Residential System Sizing Calculation

Summary

N/A
289 Highfield Terr.
Lake City, FL 32024

Project Title:
Carlos Hechauarria

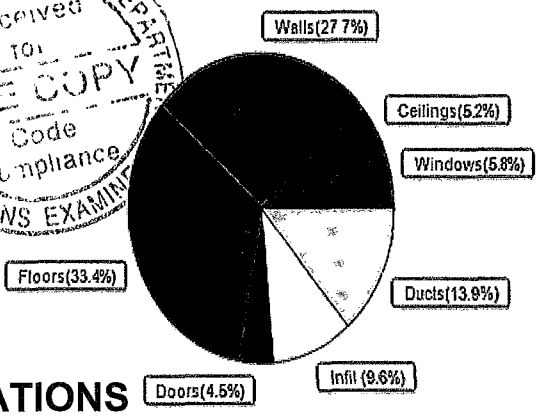
8/11/2017

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)					
Winter design temperature(TMY3 99%)	30	F	Summer design temperature(TMY3 99%)	94	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	40	F	Summer temperature difference	19	F
Total heating load calculation	**16375**	**Btuh**	**Total cooling load calculation**	**9945**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	100.0	16375	Sensible (SHR = 0.70)	86.2	6962
Heat Pump + Auxiliary(0.0kW)	100.0	16375	Latent	159.9	2984
			Total (Electric Heat Pump)	100.0	9945

WINTER CALCULATIONS

Winter Heating Load (for 792 sqft)

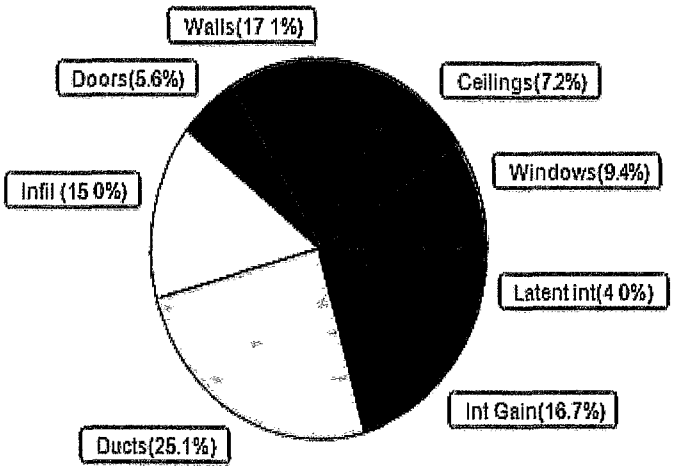
Load component			Load	
Window total	66	sqft	950	Btuh
Wall total	861	sqft	4529	Btuh
Door total	40	sqft	736	Btuh
Ceiling total	832	sqft	845	Btuh
Floor total	792	sqft	5475	Btuh
Infiltration	36	cfm	1570	Btuh
Duct loss			2270	Btuh
Subtotal			**16375**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**16375**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 792 sqft)

Load component			Load	
Window total	66	sqft	935	Btuh
Wall total	861	sqft	1698	Btuh
Door total	40	sqft	552	Btuh
Ceiling total	832	sqft	718	Btuh
Floor total			0	Btuh
Infiltration	27	cfm	559	Btuh
Internal gain			1660	Btuh
Duct gain			1956	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**8079**	**Btuh**
Latent gain(ducts)			538	Btuh
Latent gain(infiltration)			928	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			400	Btuh
Total latent gain			**1866**	**Btuh**
TOTAL HEAT GAIN			**9945**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 8/11/2017

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

N/A
289 Highfield Terr.
Lake City, FL 32024

Project Title:
Carlos Hechauarria
Building Type: User

8/11/2017

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft) X	HTM=	Load
1	2, NFRC 0.25	Vinyl	0.36	S	45.0	14.4	648 Btuh
2	2, NFRC 0.25	Vinyl	0.36	E	9.0	14.4	130 Btuh
3	2, NFRC 0.25	Vinyl	0.36	N	12.0	14.4	173 Btuh
	Window Total				66.0(sqft)		950 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	255	5.26	1342 Btuh
2	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	154	5.26	812 Btuh
3	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	288	5.26	1516 Btuh
4	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	163	5.26	860 Btuh
	Wall Total				861(sqft)		4529 Btuh

