0,000
Heating infiltration method:	AC/Hr	Heating infiltration value:	0,000
Winter exhaust air CFM:	0	Summer exhaust air CFM:	0
Minimum supply CFM:	0	Latent Btuh equipment load:	0
Ceil. exposed to plenum (sq.ft):	369	Exposed floor slab perimeter (ft):	0

Cooling loads only are calculated for this room.

Roof	Type	ASHRAE#	U-Factor	Dark	Length	Width	Area	Susp.Ceil
1	1	12	0,285	No	368,70	1,00	368,7	Yes

Part	Type	U-Factor	Cool TD	Heat TD	Height	Width	Area
1	1	0,3356	10,000	0,000	10,50	19,40	203,7
2	1	0,3356	10,000	0,000	10,50	19,10	200,6
4	1	0,3356	10,000	0,000	10,50	19,10	200,6

Wall	Type	ASHRAE#	U-Factor	Color	Height	Width	Area	Direction
3	1	D	0,393	M	10,50	19,40	203,7	90

Glass	Type	S.U-F.	Shd C.	Height	Width	Occur.	Area	Shade	Tilt	Ref
1	1	0,920	0,670	5,00	19,40	1	97,0	0	90	3

Room 5: Bodega Papeleria (166,7 sq.ft) (Zone 0)

Air Handler number:	5	Room occurrences:	1
Room length: (feet)	166,70	Room width (feet):	1,00
Lighting Watts:	250	Equipment Watts:	500
Number of people in room:	5	People profile number:	0
Lighting profile number:	0	Equipment profile number:	0
Ceiling height (feet):	10,50	Heating safety factor (%):	0
Sensible safety factor (%):	0	Latent safety factor (%):	0
Sensible heat per person (Btuh):	250	Latent heat per person (Btuh):	200
Cooling ventilation method:	CFM/Pr & CFM/sq.ft	Cooling ventilation value:	5,000 0,060
Cooling infiltration method:	AC/Hr	Cooling infiltration value:	0,000
Heating ventilation method:	CFM/Pr	Heating ventilation value:	0,000
Heating infiltration method:	AC/Hr	Heating infiltration value:	0,000
Winter exhaust air CFM:	0	Summer exhaust air CFM:	0
Minimum supply CFM:	0	Latent Btuh equipment load:	0
Ceil. exposed to plenum (sq.ft):	167	Exposed floor slab perimeter (ft):	0

Cooling loads only are calculated for this room.

Roof	Type	ASHRAE#	U-Factor	Dark	Length	Width	Area	Susp.Ceil
1	1	12	0,285	No	166,70	1,00	166,7	Yes

Part	Type	U-Factor	Cool TD	Heat TD	Height	Width	Area
1	1	0,3356	10,000	0,000	10,50	8,90	93,5
2	1	0,3356	10,000	0,000	10,50	18,80	197,4
4	1	0,3356	10,000	0,000	10,50	18,80	197,4

Wall	Type	ASHRAE#	U-Factor	Color	Height	Width	Area	Direction
3	1	D	0,393	M	10,50	8,90	93,5	90

Glass	Type	S.U-F.	Shd C.	Height	Width	Occur.	Area	Shade	Tilt	Ref
1	1	0,920	0,670	8,00	4,40	1	35,2	0	90	1
2	1	0,920	0,670	5,00	8,90	1	44,5	0	90	3

Room 6: Salon 3 (162,7 sq.ft) (Zone 0)

Room Input (cont'd)

Room 6: Salon 3 (162,7 sq.ft) (Zone 0)

Air Handler number:	6	Room occurrences:	1
Room length: (feet)	162,70	Room width (feet):	1,00
Lighting Watts:	244	Equipment Watts:	488
Number of people in room:	5	People profile number:	0
Lighting profile number:	0	Equipment profile number:	0
Ceiling height (feet):	10,50	Heating safety factor (%):	0
Sensible safety factor (%):	0	Latent safety factor (%):	0
Sensible heat per person (Btuh):	250	Latent heat per person (Btuh):	200
Cooling ventilation method:	CFM/Pr & CFM/sq.ft	Cooling ventilation value:	5,000 0,060
Cooling infiltration method:	AC/Hr	Cooling infiltration value:	0,000
Heating ventilation method:	CFM/Pr	Heating ventilation value:	0,000
Heating infiltration method:	AC/Hr	Heating infiltration value:	0,000
Winter exhaust air CFM:	0	Summer exhaust air CFM:	0
Minimum supply CFM:	0	Latent Btuh equipment load:	0
Ceil. exposed to plenum (sq.ft):	163	Exposed floor slab perimeter (ft):	0

Cooling loads only are calculated for this room.

Roof	Type	ASHRAE#	U-Factor	Dark	Length	Width	Area	Susp.Ceil
1	1	12	0,285	No	162,70	1,00	162,7	Yes

Part	Type	U-Factor	Cool TD	Heat TD	Height	Width	Area
1	1	0,3356	10,000	0,000	10,50	9,80	102,9
2	1	0,3356	10,000	0,000	10,50	17,40	182,7
4	1	0,3356	10,000	0,000	10,50	5,30	55,7
5	1	0,3356	10,000	0,000	10,50	1,60	16,8
6	1	0,3356	10,000	0,000	10,50	12,10	127,1

Wall	Type	ASHRAE#	U-Factor	Color	Height	Width	Area	Direction
3	1	D	0,393	M	10,50	8,20	86,1	90

Glass	Type	S.U-F.	Shd C.	Height	Width	Occur.	Area	Shade	Tilt	Ref
1	1	0,920	0,670	8,00	4,90	1	39,2	0	90	1
2	1	0,920	0,670	5,00	7,40	1	37,0	0	90	3
3	1	0,920	0,670	5,00	10,00	1	50,0	0	90	6

Building Envelope Report

Envelope Report Using Summer U-Factors

Material Types		Gross Area	Glass Area	Net Area	-U-Factor	Area x U-Factor	Average U-Factor
Roof	1	3.211,0	0,0	3.211,0	0,285	914,172	0,285
Tot.Roof		3.211,0	0,0	3.211,0	N/A	914,172	0,285
Wall	1	1.305,0	324,5	980,5	0,393	385,219	0,393
Tot.Wall		1.305,0	324,5	980,5	N/A	385,219	0,393
Glass	1	724,9	N/A	724,9	0,920	666,908	0,920
Tot.Glass		724,9	N/A	724,9	N/A	666,908	0,920
Totals				4.916,4		1.966,298	0,400

Wall Direction	Wall Area	Glass Area	Wall Net Area	Wall Avg U-Factor	Glass Avg U-Factor	Glass Avg Shd.Coef
N	410,6	51,0	359,6	0,393	0,920	0,670
NE	0,0	0,0	0,0	0,000	0,000	0,000
E	894,4	273,5	620,9	0,393	0,920	0,670
SE	0,0	0,0	0,0	0,000	0,000	0,000
S	0,0	0,0	0,0	0,000	0,000	0,000
SW	0,0	0,0	0,0	0,000	0,000	0,000
W	0,0	0,0	0,0	0,000	0,000	0,000
NW	0,0	0,0	0,0	0,000	0,000	0,000
Totals	1.305,0	324,5	980,5	0,393	0,920	0,670

Building Summary Loads

Building peaks in March at 4pm.

Bldg Load Descriptions	Area Quan	Sen Loss	%Tot Loss	Lat Gain	Sen Gain	Net Gain	%Net Gain
Roof	3.211	0	0,00	0	11.656	11.656	4,63
Wall	980	0	0,00	0	6.785	6.785	2,70
Glass	725	0	0,00	0	18.743	18.743	7,45
Floor Slab	0	0	0,00	0	0	0	0,00
Skin Loads		0	0,00	0	37.184	37.184	14,77
Lighting	4.817	0	0,00	0	16.435	16.435	6,53
Equipment	9.633	0	0,00	0	32.869	32.869	13,06
Pool Latent	0	0	0,00	0	0	0	0,00
People	209	0	0,00	41.800	52.250	94.050	37,37
Partition	4.376	0	0,00	0	14.684	14.684	5,83
Cool. Pret.	0	0	0,00	0	0	0	0,00
Heat. Pret.	0	0	0,00	0	0	0	0,00
Cool. Vent.	1.238	0	0,00	25.678	15.946	41.624	16,54
Heat. Vent.	0	0	0,00	0	0	0	0,00
Cool. Infil.	0	0	0,00	0	0	0	0,00
Heat. Infil.	0	0	0,00	0	0	0	0,00
Draw-Thru Fan	0	0	0,00	0	2.246	2.246	0,89
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	10.313	10.313	4,10
Return Duct	0	0	0,00	0	2.294	2.294	0,91
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	67.478	184.221	251.699	100,00

Building Summary	Sen Loss	%Tot Loss	Lat Gain	Sen Gain	Net Gain	%Net Gain
Ventilation	0	0,00	25.678	15.946	41.624	16,54
Infiltration	0	0,00	0	0	0	0,00
Pretreated Air	0	0,00	0	0	0	0,00
Room Loads	0	0,00	41.800	153.422	195.222	77,56
Plenum Loads	0	0,00	0	0	0	0,00
Fan/Duct/Misc Loads	0	0,00	0	14.853	14.853	5,90
Building Totals	0	0,00	67.478	184.221	251.699	100,00

Check Figures

Total Building Supply Air (based on a 17° TD):	11.207	CFM
Total Building Vent. Air (11,04% of Supply):	1.238	CFM
Total Conditioned Air Space:	3.211	Sq.ft
Supply Air Per Unit Area:	3,4902	CFM/Sq.ft
Area Per Cooling Capacity:	153,1	Sq.ft/Ton
Cooling Capacity Per Area:	0,0065	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:	20,97	Tons

Air Handler #1 - Auditorio - 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	Auditorio	1.705	0	89.218	34.200	None	5/P, 0,06/ft²
	6pm June	171	0	6.143	0	0	957
		19.611	0,00	3,60	0	0	957
	Room Peak Totals:	1.705	0	89.218	34.200		
	Total Rooms: 1	171	0	6.143	0	0	957
	Unique Rooms: 1	19.611	0,00	3,60	0	0	957

Air Handler #1 - Auditorio - Total Load Summary

Air Handler Description:	Auditorio Constant Volume - Proportion
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,58 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,74

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

Air System Peak Time:	5pm in June.
Outdoor Conditions:	Clg: 85° DB, 70° WB, 108,11 grains
Indoor Conditions:	Clg: 72° DB, 50% RH

Because of the diversity in room, plenum and ventilation loads, the room sensible peak time in June at 6pm is different from the total system peak time, hence the air system CFM was computed using a room sensible load of 89.218.

Summer: Ventilation 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 / (,837 X 1,08 X 0) =			0	CFM
Winter Vent Outside Air (0,0% of supply) =			0	CFM
Room space sensible gain:	88.599	Btuh		
Infiltration sensible gain:	0	Btuh		
Draw-thru fan sensible gain:	1.231	Btuh		
Supply duct sensible gain:	5.653	Btuh		
Reserve sensible gain:	0	Btuh		
Total sensible gain on supply side of coil:				95.484 Btuh
Cooling Supply Air: 96.102 / (,837 X 1,1 X 17) =			6.143	CFM
Summer Vent Outside Air (15,6% of supply) =			957	CFM
Return duct sensible gain:	1.193	Btuh		
Return plenum sensible gain:	0	Btuh		
Outside air sensible gain:	11.453	Btuh	957	CFM
Blow-thru fan sensible gain:	0	Btuh		
Total sensible gain on return side of coil:				12.646 Btuh
Total sensible gain on air handling system:				108.130 Btuh
Room space latent gain:	34.200	Btuh		
Infiltration latent gain:	0	Btuh		
Outside air latent gain:	20.747	Btuh		
Total latent gain on air handling system:				54.947 Btuh
Total system sensible and latent gain:				163.076 Btuh

Check Figures

Total Air Handler Supply Air (based on a 17° TD):	6.143	CFM
Total Air Handler Vent. Air (15,58% of Supply):	957	CFM
Total Conditioned Air Space:	1.705	Sq.ft
Supply Air Per Unit Area:	3,6021	CFM/Sq.ft
Area Per Cooling Capacity:	125,5	Sq.ft/Ton
Cooling Capacity Per Area:	0,0080	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:	13,59	Tons

Air Handler #2 - Lobby Ingreso Auditorio - 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	Lobby Ingreso Auditorio	449	0	16.055	1.800	None	5/P, 0,06/ft²
	9pm September	9	0	1.105	0	0	72
		5.743	0,00	2,46	0	0	72
	Room Peak Totals:	449	0	16.055	1.800		
	Total Rooms: 1	9	0	1.105	0	0	72
	Unique Rooms: 1	5.743	0,00	2,46	0	0	72

Air Handler #2 - Lobby Ingreso Auditorio - Total Load Summary

Air Handler Description:	Lobby Ingreso Auditorio Constant Volume - Proportion
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,10 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,91

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

Air System Peak Time:	5pm in September.
Outdoor Conditions:	Clg: 85° DB, 70° WB, 108,11 grains
Indoor Conditions:	Clg: 72° DB, 50% RH

Because of the diversity in room, plenum and ventilation loads, the room sensible peak time in September at 9pm is different from the total system peak time, hence the air system CFM was computed using a room sensible load of 16.055.

