Residential System Sizing Calculation

Summary

Project Title:
LaFlamme Residence

, FL

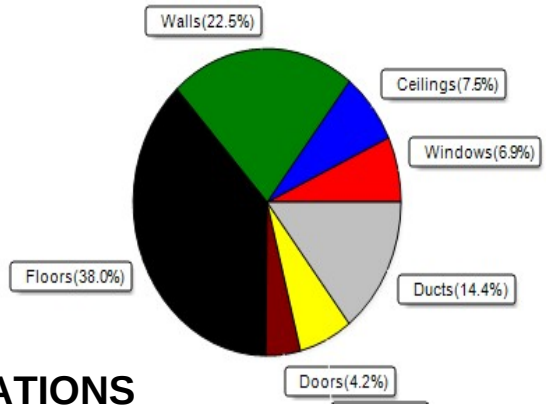
8/5/2022

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	**21857**	**Btuh**	**Total cooling load calculation**	**18511**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	137.3	30000	Sensible (SHR = 0.85)	162.7	25500
Heat Pump + Auxiliary(0.0kW)	137.3	30000	Latent	158.3	4500
			Total (Electric Heat Pump)	162.1	30000

WINTER CALCULATIONS

Winter Heating Load (for 1293 sqft)

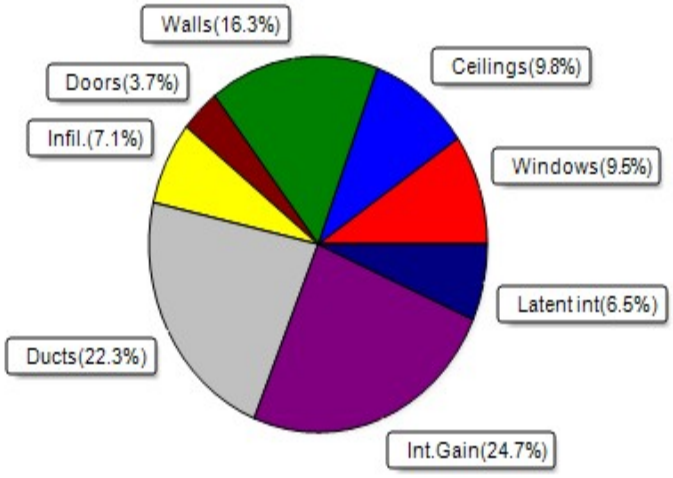
Load component			Load	
Window total	144	sqft	1501	Btuh
Wall total	1387	sqft	4925	Btuh
Door total	58	sqft	924	Btuh
Ceiling total	1293	sqft	1647	Btuh
Floor total	1293	sqft	8307	Btuh
Infiltration	32	cfm	1396	Btuh
Duct loss			3157	Btuh
Subtotal			**21857**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**21857**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 1293 sqft)

Load component			Load	
Window total	144	sqft	1752	Btuh
Wall total	1387	sqft	3023	Btuh
Door total	58	sqft	693	Btuh
Ceiling total	1293	sqft	1812	Btuh
Floor total			0	Btuh
Infiltration	24	cfm	497	Btuh
Internal gain			4580	Btuh
Duct gain			3311	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**15669**	**Btuh**
Latent gain(ducts)			818	Btuh
Latent gain(infiltration)			825	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1200	Btuh
Total latent gain			**2843**	**Btuh**
TOTAL HEAT GAIN			**18511**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 8-3-22

