Residential System Sizing Calculation

Summary

Project Title:
Lot 62 Mother Inlaw Suite

, FL

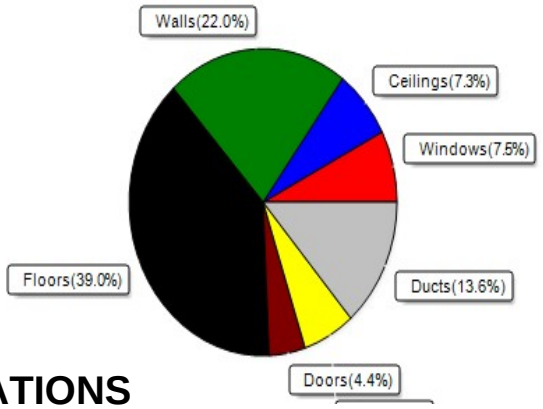
5/4/2022

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	**14516**	**Btuh**	**Total cooling load calculation**	**11446**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	124.0	18000	Sensible (SHR = 0.85)	153.0	15300
Heat Pump + Auxiliary(0.0kW)	124.0	18000	Latent	186.7	2700
			Total (Electric Heat Pump)	157.3	18000

WINTER CALCULATIONS

Winter Heating Load (for 832 sqft)

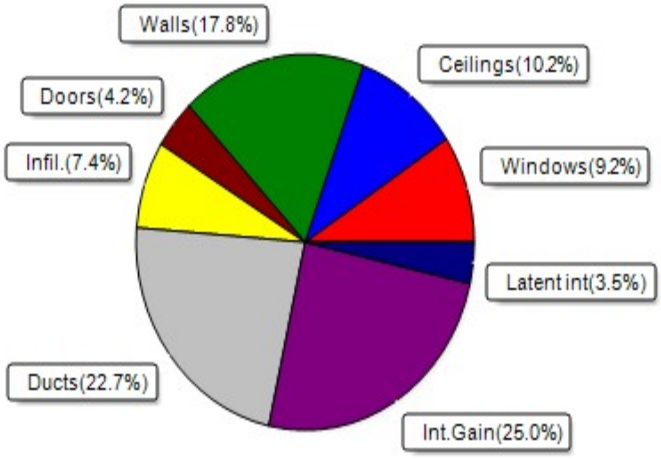
Load component			Load	
Window total	105	sqft	1092	Btuh
Wall total	926	sqft	3193	Btuh
Door total	40	sqft	640	Btuh
Ceiling total	832	sqft	1060	Btuh
Floor total	832	sqft	5664	Btuh
Infiltration	21	cfm	898	Btuh
Duct loss			1969	Btuh
Subtotal			**14516**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**14516**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 832 sqft)

Load component			Load	
Window total	105	sqft	1051	Btuh
Wall total	926	sqft	2036	Btuh
Door total	40	sqft	480	Btuh
Ceiling total	832	sqft	1166	Btuh
Floor total			0	Btuh
Infiltration	15	cfm	320	Btuh
Internal gain			2860	Btuh
Duct gain			2088	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**10000**	**Btuh**
Latent gain(ducts)			515	Btuh
Latent gain(infiltration)			531	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			400	Btuh
Total latent gain			**1446**	**Btuh**
TOTAL HEAT GAIN			**11446**	**Btuh**



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EnergyGauge® / USRCZB v7.0.01

EnergyGauge® System Sizing
PREPARED BY: _____
DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Lot 62 Mother Inlaw Suite

, FL

5/4/2022

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	0.20, 0.26	No	No	S	1.5ft.	2.3ft.	30.0	30.0	0.0	9	11	274	Btuh
2	2 NFRC	0.20, 0.26	No	No	W	1.5ft.	2.3ft.	6.0	0.0	6.0	9	24	145	Btuh
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft.	2.3ft.	15.0	0.0	15.0	9	9	137	Btuh
4	2 NFRC	0.20, 0.26	No	No	N	1.5ft.	2.3ft.	15.0	0.0	15.0	9	9	137	Btuh
5	2 NFRC	0.20, 0.26	No	No	E	9.5ft.	2.3ft.	30.0	30.0	0.0	9	24	274	Btuh
6	2 NFRC	0.20, 0.26	No	No	E	9.5ft.	2.3ft.	9.0	9.0	0.0	9	24	82	Btuh
	Window Total								105 (sqft)					1051 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.09	13.0/0.6	231.0	2.2	508 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.6	273.0	2.2	600 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.6	117.0	2.2	257 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.6	45.0	2.2	99 Btuh
5	Frame - Wood - Ext	0.09	13.0/0.6	85.0	2.2	187 Btuh
6	Frame - Wood - Ext	0.09	13.0/0.6	175.0	2.2	385 Btuh
	Wall Total			926 (sqft)		2036 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	20.0	12.0	240 Btuh
2	Insulated - Exterior	20.0	12.0	240 Btuh
	Door Total	40 (sqft)		480 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/Light/Shingle	0.032	30.0/0.0	832.0	1.40	1166 Btuh
	Ceiling Total			832 (sqft)		1166 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	832 (ft-perimeter)	0.0	0 Btuh
	Floor Total		832.0 (sqft)		0 Btuh
			Envelope Subtotal:		4732 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	7488	1	15.4	320 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		2	X 230	+	2400	2860 Btuh
				Sensible Envelope Load:		7912 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.264)		2088 Btuh
				Sensible Load All Zones		**10000 Btuh**

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Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lot 62 Mother Inlaw Suite
, FL

5/4/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**7912 Btuh**
	Sensible Duct Load	2088 Btuh
	Total Sensible Zone Loads	**10000 Btuh**
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	**10000 Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	531 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	515 Btuh
	Latent occupant gain (2.0 people @ 200 Btuh per person)	400 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**1446 Btuh**
	TOTAL GAIN	**11446 Btuh**

EQUIPMENT

1. Central Unit	#	18000 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)

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System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Lot 62 Mother Inlaw Suite
, FL Building Type: User

5/4/2022

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 0.20	Vinyl	0.26	S	30.0	10.4	312 Btuh
2	2, NFRC 0.20	Vinyl	0.26	W	6.0	10.4	62 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	15.0	10.4	156 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	15.0	10.4	156 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	30.0	10.4	312 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	9.0	10.4	94 Btuh
	Window Total				105.0(sqft)		1092 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	231	3.45	797 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	273	3.45	941 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	117	3.45	403 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	45	3.45	155 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	85	3.45	293 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	175	3.45	603 Btuh
	Wall Total				926(sqft)		3193 Btuh
Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		20	16.0	320 Btuh
2	Insulated - Exterior,	n	(0.400)		20	16.0	320 Btuh
	Door Total				40(sqft)		640Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	832	1.3	1060 Btuh
	Ceiling Total				832(sqft)		1060Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	120.0 ft(perim.)	47.2	5664 Btuh
	Floor Total				832 sqft		5664 Btuh
					Envelope Subtotal:		11649 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.16	7488	1.00	20.5	898 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.157)	1969 Btuh
All Zones				**Sensible Subtotal All Zones**			**14516 Btuh**

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Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Lot 62 Mother Inlaw Suite
Building Type: User

, FL

5/4/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	14516 Btuh 0 Btuh 14516 Btuh

EQUIPMENT

1. Electric Heat Pump	#	18000 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)

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