Summer: Ventilation 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 / (,837 X 1,08 X 0) =			0	CFM
Winter Vent Outside Air (0,0% of supply) =			0	CFM
Room space sensible gain:	15.927	Btuh		
Infiltration sensible gain:	0	Btuh		
Draw-thru fan sensible gain:	222	Btuh		
Supply duct sensible gain:	1.017	Btuh		
Reserve sensible gain:	0	Btuh		
Total sensible gain on supply side of coil:				17.166 Btuh
Cooling Supply Air: 17.293 / (,837 X 1,1 X 17) =			1.105	CFM
Summer Vent Outside Air (6,5% of supply) =			72	CFM
Return duct sensible gain:	238	Btuh		
Return plenum sensible gain:	0	Btuh		
Outside air sensible gain:	860	Btuh	72	CFM
Blow-thru fan sensible gain:	0	Btuh		
Total sensible gain on return side of coil:				1.098 Btuh
Total sensible gain on air handling system:				18.264 Btuh
Room space latent gain:	1.800	Btuh		
Infiltration latent gain:	0	Btuh		
Outside air latent gain:	1.559	Btuh		
Total latent gain on air handling system:				3.359 Btuh
Total system sensible and latent gain:				21.623 Btuh

Check Figures

Total Air Handler Supply Air (based on a 17° TD):	1.105	CFM
Total Air Handler Vent. Air (6,51% of Supply):	72	CFM
Total Conditioned Air Space:	449	Sq.ft
Supply Air Per Unit Area:	2,4635	CFM/Sq.ft
Area Per Cooling Capacity:	249,0	Sq.ft/Ton
Cooling Capacity Per Area:	0,0040	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:	1,80	Tons

Air Handler #3 - Salon 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
3	Salon 1	359	0	18.762	1.800	None	5/P, 0,06/ft²
	10am March	9	0	1.292	0	0	67
		3.768	0,00	3,60	0	0	67
	Room Peak Totals:	359	0	18.762	1.800		
	Total Rooms: 1	9	0	1.292	0	0	67
	Unique Rooms: 1	3.768	0,00	3,60	0	0	67

Air Handler #3 - Salon 1 - Total Load Summary

Air Handler Description:	Salon 1 Constant Volume - Proportion
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,12 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,92

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

Air System Peak Time:	10am in March.
Outdoor Conditions:	Clg: 76° DB, 67° WB, 107,29 grains
Indoor Conditions:	Clg: 72° DB, 50% RH

Summer: Ventilation 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 / (,837 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	18.762 Btuh		
Infiltration sensible gain:	0 Btuh		
Draw-thru fan sensible gain:	259 Btuh		
Supply duct sensible gain:	1.189 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			20.210 Btuh
Cooling Supply Air: 20.210 / (,837 X 1,1 X 17) =		1.292 CFM	
Summer Vent Outside Air (5,2% of supply) =		67 CFM	
Return duct sensible gain:	282 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	245 Btuh	67 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			527 Btuh
Total sensible gain on air handling system:			20.737 Btuh
Room space latent gain:	1.800 Btuh		
Infiltration latent gain:	0 Btuh		
Outside air latent gain:	1.310 Btuh		
Total latent gain on air handling system:			3.110 Btuh
Total system sensible and latent gain:			23.847 Btuh

Check Figures

Total Air Handler Supply Air (based on a 17° TD):	1.292	CFM
Total Air Handler Vent. Air (5,15% of Supply):	67	CFM
Total Conditioned Air Space:	359	Sq.ft
Supply Air Per Unit Area:	3,5993	CFM/Sq.ft
Area Per Cooling Capacity:	180,6	Sq.ft/Ton
Cooling Capacity Per Area:	0,0055	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:	1,99	Tons

Air Handler #4 - Salon 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
4	Salon 2	369	0	19.382	2.000	None	5/P, 0,06/ft²
	10am March	10	0	1.334	0	0	72
		3.871	0,00	3,62	0	0	72
	Room Peak Totals:	369	0	19.382	2.000		
	Total Rooms: 1	10	0	1.334	0	0	72
	Unique Rooms: 1	3.871	0,00	3,62	0	0	72

Air Handler #4 - Salon 2 - Total Load Summary

Air Handler Description:	Salon 2 Constant Volume - Proportion	
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,13 HP	
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan	
Sensible Heat Ratio:	0,91	--- This system occurs 1 time(s) in the building. ---
Air System Peak Time:	10am in March.	
Outdoor Conditions:	Clg: 76° DB, 67° WB, 107,29 grains	
Indoor Conditions:	Clg: 72° DB, 50% RH	

Summer: Ventilation 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 / (,837 X 1,08 X 0) =			0	CFM	
Winter Vent Outside Air (0,0% of supply) =			0	CFM	
Room space sensible gain:	19.382	Btuh			
Infiltration sensible gain:	0	Btuh			
Draw-thru fan sensible gain:	267	Btuh			
Supply duct sensible gain:	1.228	Btuh			
Reserve sensible gain:	0	Btuh			
Total sensible gain on supply side of coil:					20.878 Btuh
Cooling Supply Air: 20.878 / (,837 X 1,1 X 17) =			1.334	CFM	
Summer Vent Outside Air (5,4% of supply) =			72	CFM	
Return duct sensible gain:	290	Btuh			
Return plenum sensible gain:	0	Btuh			
Outside air sensible gain:	265	Btuh	72	CFM	
Blow-thru fan sensible gain:	0	Btuh			
Total sensible gain on return side of coil:					556 Btuh
Total sensible gain on air handling system:					21.434 Btuh
Room space latent gain:	2.000	Btuh			
Infiltration latent gain:	0	Btuh			
Outside air latent gain:	1.420	Btuh			
Total latent gain on air handling system:					3.420 Btuh
Total system sensible and latent gain:					24.853 Btuh

Check Figures

Total Air Handler Supply Air (based on a 17° TD):	1.334	CFM
Total Air Handler Vent. Air (5,40% of Supply):	72	CFM
Total Conditioned Air Space:	369	Sq.ft
Supply Air Per Unit Area:	3,6194	CFM/Sq.ft
Area Per Cooling Capacity:	178,0	Sq.ft/Ton
Cooling Capacity Per Area:	0,0056	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:	2,07	Tons

Air Handler #5 - Bodega Papeleria - 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	Bodega Papeleria	167	0	9.865	1.000	None	5/P, 0,06/ft²
	10am March	5	0	679	0	0	35
		1.750	0,00	4,07	0	0	35
	Room Peak Totals:	167	0	9.865	1.000		
	Total Rooms: 1	5	0	679	0	0	35
	Unique Rooms: 1	1.750	0,00	4,07	0	0	35

Air Handler #5 - Bodega Papeleria - Total Load Summary

Air Handler Description:	Bodega Papeleria Constant Volume - Proportion
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,06 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,91

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

Air System Peak Time:	10am in March.
Outdoor Conditions:	Clg: 76° DB, 67° WB, 107,29 grains
Indoor Conditions:	Clg: 72° DB, 50% RH

Summer: Ventilation 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 / (,837 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	9.865 Btuh		
Infiltration sensible gain:	0 Btuh		
Draw-thru fan sensible gain:	136 Btuh		
Supply duct sensible gain:	625 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			10.626 Btuh
Cooling Supply Air: 10.626 / (,837 X 1,1 X 17) =		679 CFM	
Summer Vent Outside Air (5,2% of supply) =		35 CFM	
Return duct sensible gain:	148 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	129 Btuh	35 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			277 Btuh
Total sensible gain on air handling system:			10.903 Btuh
Room space latent gain:	1.000 Btuh		
Infiltration latent gain:	0 Btuh		
Outside air latent gain:	689 Btuh		
Total latent gain on air handling system:			1.689 Btuh
Total system sensible and latent gain:			12.592 Btuh

Check Figures

Total Air Handler Supply Air (based on a 17° TD):	679	CFM
Total Air Handler Vent. Air (5,15% of Supply):	35	CFM
Total Conditioned Air Space:	167	Sq.ft
Supply Air Per Unit Area:	4,0741	CFM/Sq.ft
Area Per Cooling Capacity:	158,9	Sq.ft/Ton
Cooling Capacity Per Area:	0,0063	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:	1,05	Tons

Air Handler #6 - Salon 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
6	Salon 3	163	0	9.492	1.000	None	5/P, 0,06/ft²
	10am March	5	0	653	0	0	35
		1.708	0,00	4,02	0	0	35
	Room Peak Totals:	163	0	9.492	1.000		
	Total Rooms: 1	5	0	653	0	0	35
	Unique Rooms: 1	1.708	0,00	4,02	0	0	35

Air Handler #6 - Salon 3 - Total Load Summary

Air Handler Description:	Salon 3 Constant Volume - Proportion
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,06 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,91

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

Air System Peak Time:	10am in March.
Outdoor Conditions:	Clg: 76° DB, 67° WB, 107,29 grains
Indoor Conditions:	Clg: 72° DB, 50% RH

Summer: Ventilation 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 / (,837 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	9.492 Btuh		
Infiltration sensible gain:	0 Btuh		
Draw-thru fan sensible gain:	131 Btuh		
Supply duct sensible gain:	601 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			10.224 Btuh
Cooling Supply Air: 10.224 / (,837 X 1,1 X 17) =		653 CFM	
Summer Vent Outside Air (5,3% of supply) =		35 CFM	
Return duct sensible gain:	142 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	128 Btuh	35 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			270 Btuh
Total sensible gain on air handling system:			10.494 Btuh
Room space latent gain:	1.000 Btuh		
Infiltration latent gain:	0 Btuh		
Outside air latent gain:	684 Btuh		
Total latent gain on air handling system:			1.684 Btuh
Total system sensible and latent gain:			12.179 Btuh

Check Figures

Total Air Handler Supply Air (based on a 17° TD):	653	CFM
Total Air Handler Vent. Air (5,32% of Supply):	35	CFM
Total Conditioned Air Space:	163	Sq.ft
Supply Air Per Unit Area:	4,0164	CFM/Sq.ft
Area Per Cooling Capacity:	160,3	Sq.ft/Ton
Cooling Capacity Per Area:	0,0062	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:	1,01	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-Auditorio peaks (sensible) in June at 6pm, Air Handler 1 (Auditorio), Zone 0, 1.705,3 x 1,0, Construction Type: 16 (Heavy)								
Roof-1-12-Susp.C-L	1.705	0,50	12,5	0,285	6.069		2,278	3.884
Wall-3-0-D-M	360	0,83	20,6	0,393	2.907		3,143	1.130
Wall-4-90-D-M	312	0,83	22,2	0,393	2.723		3,143	980
Partition-1-1	328,9		10/0	0,336	1.104		0,000	0
Partition-2-1	217,35		10/0	0,336	729		0,000	0
Partition-5-1	213,9		10/0	0,336	718		0,000	0
Partition-6-1	55,2		10/0	0,336	185		0,000	0
Partition-7-1	88,09999		10/0	0,336	296		0,000	0
Partition-8-1	65,55		10/0	0,336	220		0,000	0
Partition-9-1	305,9		10/0	0,336	1.027		0,000	0
Gls-P-1-90-Tran	15,5	1,000	10	0,920	143		0,000	0
0%S-0-NS-Solar	15,5	0,670	0	0,000	0			
Gls-P-1-90-Tran	30,5	1,000	10	0,920	281		0,000	0
0%S-0-NS-Solar	30,5	0,670	0	0,000	0			
Gls-0-1-90-Tran	51,0	1,000	10	0,920	457		8,160	416
0%S-0-NS-Solar	51,0	0,670	110	0,750	2.819			
Gls-P-1-90-Tran	66,0	1,000	10	0,920	607		0,000	0
0%S-0-NS-Solar	66,0	0,670	0	0,000	0			
Lights-Prof=0	2.558	1,000			8.728			
Equipment-Prof=0	5.116	1,000			17.456	0		
People-Prof=0	171,0	1,000			42.750	34.200		
Sub-total					89.218	34.200		0
Safety factors:					+0%	+0%		+0%
Total w/ safety factors:					89.218	34.200		0
Room 2-Lobby Ingreso Auditorio peaks (sensible) in September at 9pm, Air Handler 2 (Lobby Ingreso Auditorio), Zone 0, 448,7 x 1,0, Construction Type: 24 (Heavy)								
Roof-1-12-Susp.C-L	449	0,50	14,8	0,285	1.884		2,278	1.022
Partition-1-1	433,92		10/0	0,336	1.456		0,000	0
Partition-2-1	171,52		10/0	0,336	576		0,000	0
Partition-3-1	367,92		10/0	0,336	1.235		0,000	0
Partition-4-1	76,08		10/0	0,336	255		0,000	0
Gls-P-1-90-Tran	66,0	1,000	4	0,920	607		0,000	0
0%S-0-NS-Solar	66,0	0,670	0	0,000	0			
Gls-P-1-90-Tran	98,0	1,000	4	0,920	902		0,000	0
0%S-0-NS-Solar	98,0	0,670	0	0,000	0			
Lights-Prof=0	673	1,000			2.297			
Equipment-Prof=0	1.346	1,000			4.593	0		
People-Prof=0	9,0	1,000			2.250	1.800		
Sub-total					16.055	1.800		0
Safety factors:					+0%	+0%		+0%
Total w/ safety factors:					16.055	1.800		0
Room 3-Salon 1 peaks (sensible) in March at 10am, Air Handler 3 (Salon 1), Zone 0, 358,9 x 1,0, Construction Type: 16 (Heavy)								
Roof-1-12-Susp.C-L	359	0,50	8,3	0,285	843		2,278	817
Wall-3-90-D-M	105	0,83	11,0	0,393	453		3,143	328
Partition-1-1	200,55		10/0	0,336	673		0,000	0
Partition-2-1	198,45		10/0	0,336	666		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
Partition-4-1	198,45		10/0	0,336	666		0,000	0
Gls-90°-1-90-Tran	95,0	1,000	2	0,920	153		8,160	775
0%S-0-NS-Solar	95,0	0,670	242	0,490	7.548			
Lights-Prof=0	538	1,000			1.837			
Equipment-Prof=0	1.077	1,000			3.674	0		
People-Prof=0	9,0	1,000			2.250	1.800		
Sub-total					18.762	1.800		0
Safety factors:					+0%	+0%		+0%
Total w/ safety factors:					18.762	1.800		0