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
LaFlamme Residence

, FL

8/5/2022

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	N	1.5ft.	2.3ft.	30.0	0.0	30.0	9	9	274	Btuh
2	2 NFRC	0.20, 0.26	No	No	N	7.0ft.	2.3ft.	30.0	0.0	30.0	9	9	274	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	S	1.5ft.	2.3ft.	30.0	30.0	0.0	9	11	274	Btuh
5	2 NFRC	0.20, 0.26	No	No	S	9.5ft.	2.3ft.	13.3	13.3	0.0	9	11	122	Btuh
6	2 NFRC	0.20, 0.26	No	No	W	1.5ft.	2.3ft.	6.0	0.0	6.0	9	24	145	Btuh
7	2 NFRC	0.20, 0.26	No	No	W	1.5ft.	2.3ft.	20.0	0.0	20.0	9	24	484	Btuh
	Excursion												39	Btuh
	Window Total								144 (sqft)				1752	Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.09	13.0/0.0	163.5	2.3	370 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	49.5	2.3	112 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	80.5	2.3	182 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	49.5	2.3	112 Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	75.0	2.3	170 Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	218.3	2.3	494 Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	54.0	2.3	122 Btuh
8	Frame - Wood - Ext	0.09	13.0/0.0	112.5	2.3	255 Btuh
9	Frame - Wood - Ext	0.09	13.0/0.0	73.5	2.3	166 Btuh
10	Frame - Wood - Ext	0.09	13.0/0.0	52.5	2.3	119 Btuh
11	Frame - Wood - Ext	0.09	13.0/0.0	25.2	2.3	57 Btuh
12	Frame - Wood - Adj	0.09	13.0/0.0	201.2	1.7	339 Btuh
13	Frame - Wood - Ext	0.09	13.0/0.0	232.0	2.3	525 Btuh
	Wall Total			1387 (sqft)		3023 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	20.0	12.0	240 Btuh
2	Wood - Exterior	20.0	12.0	240 Btuh
3	Insulated - Garage	17.8	12.0	213 Btuh
	Door Total	58 (sqft)		693 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/Light/Shingle	0.032	30.0/0.0	1293.0	1.40	1812 Btuh
	Ceiling Total			1293 (sqft)		1812 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	1293 (ft-perimeter)	0.0	0 Btuh
	Floor Total		1293.0 (sqft)		0 Btuh

		Envelope Subtotal:	7280 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: LaFlamme Residence
Climate:FL_GAINESVILLE_REGIONAL_A

, FL

8/5/2022

Infiltration	Type		Average ACH		Volume(cuft)		Wall Ratio		CFM=	Load
	Natural		0.12		11637		1		23.9	497 Btuh
Internal gain		Occupants		Btuh/occupant				Appliance		Load
		6	X	230	+			3200		4580 Btuh
							Sensible Envelope Load:			12357 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)						(DGM of 0.268)			3311 Btuh
							Sensible Load All Zones			**15669 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: LaFlamme Residence
Climate:FL_GAINESVILLE_REGIONAL_A

, FL

8/5/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**12357**	**Btuh**
	Sensible Duct Load	3311	Btuh
	Total Sensible Zone Loads	**15669**	**Btuh**
	Sensible ventilation	0	Btuh
	Blower	0	Btuh
	Total sensible gain	**15669**	**Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	825	Btuh
	Latent ventilation gain	0	Btuh
	Latent duct gain	818	Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200	Btuh
	Latent other gain	0	Btuh
	Latent total gain	**2843**	**Btuh**
	TOTAL GAIN	**18511**	**Btuh**

EQUIPMENT

1. Central Unit	#	30000 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

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
LaFlamme Residence
, FL Building Type: User

8/5/2022

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	N	30.0	10.4	312 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	30.0	10.4	312 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	15.0	10.4	156 Btuh
4	2, NFRC 0.20	Vinyl	0.26	S	30.0	10.4	312 Btuh
5	2, NFRC 0.20	Vinyl	0.26	S	13.3	10.4	139 Btuh
6	2, NFRC 0.20	Vinyl	0.26	W	6.0	10.4	62 Btuh
7	2, NFRC 0.20	Vinyl	0.26	W	20.0	10.4	208 Btuh
	Window Total				144.3(sqft)		1501 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	164	3.55	580 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	50	3.55	176 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	81	3.55	286 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	50	3.55	176 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	75	3.55	266 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	218	3.55	775 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	54	3.55	192 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	113	3.55	399 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	74	3.55	261 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	53	3.55	186 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	25	3.55	89 Btuh
12	Frame - Wood	- Adj	(0.089)	13.0/0.0	201	3.55	714 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	232	3.55	824 Btuh
	Wall Total				1387(sqft)		4925 Btuh
Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		20	16.0	320 Btuh
2	Wood - Exterior,	n	(0.400)		20	16.0	320 Btuh
3	Insulated - Garage,	n	(0.400)		18	16.0	284 Btuh
	Door Total				58(sqft)		924Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	1293	1.3	1647 Btuh
	Ceiling Total				1293(sqft)		1647Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	176.0 ft(perim.)	47.2	8307 Btuh
	Floor Total				1293 sqft		8307 Btuh
					Envelope Subtotal:		17305 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.16	11637	1.00	31.9	1396 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
LaFlamme Residence
Building Type: User

, FL

8/5/2022

Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.169)	3157 Btuh
All Zones	**Sensible Subtotal All Zones**	**21857 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	21857 Btuh 0 Btuh 21857 Btuh

EQUIPMENT

1. Electric Heat Pump	#	30000 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