Doors	Type	Storm	Ueff.	Area X	HTM=	Load
1	Insulated - Exterior, n		(0.460)	20	18.4	368 Btuh
2	Insulated - Exterior, n		(0.460)	20	18.4	368 Btuh
	Door Total			40(sqft)		736Btuh

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Vented Attic/L/Shing	(0.025)	38.0/0.0	832	1.0	845 Btuh
	Ceiling Total			832(sqft)		845Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	116.0 ft(perim.)	47.2	5475 Btuh
	Floor Total			792 sqft		5475 Btuh

	Envelope Subtotal:	12536 Btuh

Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.33	6597	1.00	35.9	1570 Btuh

Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.161)	2270 Btuh
All Zones	**Sensible Subtotal All Zones**	**16375 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	16375 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	16375 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

N/A
289 Highfield Terr.
Lake City, FL 32024

Project Title:
Carlos Hechauarria
Building Type: User

8/11/2017

EQUIPMENT

1. Electric Heat Pump	#	16375 Btuh

Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)
U - (Window U-Factor)
HTM - (ManualJ Heat Transfer Multiplier)

Version 8

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

N/A
289 Highfield Terr.
Lake City, FL 32024

Project Title:
Carlos Hechauarria

8/11/2017

Reference City: Gainesville, FL Temperature Difference: 19.0F(TMY3 99%) Humidity difference: 51gr.

Component Loads for Whole House

Window	Type* Panes	SHGC	U	InSh	IS	Ornt	Overhang Len	Hgt	Window Area(sqft) Gross	Shaded	Unshaded	HTM Shaded	Unshaded	Load
1	2 NFRC	0 25, 0 36		No	No	S	1 5ft.	0.7ft.	45.0	45.0	0.0	12	14	544 Btuh
2	2 NFRC	0 25, 0.36		No	No	E	1 5ft.	0.7ft	9.0	1.7	7 3	12	31	246 Btuh
3	2 NFRC	0.25, 0.36		No	No	N	1 5ft.	0.7ft	12.0	0.0	12 0	12	12	145 Btuh
	Window Total								66 (sqft)					935 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Concrete Blk,Hollow- Ext	0 13	5.0/0 0	255.0	2 0	503 Btuh
2	Concrete Blk,Hollow- Ext	0 13	5 0/0 0	154.3	2.0	305 Btuh
3	Concrete Blk,Hollow- Ext	0.13	5 0/0 0	288.0	2.0	568 Btuh
4	Concrete Blk,Hollow- Ext	0.13	5 0/0 0	163.3	2.0	322 Btuh
	Wall Total			861 (sqft)		1698 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	20 0	13.8	276 Btuh
2	Insulated - Exterior	20.0	13.8	276 Btuh
	Door Total	40 (sqft)		552 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/Light/Shingle/RB	0.025	38.0/0.0	832.0	0 86	718 Btuh
	Ceiling Total			832 (sqft)		718 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0 0	792 (ft-perimeter)	0 0	0 Btuh
	Floor Total		792.0 (sqft)		0 Btuh

	Envelope Subtotal:	3904 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.24	6597	1	26.9	559 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		2	X 230	+	1200	1660 Btuh
				Sensible Envelope Load:		6123 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.319)		1956 Btuh
				Sensible Load All Zones		**8079 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

N/A
289 Highfield Terr.
Lake City, FL 32024

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Carlos Hechauarria

8/11/2017

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**6123 Btuh**
	Sensible Duct Load	1956 Btuh
	Total Sensible Zone Loads	**8079 Btuh**
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	**8079 Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	928 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	538 Btuh
	Latent occupant gain (2.0 people @ 200 Btuh per person)	400 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**1866 Btuh**
	TOTAL GAIN	**9945 Btuh**

EQUIPMENT

1. Central Unit	#	9945 Btuh

*Key. Window types (Panes - Number and type of panes of glass)
(SHGC - Shading coefficient of glass as SHGC numerical value)
(U - Window U-Factor)
(InSh - Interior shading device none(No), Blinds(B), Draperies(D) or Roller Shades(R))
- For Blinds. Assume medium color, half closed
For Draperies: Assume medium weave, half closed
For Roller shades. Assume translucent, half closed
(IS - Insect screen: none(N), Full(F) or Half(½))
(Ornt - compass orientation)

Version 8