Room 4-Salon 2 peaks (sensible) in March at 10am, Air Handler 4 (Salon 2), Zone 0, 368,7 x 1,0, Construction Type: 16 (Heavy)

Roof-1-12-Susp.C-L	369	0,50	8,3	0,285	866		2,278	840
Wall-3-90-D-M	107	0,83	11,0	0,393	462		3,143	335
Partition-1-1	203,7		10/0	0,336	684		0,000	0
Partition-2-1	200,55		10/0	0,336	673		0,000	0
Partition-4-1	200,55		10/0	0,336	673		0,000	0
Gls-90°-1-90-Tran	97,0	1,000	2	0,920	156		8,160	792
0%S-0-NS-Solar	97,0	0,670	242	0,490	7.707			
Lights-Prof=0	553	1,000			1.887			
Equipment-Prof=0	1.106	1,000			3.774	0		
People-Prof=0	10,0	1,000			2.500	2.000		
Sub-total					19.382	2.000		0
Safety factors:					+0%	+0%		+0%
Total w/ safety factors:					19.382	2.000		0

Room 5-Bodega Papeleria peaks (sensible) in March at 10am, Air Handler 5 (Bodega Papeleria), Zone 0, 166,7 x 1,0, Construction Type: 16 (Heavy)

Roof-1-12-Susp.C-L	167	0,50	8,3	0,285	392		2,278	380
Wall-3-90-D-M	49	0,83	11,0	0,393	212		3,143	154
Partition-1-1	58,25		10/0	0,336	195		0,000	0
Partition-2-1	197,4		10/0	0,336	662		0,000	0
Partition-4-1	197,4		10/0	0,336	662		0,000	0
Gls-P-1-90-Tran	35,2	1,000	2	0,920	324		0,000	0
0%S-0-NS-Solar	35,2	0,670	0	0,000	0			
Gls-90°-1-90-Tran	44,5	1,000	2	0,920	72		8,160	363
0%S-0-NS-Solar	44,5	0,670	242	0,490	3.535			
Lights-Prof=0	250	1,000			853			
Equipment-Prof=0	500	1,000			1.706	0		
People-Prof=0	5,0	1,000			1.250	1.000		
Sub-total					9.865	1.000		0
Safety factors:					+0%	+0%		+0%
Total w/ safety factors:					9.865	1.000		0

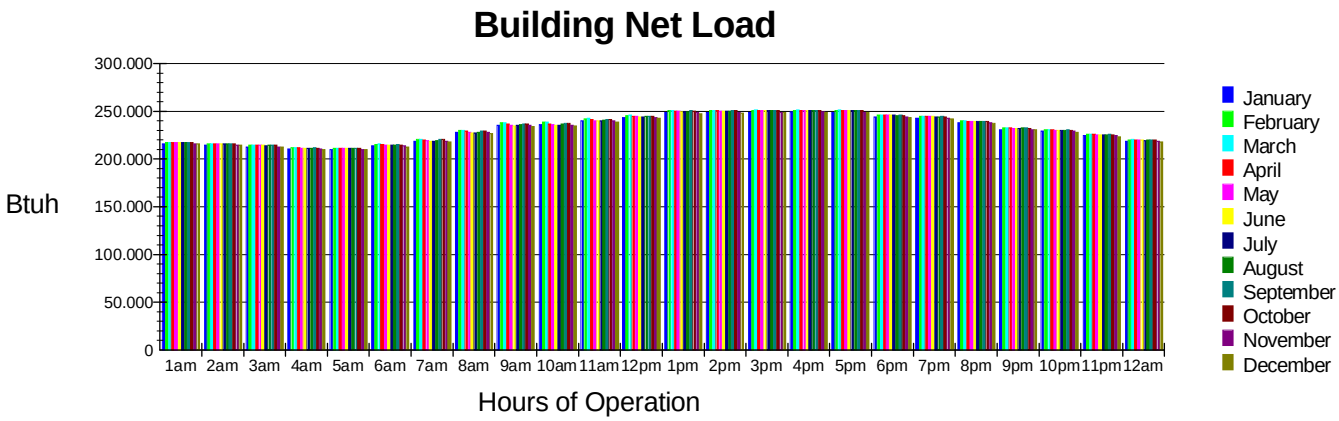
Room 6-Salon 3 peaks (sensible) in March at 10am, Air Handler 6 (Salon 3), Zone 0, 162,7 x 1,0, Construction Type: 16 (Heavy)

Roof-1-12-Susp.C-L	163	0,50	8,3	0,285	382		2,278	371
Wall-3-90-D-M	49	0,83	11,0	0,393	213		3,143	154

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

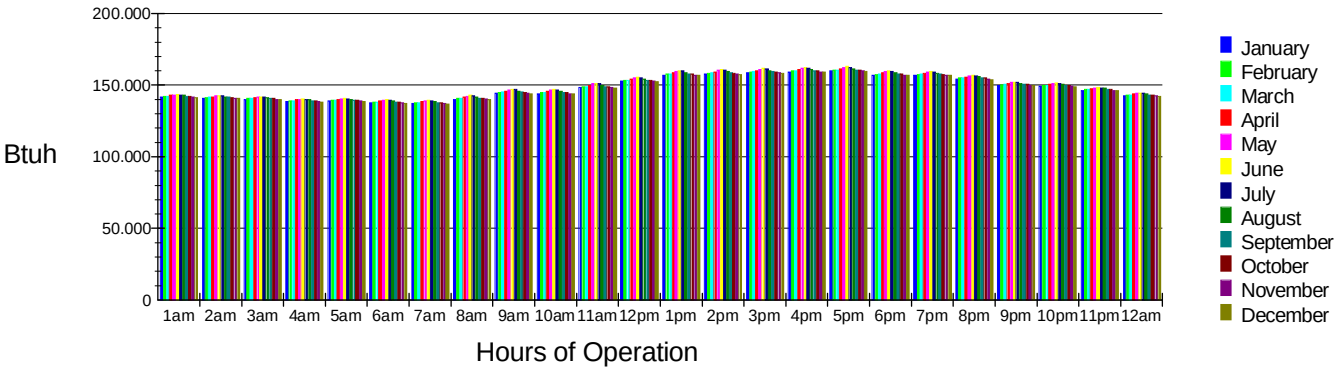
Load Description	Unit Quan	-SC- CFAC	CLTD SHGF	U.Fac -CLF-	Sen. Gain	Lat. Gain	Htg. Mult.	Htg. Loss
Partition-1-1	63,7		10/0	0,336	214		0,000	0
Partition-2-1	182,7		10/0	0,336	613		0,000	0
Partition-4-1	55,65		10/0	0,336	187		0,000	0
Partition-5-1	16,8		10/0	0,336	56		0,000	0
Partition-6-1	77,05		10/0	0,336	259		0,000	0
Gls-P-1-90-Tran	39,2	1,000	2	0,920	361		0,000	0
0%S-0-NS-Solar	39,2	0,670	0	0,000	0			
Gls-90°-1-90-Tran	37,0	1,000	2	0,920	60		8,160	302
0%S-0-NS-Solar	37,0	0,670	242	0,490	2.940			
Gls-P-1-90-Tran	50,0	1,000	2	0,920	460		0,000	0
0%S-0-NS-Solar	50,0	0,670	0	0,000	0			
Lights-Prof=0	244	1,000			833			
Equipment-Prof=0	488	1,000			1.665	0		
People-Prof=0	5,0	1,000			1.250	1.000		
Sub-total					9.492	1.000		0
Safety factors:					+0%	+0%		+0%
					---	---		---
Total w/ safety factors:					9.492	1.000		0

Building Profile Graphs

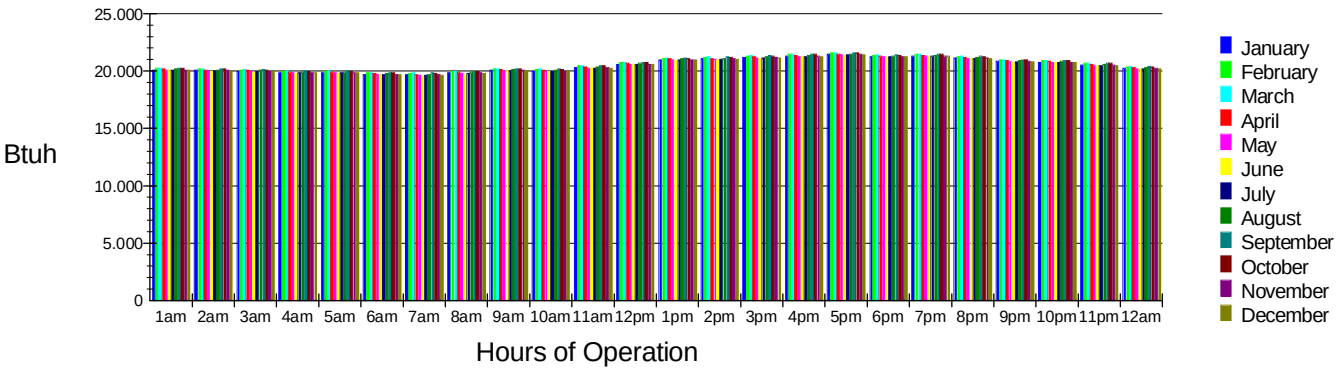


Air Handler Profile Graphs

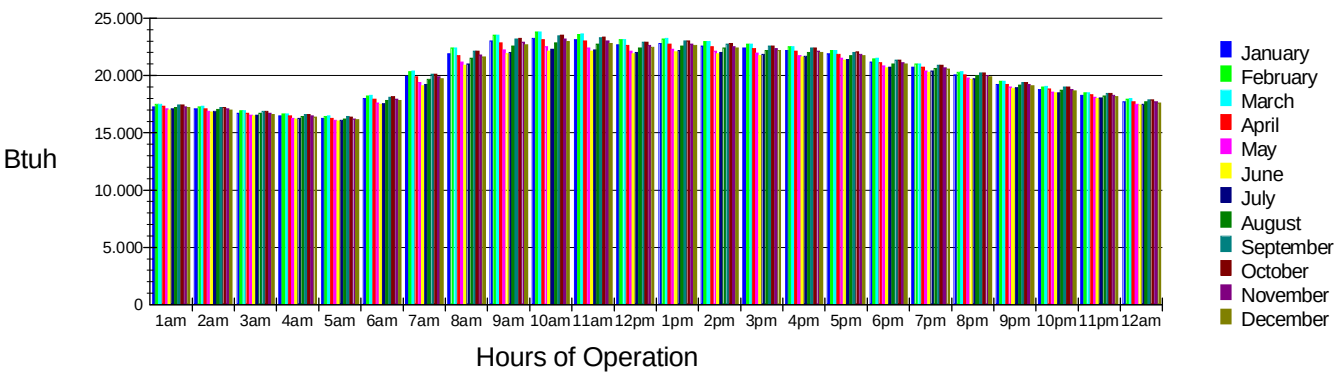
Air Handler 1 Net Load



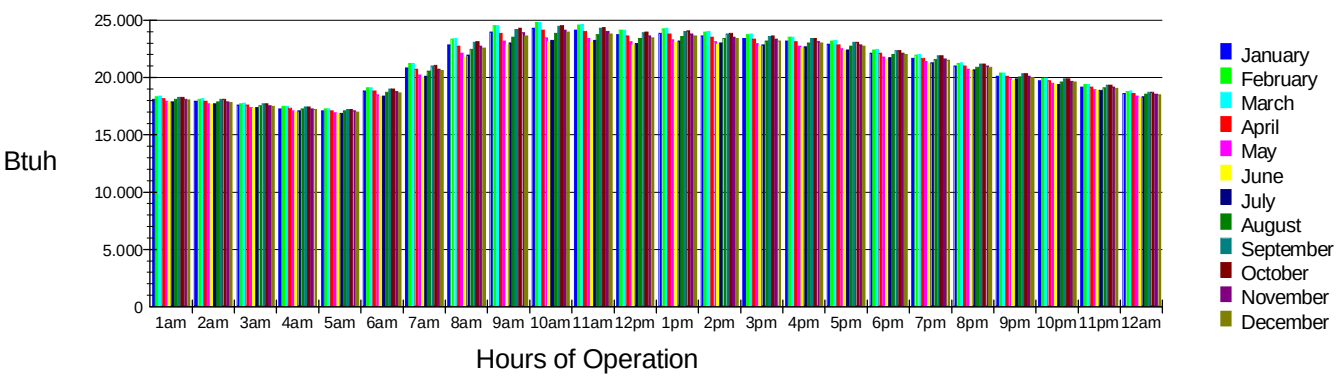
Air Handler 2 Net Load



Air Handler 3 Net Load

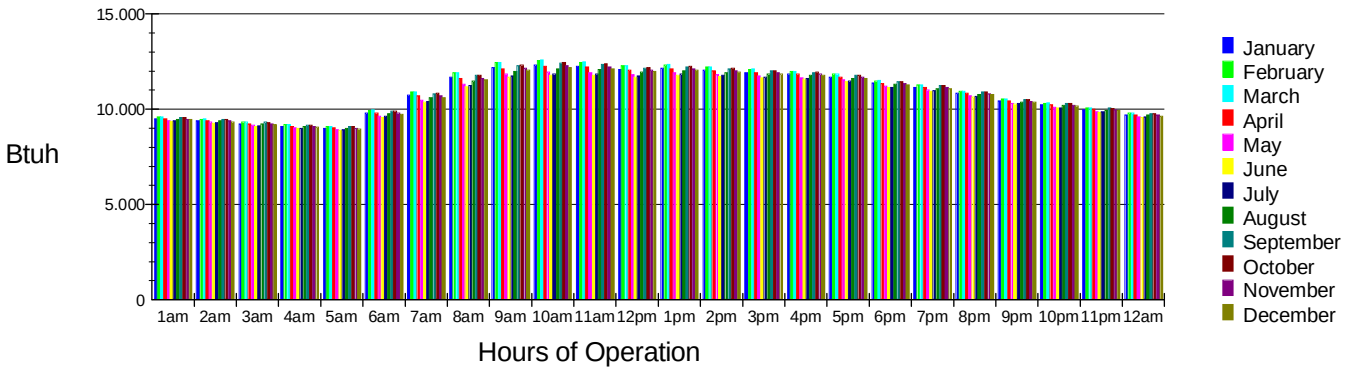


Air Handler 4 Net Load

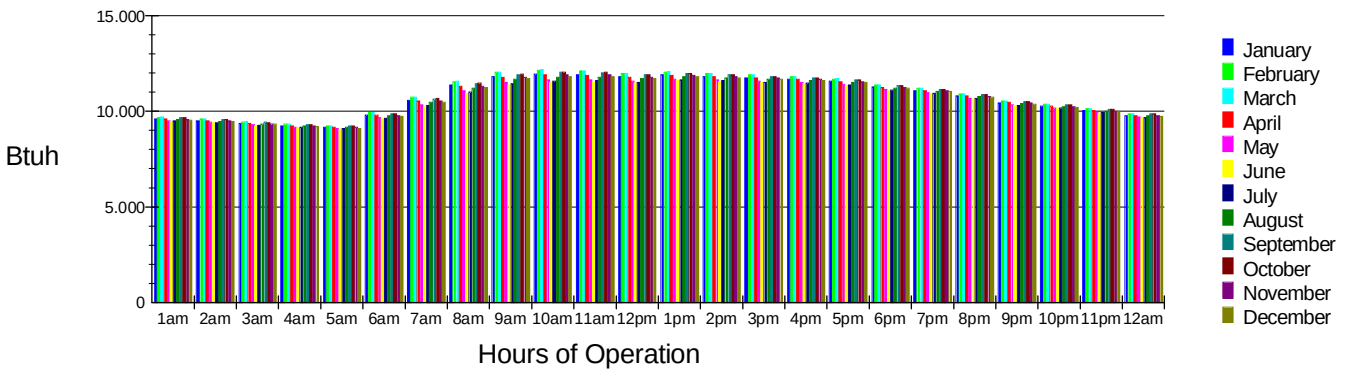


Air Handler Profile Graphs (cont'd)

Air Handler 5 Net Load

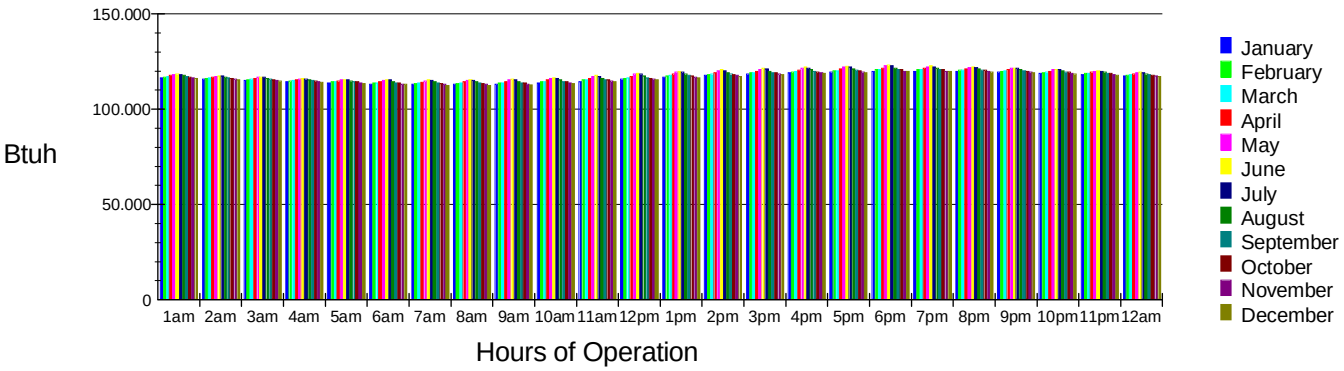


Air Handler 6 Net Load

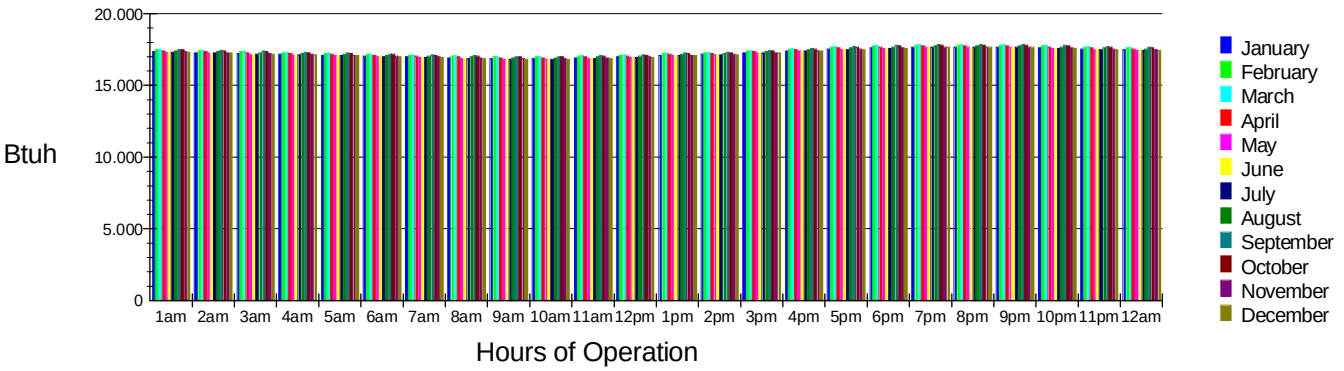


Room Profile Graphs

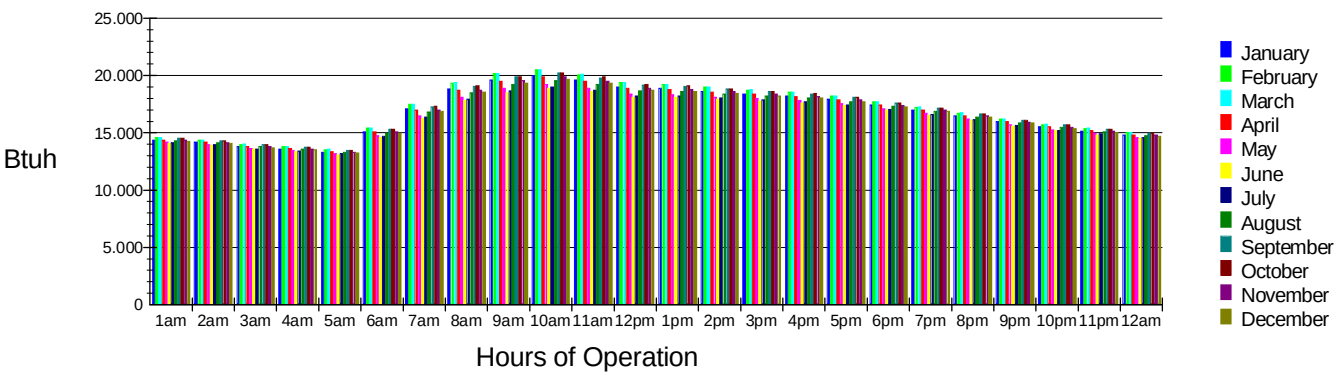
Room 1 Net Load



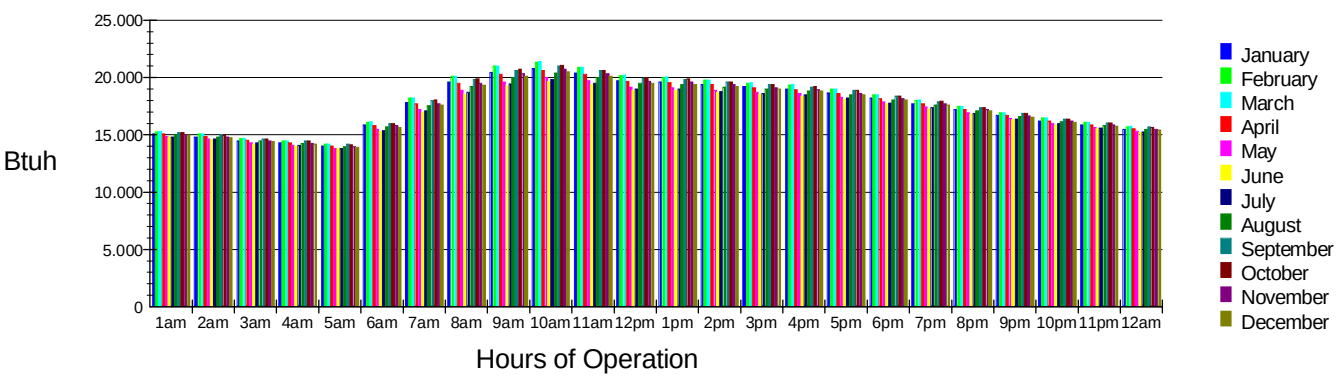
Room 2 Net Load



Room 3 Net Load

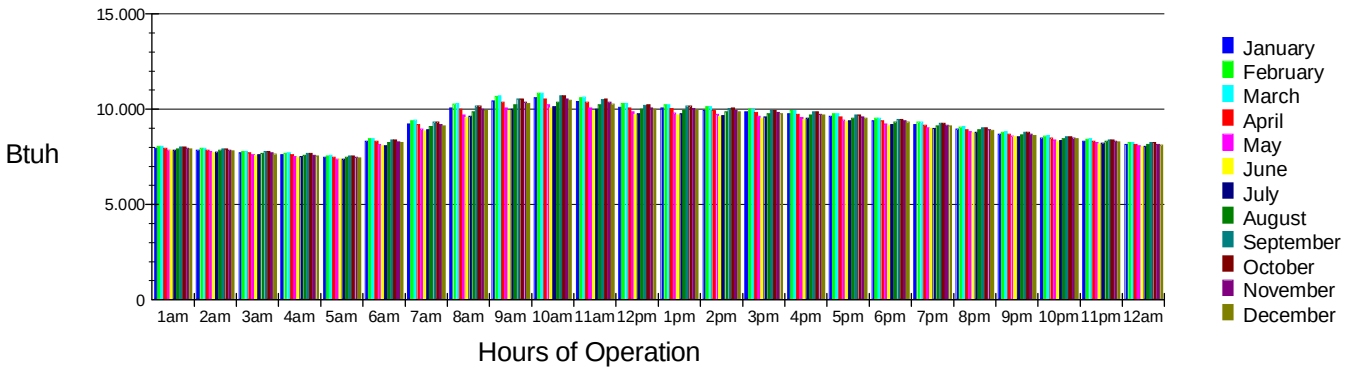


Room 4 Net Load

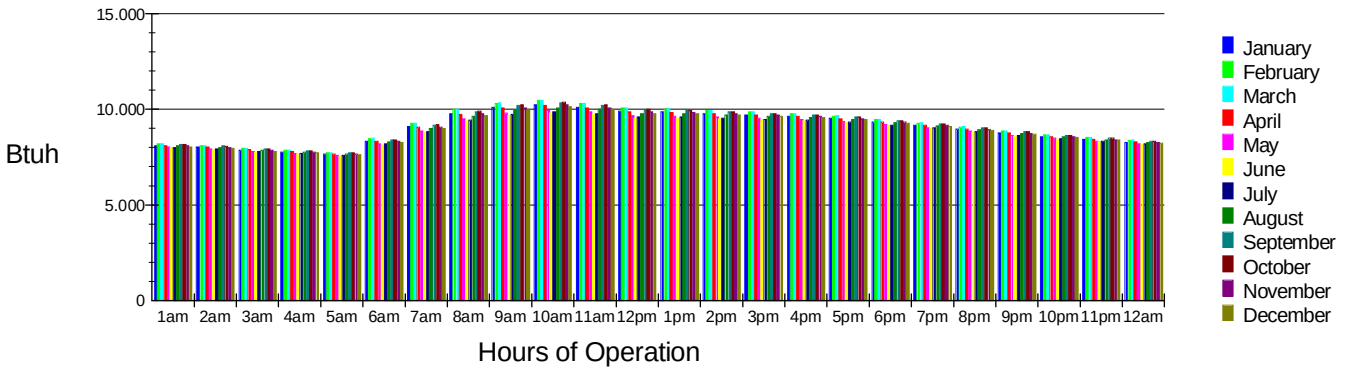


Room Profile Graphs (cont'd)

Room 5 Net Load



Room 6 Net Load



Air System #1 (Auditorio) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		60,152		55,000	
Draw-Thru Fan			1.231	0,218	79
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			5.653	1,000	361
Room Loads	34.200	9,787	89.218	15,782	5.703
Sensible Reserve			0	0,000	0
Room Condition	34.200	69,939	96.102	72,000	6.143
Return Air Duct			1.193	0,250	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 957 CFM	20.747	5,936	11.453	1,987	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	54.947	75,875	108.748	74,237	6.143

Air-Side Check Figure Psychrometric Equations:

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	=	0,837	x	1,10	x	6.143	x (	74,2	-	55,0	) =	108.748	Btuh
TLH	=	0,837	x	0,68	x	6.143	x (	75,9	-	60,2	) =	54.945	Btuh
SUM	=											163.693	Btuh
GTH	=	0,837	x	4,50	x	6.143	x (	29,7	-	22,5	) =	165.303	Btuh
Total System Load											=	163.076	Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM	=	165.303	/ (	0,00	x	500	)	=	0,0 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:	74,24	
Wet bulb temperature:	61,22	
Relative humidity:	50,25	
Enthalpy:	29,68	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	72,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	55,00	
Wet bulb temperature:	51,02	
Relative humidity:	78,25	
Enthalpy:	22,53	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	72,00

Air System #2 (Lobby Ingreso Auditorio) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		67,074		55,000	
Draw-Thru Fan			222	0,218	14
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			1.017	1,000	65
Room Loads	1.800	2,862	16.055	15,782	1.026
Sensible Reserve			0	0,000	0
Room Condition	1.800	69,937	17.293	72,000	1.105
Return Air Duct			238	0,250	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 72 CFM	1.559	2,479	860	0,830	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	3.359	72,415	18.392	73,080	1.105

Air-Side Check Figure Psychrometric Equations:

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	=	0,837	x	1,10	x	1.105	x (	73,1	-	55,0	) =	18.391	Btuh
TLH	=	0,837	x	0,68	x	1.105	x (	72,4	-	67,1	) =	3.359	Btuh

SUM	=											21.750	Btuh
GTH	=	0,837	x	4,50	x	1.105	x (	28,9	-	23,6	) =	21.850	Btuh
Total System Load											=	21.623	Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM	=	21.850	/ (	0,00	x	500	)	=	0,0	GPM
Heating GPM	=	0	/ (	0,00	x	500	)	=	0,0	GPM
Steam Req.	=	0	/	970				=	0,0	lb./hr

Entering Cooling Coil Conditions			Entering Heating Coil Conditions	
Dry bulb temperature:	73,08		Dry bulb temperature:	72,00
Wet bulb temperature:	60,16			
Relative humidity:	49,89			
Enthalpy:	28,85	Btu/lbm		

Leaving Cooling Coil Conditions			Leaving Heating Coil Conditions	
Dry bulb temperature:	55,00		Dry bulb temperature:	72,00
Wet bulb temperature:	52,68			
Relative humidity:	87,12			
Enthalpy:	23,60	Btu/lbm		

Air System #3 (Salon 1) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		67,487		55,000	
Draw-Thru Fan			259	0,218	17
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			1.189	1,000	76
Room Loads	1.800	2,449	18.762	15,782	1.199
Sensible Reserve			0	0,000	0
Room Condition	1.800	69,936	20.210	72,000	1.292
Return Air Duct			282	0,250	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 67 CFM	1.310	1,782	245	0,193	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	3.110	71,719	20.737	72,443	1.292

Air-Side Check Figure Psychrometric Equations:

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	=	0,837	x	1,10	x	1.292	x (	72,4	-	55,0	) =	20.737	Btuh
TLH	=	0,837	x	0,68	x	1.292	x (	71,7	-	67,5	) =	3.110	Btuh

SUM	=											23.846	Btuh
GTH	=	0,837	x	4,50	x	1.292	x (	28,6	-	23,7	) =	23.937	Btuh
Total System Load											=	23.847	Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM	=	23.937	/ (	0,00	x	500	)	=	0,0 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:	72,44	
Wet bulb temperature:	59,82	
Relative humidity:	50,49	
Enthalpy:	28,59	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	72,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	55,00	
Wet bulb temperature:	52,79	
Relative humidity:	87,68	
Enthalpy:	23,67	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	72,00

Air System #4 (Salon 2) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		67,302		55,000	
Draw-Thru Fan			267	0,218	17
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			1.228	1,000	78
Room Loads	2.000	2,634	19.382	15,782	1.239
Sensible Reserve			0	0,000	0
Room Condition	2.000	69,936	20.878	72,000	1.334
Return Air Duct			290	0,250	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 72 CFM	1.420	1,870	265	0,203	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	3.420	71,807	21.434	72,453	1.334

Air-Side Check Figure Psychrometric Equations:

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	=	0,837	x	1,10	x	1.334	x (	72,5	-	55,0	) =	21.433	Btuh
TLH	=	0,837	x	0,68	x	1.334	x (	71,8	-	67,3	) =	3.420	Btuh

SUM	=											24.853	Btuh
GTH	=	0,837	x	4,50	x	1.334	x (	28,6	-	23,6	) =	24.953	Btuh
Total System Load											=	24.853	Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM	=	24.953	/ (	0,00	x	500	)	=	0,0 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:	72,45	
Wet bulb temperature:	59,84	
Relative humidity:	50,54	
Enthalpy:	28,60	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	72,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	55,00	
Wet bulb temperature:	52,74	
Relative humidity:	87,43	
Enthalpy:	23,64	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	72,00

Air System #5 (Bodega Papeleria) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		67,348		55,000	
Draw-Thru Fan			136	0,218	9
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			625	1,000	40
Room Loads	1.000	2,588	9.865	15,783	631
Sensible Reserve			0	0,000	0
Room Condition	1.000	69,937	10.626	72,000	679
Return Air Duct			148	0,250	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 35 CFM	689	1,784	129	0,193	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	1.689	71,720	10.903	72,443	679

Air-Side Check Figure Psychrometric Equations:

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	=	0,837	x	1,10	x	679	x (	72,4	-	55,0	) =	10.902	Btuh
TLH	=	0,837	x	0,68	x	679	x (	71,7	-	67,3	) =	1.689	Btuh
SUM	=											12.591	Btuh
GTH	=	0,837	x	4,50	x	679	x (	28,6	-	23,6	) =	12.640	Btuh
Total System Load											=	12.592	Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM	=	12.640	/ (	0,00	x	500	)	=	0,0 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:	72,44	
Wet bulb temperature:	59,82	
Relative humidity:	50,49	
Enthalpy:	28,59	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	72,00

Leaving Cooling Coil Conditions

Dry bulb temperature:	55,00	
Wet bulb temperature:	52,75	
Relative humidity:	87,49	
Enthalpy:	23,64	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	72,00

Air System #6 (Salon 3) Psychrometric Analysis

System Load Analysis	Latent	Grains	Sensible	Temp	CFM
Leaving Coil Condition		67,247		55,000	
Draw-Thru Fan			131	0,218	8
Misc Load on Supply Side	0	0,000	0	0,000	0
Supply Air Duct			601	1,000	38
Room Loads	1.000	2,690	9.492	15,783	607
Sensible Reserve			0	0,000	0
Room Condition	1.000	69,937	10.224	72,000	653
Return Air Duct			142	0,250	
Return Air Plenum			0	0,000	
Misc Load on Return Side	0	0,000	0	0,000	
Vent Air 35 CFM	684	1,841	128	0,199	
Blow-Thru Fan			0	0,000	
Entering Coil Condition	1.684	71,778	10.494	72,449	653

Air-Side Check Figure Psychrometric Equations:

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	=	0,837	x	1,10	x	653	x (	72,4	-	55,0	) =	10.494	Btuh
TLH	=	0,837	x	0,68	x	653	x (	71,8	-	67,2	) =	1.684	Btuh
SUM	=											12.178	Btuh
GTH	=	0,837	x	4,50	x	653	x (	28,6	-	23,6	) =	12.227	Btuh
Total System Load											=	12.179	Btuh

Chilled and Hot Water Flow Rates and Steam Requirement

Cooling GPM	=	12.227	/ (	0,00	x	500	)	=	0,0 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:	72,45	
Wet bulb temperature:	59,83	
Relative humidity:	50,53	
Enthalpy:	28,60	Btu/lbm

Entering Heating Coil Conditions

Dry bulb temperature:	72,00

Leaving Cooling Coil Conditions

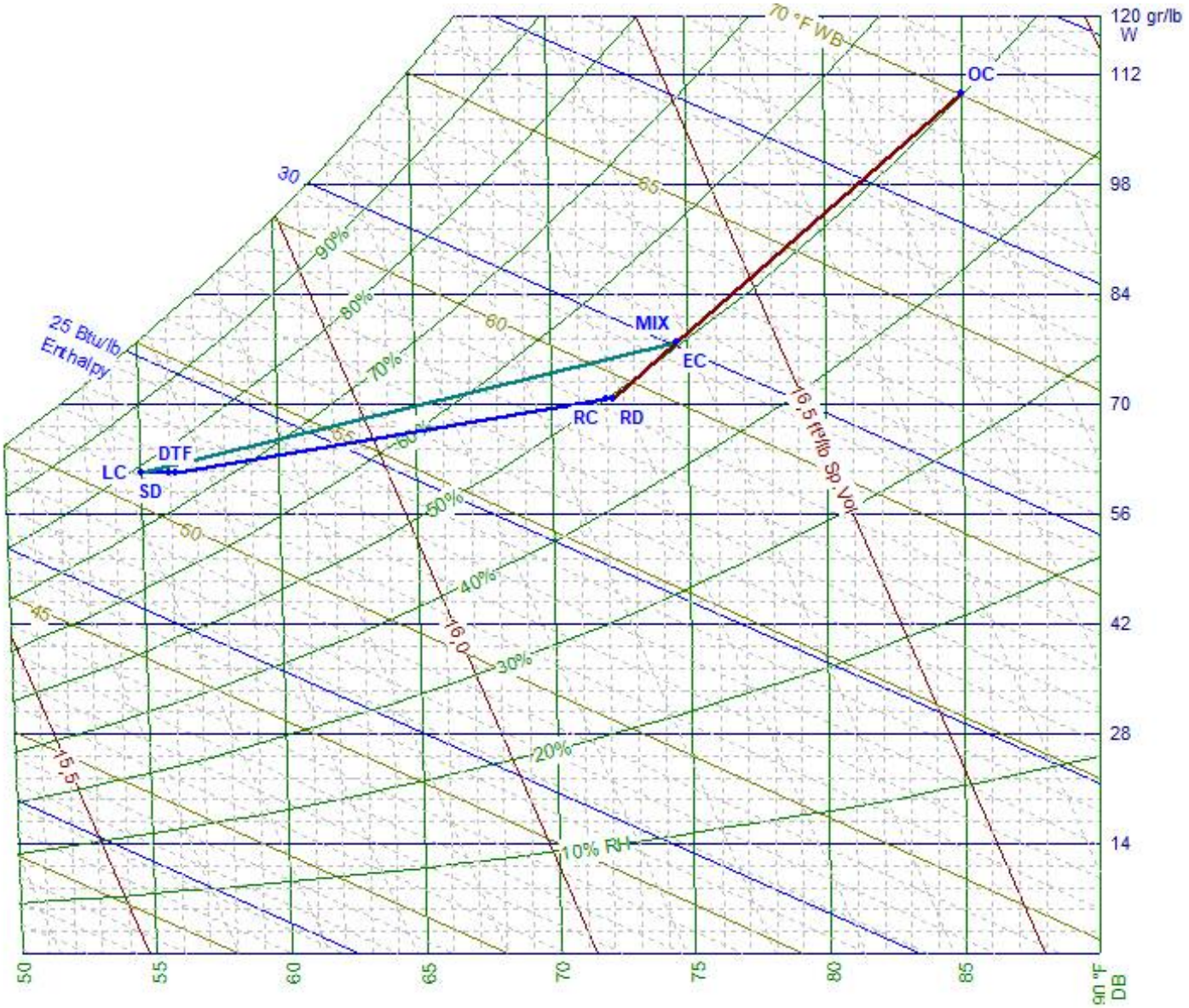
Dry bulb temperature:	55,00	
Wet bulb temperature:	52,73	
Relative humidity:	87,35	
Enthalpy:	23,63	Btu/lbm

Leaving Heating Coil Conditions

Dry bulb temperature:	72,00

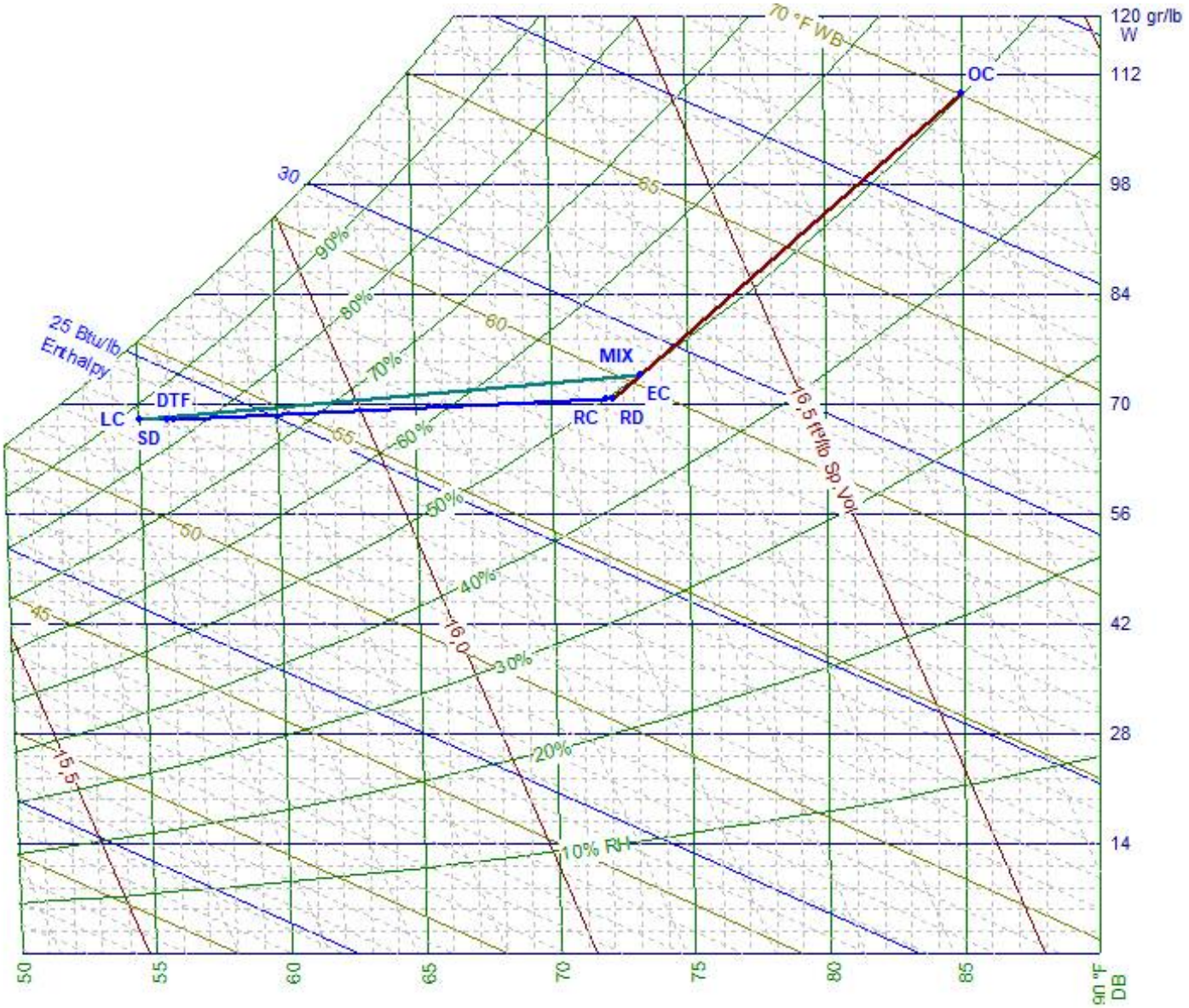
Air System #1 (Auditorio) Psychrometric Chart

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



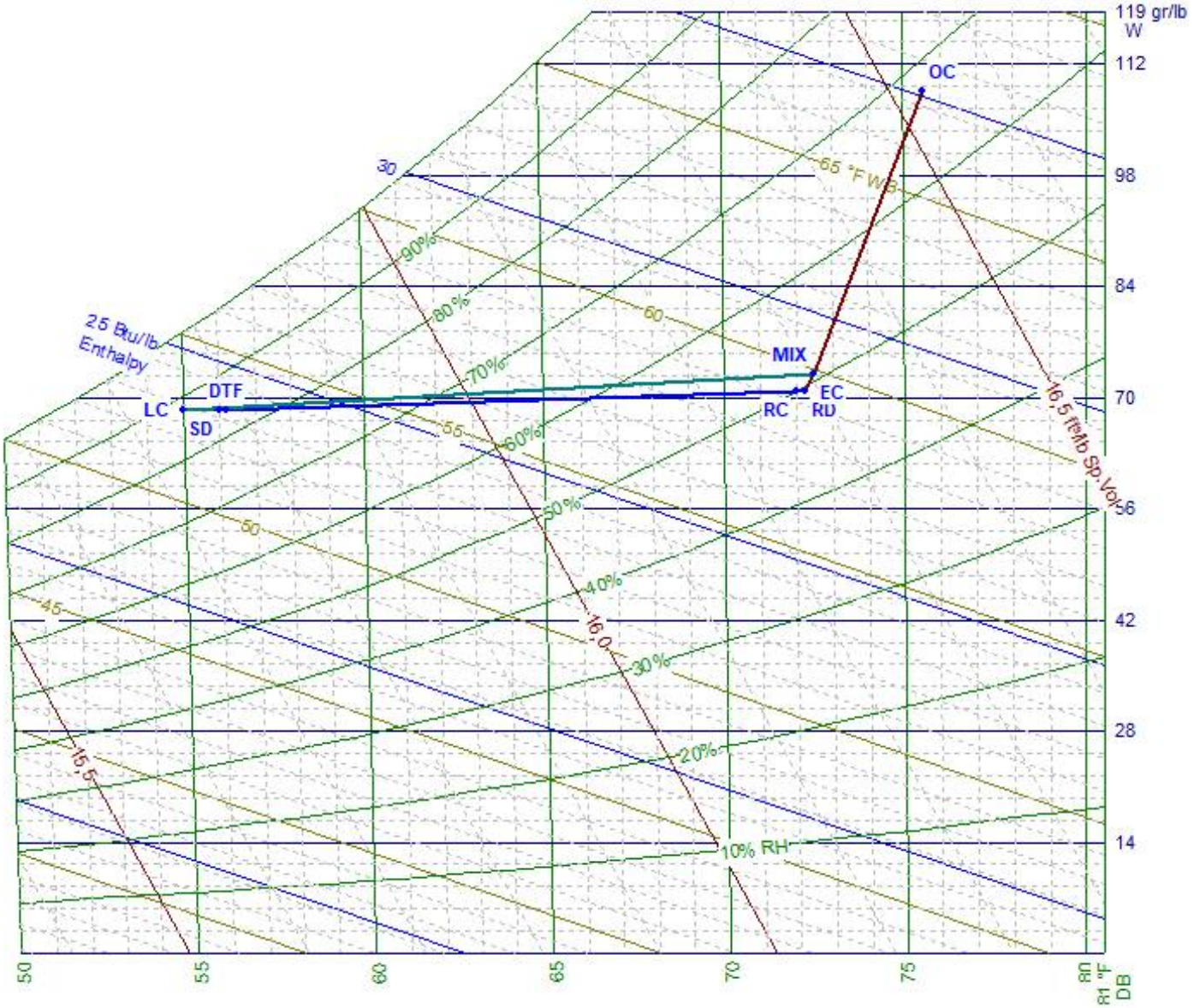
Air System #2 (Lobby Ingreso Auditorio) Psychrometric Chart

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



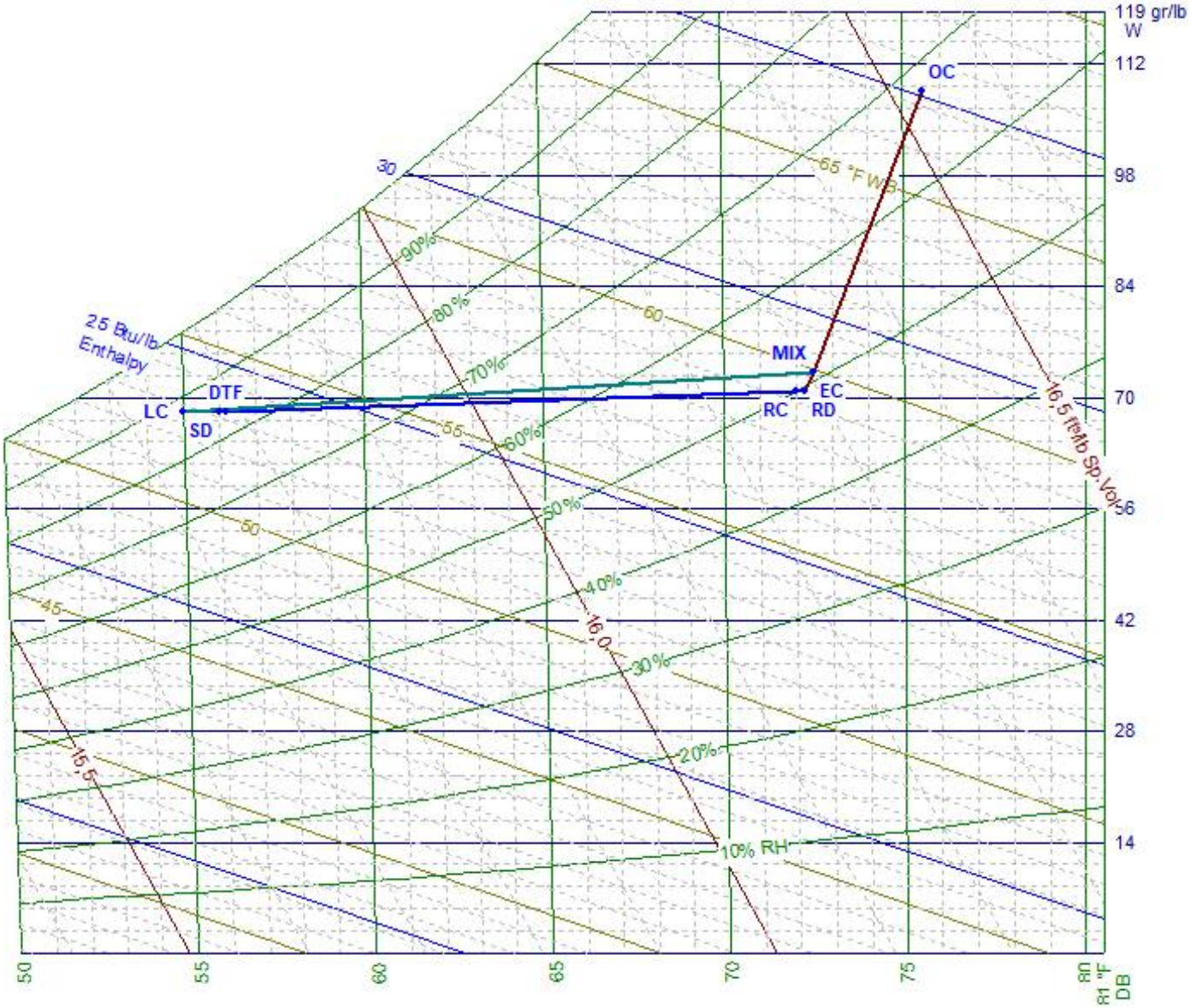
Air System #3 (Salon 1) Psychrometric Chart

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



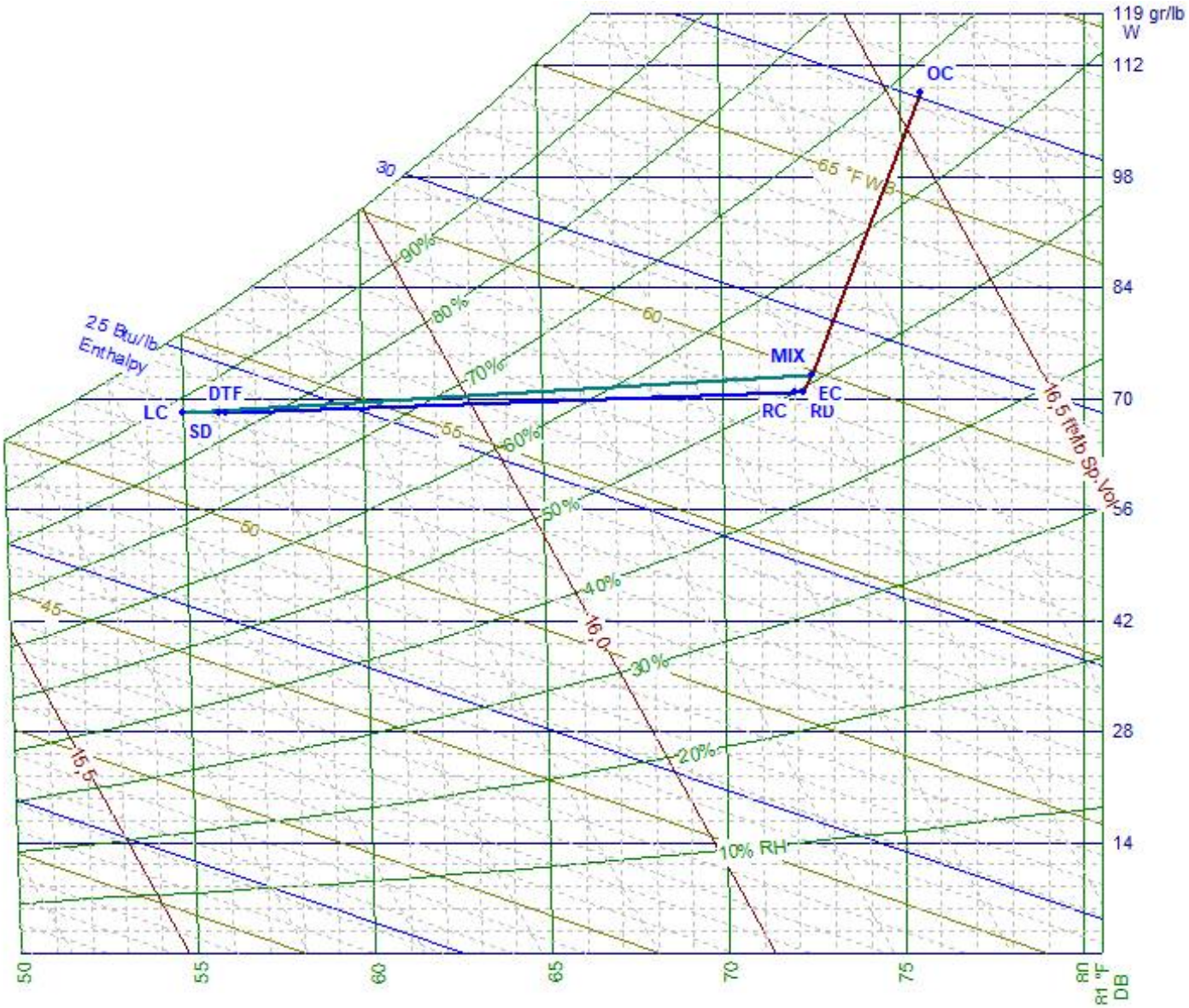
Air System #4 (Salon 2) Psychrometric Chart

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



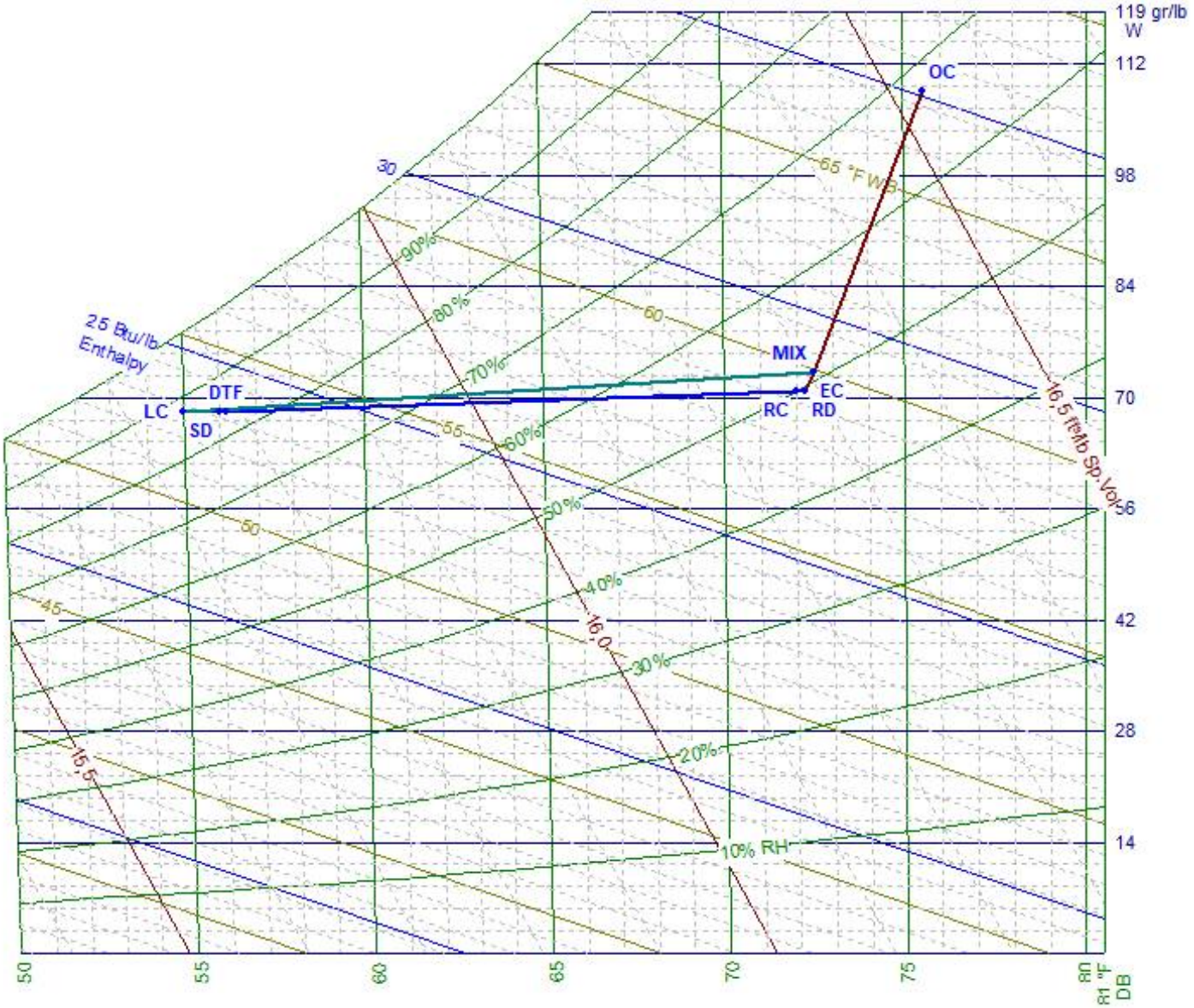
Air System #5 (Bodega Papeleria) Psychrometric Chart

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



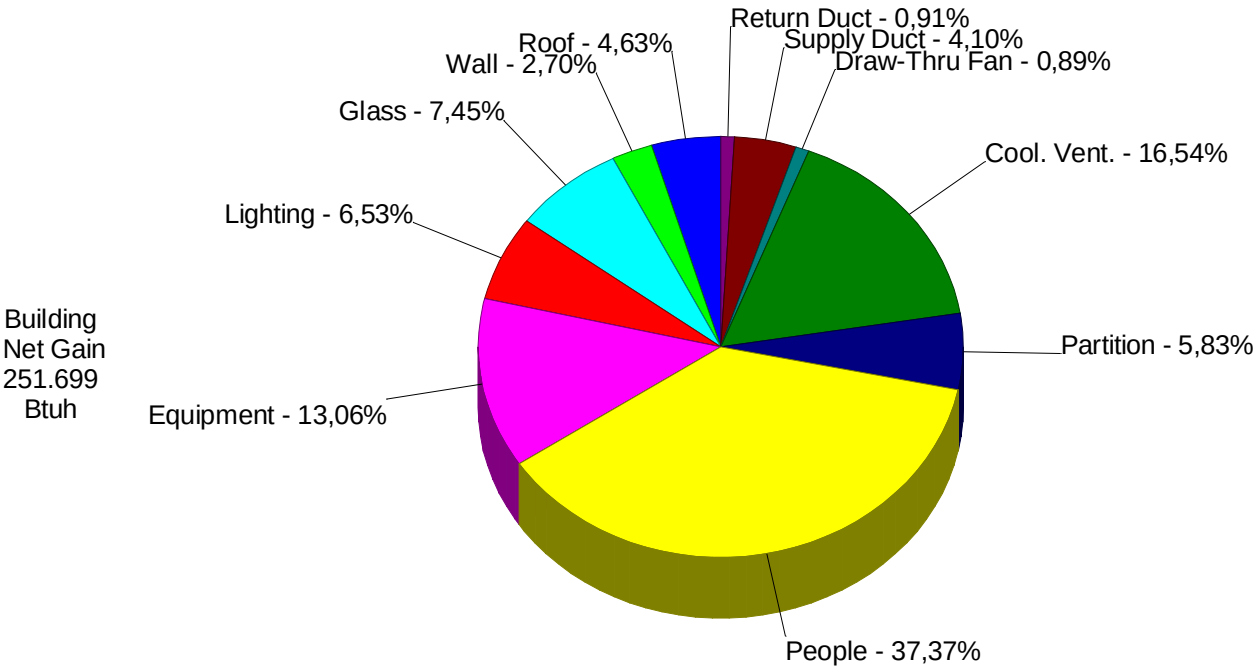
Air System #6 (Salon 3) Psychrometric Chart

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



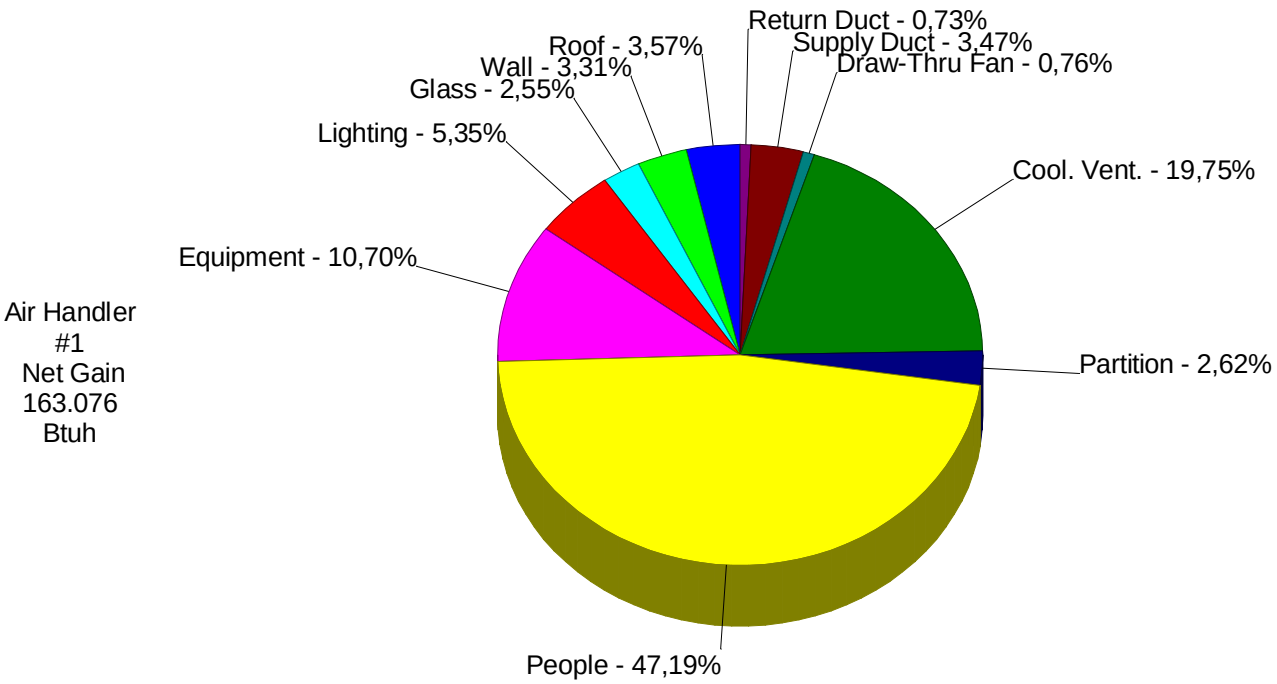
Building Pie Charts

Building peaks in March at 4pm.



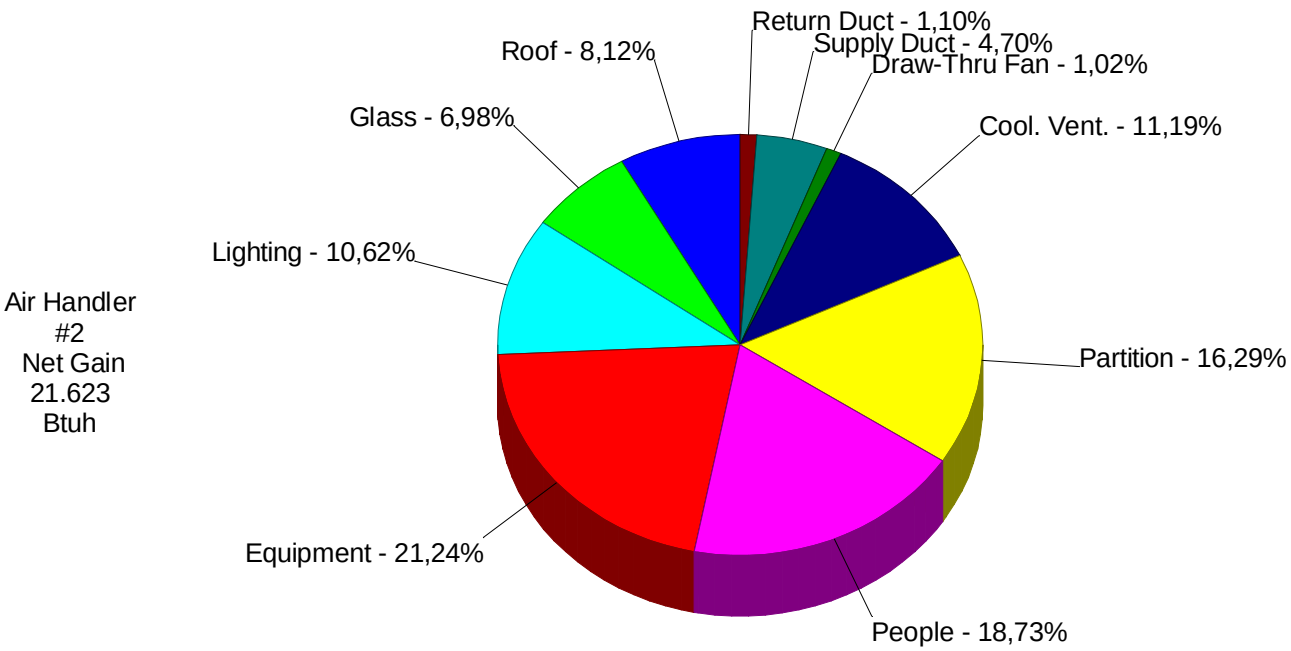
Air Handler #1 - Auditorio - Pie Charts

Air Handler #1 peaks in June at 5pm.



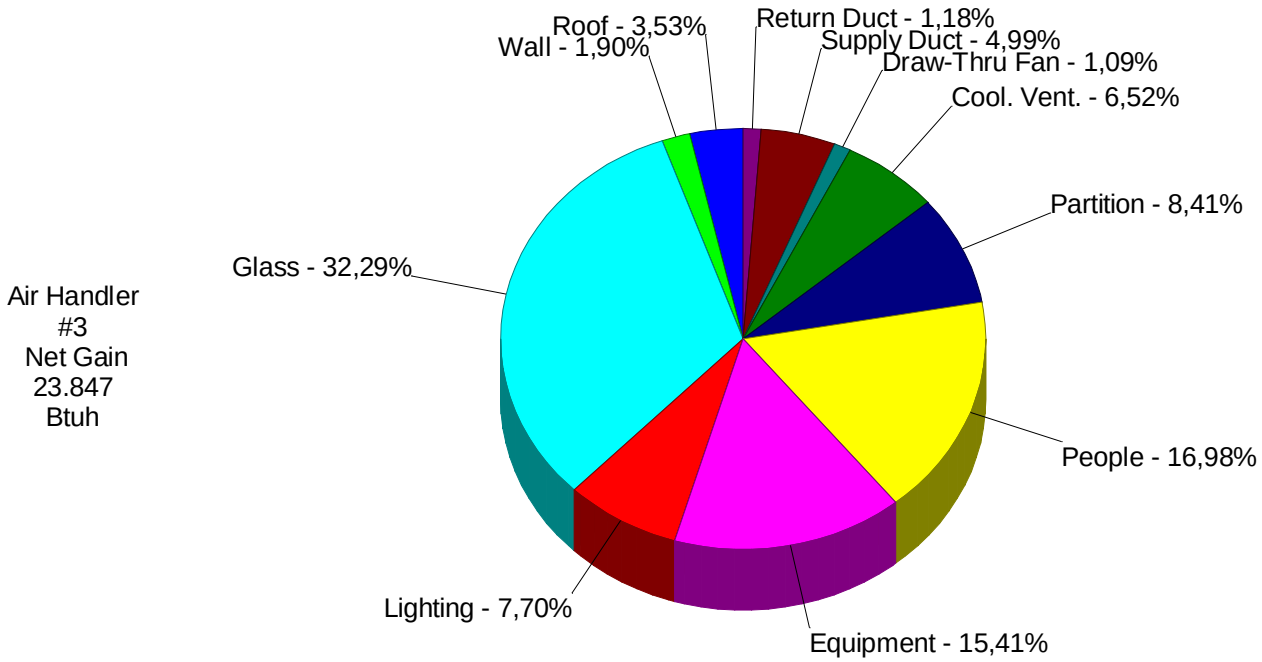
Air Handler #2 - Lobby Ingreso Auditorio - Pie Charts

Air Handler #2 peaks in September at 5pm.



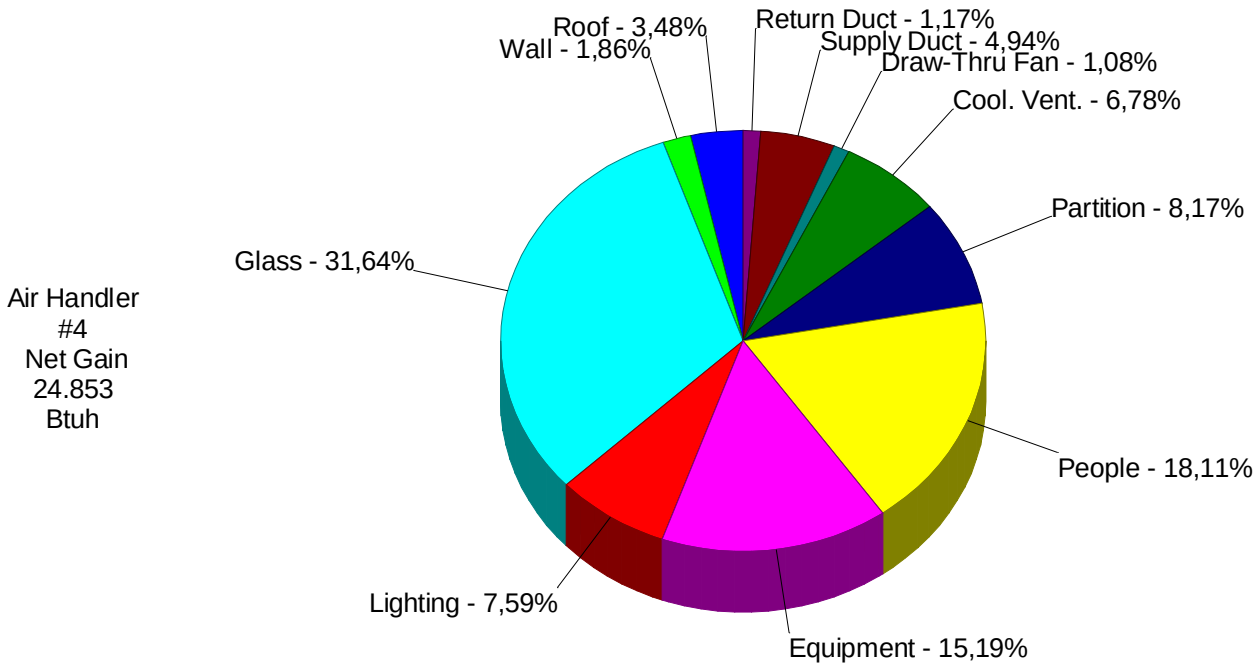
Air Handler #3 - Salon 1 - Pie Charts

Air Handler #3 peaks in March at 10am.



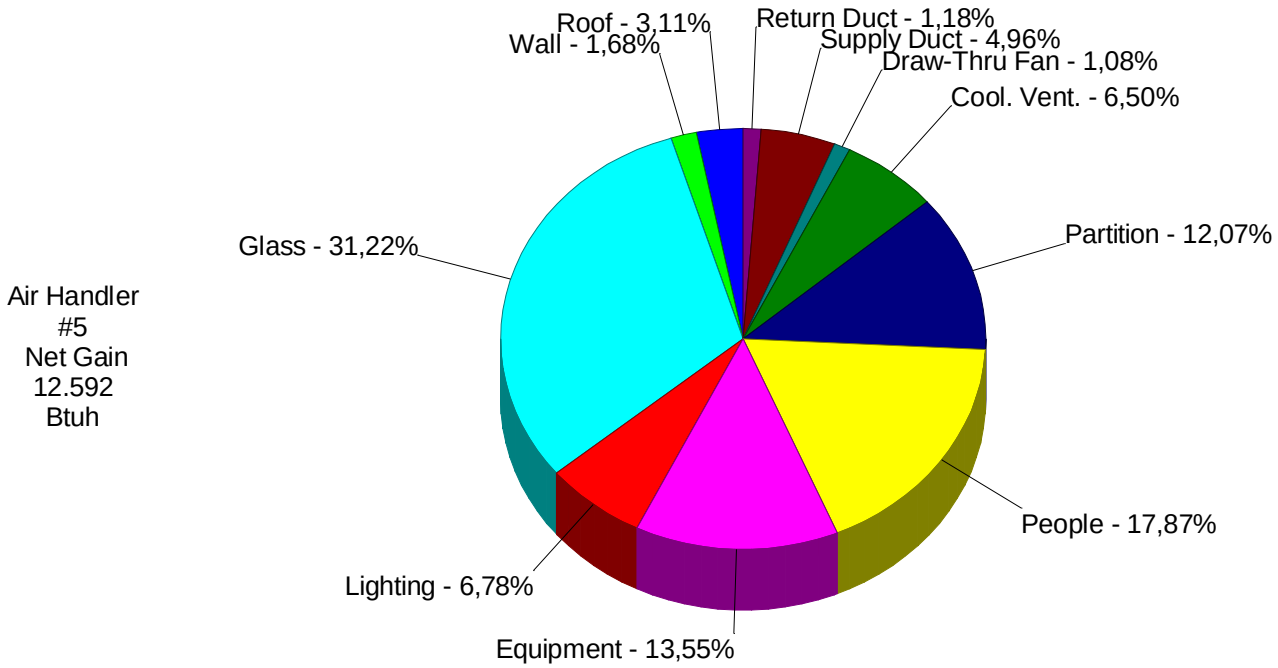
Air Handler #4 - Salon 2 - Pie Charts

Air Handler #4 peaks in March at 10am.



Air Handler #5 - Bodega Papeleria - Pie Charts

Air Handler #5 peaks in March at 10am.



Air Handler #6 - Salon 3 - Pie Charts

Air Handler #6 peaks in March at 10am.

