Residential System Sizing Calculation

Summary

Melodie Tessier
Pinemount Road
Lake City, FL

Project Title:
Tessier Res

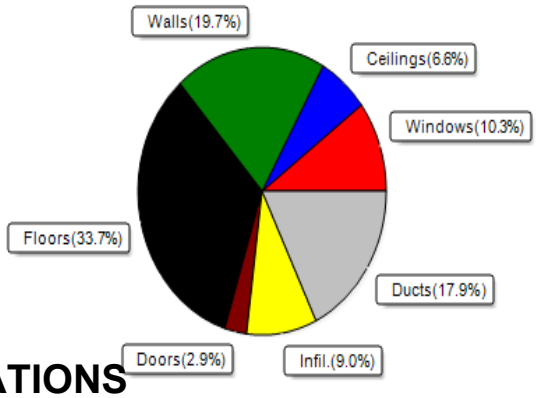
4/3/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M) Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)					
Winter design temperature(MJ8 99%/Cu)	33	F	Summer design temperature(MJ8 99%/Cu)	99	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	37	F	Summer temperature difference	24	F
Total heating load calculation	**23758**	**Btuh**	**Total cooling load calculation**	**21526**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	108.0	25665	Sensible (SHR = 0.75)	81.6	14642
Heat Pump + Auxiliary(0.0kW)	108.0	25665	Latent	136.5	4881
			Total (Electric Heat Pump)	90.7	19523

WINTER CALCULATIONS

Winter Heating Load (for 1523 sqft)

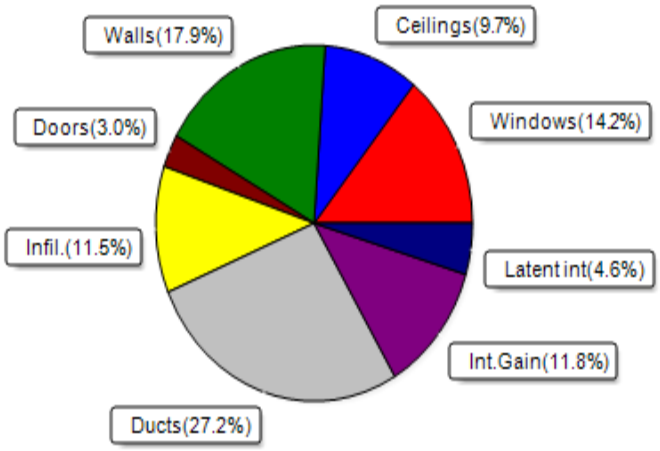
Load component			Load	
Window total	183	sqft	2438	Btuh
Wall total	1427	sqft	4686	Btuh
Door total	40	sqft	681	Btuh
Ceiling total	1675	sqft	1573	Btuh
Floor total	1523	sqft	8004	Btuh
Infiltration	53	cfm	2129	Btuh
Duct loss			4248	Btuh
Subtotal			**23758**	**Btuh**
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			**23758**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 1523 sqft)

Load component			Load	
Window total	183	sqft	3058	Btuh
Wall total	1427	sqft	3863	Btuh
Door total	40	sqft	644	Btuh
Ceiling total	1675	sqft	2083	Btuh
Floor total			0	Btuh
Infiltration	39	cfm	1036	Btuh
Internal gain			2550	Btuh
Duct gain			4717	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			**17950**	**Btuh**
Latent gain(ducts)			1135	Btuh
Latent gain(infiltration)			1440	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1000	Btuh
Total latent gain			**3575**	**Btuh**
TOTAL HEAT GAIN			**21526**	**Btuh**



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Columbia County Building Department — Plans Reviewed for Code Compliance — State of Florida

EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 4 / 3 / 2024

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Melodie Tessier
Pinemount Road
Lake City, FL

Project Title:
Tessier Res
Building Type: User

4/3/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%/Cu)
Winter Setpoint: 70 °F (Required Manual J default)

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	30.0	13.3	400 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	9.0	13.3	120 Btuh
3	2, NFRC 0.25	Vinyl	0.36	E	9.0	13.3	120 Btuh
4	2, NFRC 0.25	TIM	0.36	N	40.0	13.3	533 Btuh
5	2, NFRC 0.25	Vinyl	0.36	N	75.0	13.3	999 Btuh
6	2, NFRC 0.25	Vinyl	0.36	W	20.0	13.3	266 Btuh
	Window Total				183.0(sqft)		2438 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	499	3.28	1639 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	258	3.28	847 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	423	3.28	1389 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	247	3.28	811 Btuh
	Wall Total				1427(sqft)		4686 Btuh
Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		20	17.0	340 Btuh
2	Insulated - Exterior,	n	(0.460)		20	17.0	340 Btuh
	Door Total				40(sqft)		681Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	1675	0.94	1573 Btuh
	Ceiling Total				1675(sqft)		1573Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	183.3 ft(perim.)	43.7	8004 Btuh
	Floor Total				1523 sqft		8004 Btuh
					Envelope Subtotal:		17382 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.23	13707	1.00	52.6	2129 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.218)	4248 Btuh
All Zones				**Sensible Subtotal All Zones**			**23758 Btuh**

Manual J Winter Calculations

Residential Load - Component Details (continued)

Melodie Tessier
Pinemount Road
Lake City, FL

Project Title:
Tessier Res
Building Type: User

4/3/2024

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	23758 Btuh 0 Btuh 23758 Btuh

EQUIPMENT

1. Electric Heat Pump	#	25665 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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System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Melodie Tessier
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Lake City, FL

Project Title:
Tessier Res

4/3/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 54gr.

Temperature Difference: 24.0F(MJ8 99%/Cu)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Whole House

	Type*					Overhang		Window Area(sqft)			HTM		Load
Window	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded	
1	2 NFRC	0.25, 0.36		No	No	S	1.5ft.	1.0ft.	30.0	30.0	0.0	14	16	417 Btuh
2	2 NFRC	0.25, 0.36		No	No	S	1.5ft.	1.0ft.	9.0	9.0	0.0	14	16	125 Btuh
3	2 NFRC	0.25, 0.36		No	No	E	1.5ft.	1.0ft.	9.0	0.7	8.3	14	33	281 Btuh
4	2 NFRC	0.25, 0.36		No	No	N	1.5ft.	1.0ft.	40.0	0.0	40.0	14	14	556 Btuh
5	2 NFRC	0.25, 0.36		No	No	N	1.5ft.	1.0ft.	75.0	0.0	75.0	14	14	1042 Btuh
6	2 NFRC	0.25, 0.36		No	No	W	1.5ft.	1.0ft.	20.0	1.0	19.0	14	33	636 Btuh
	Window Total								183 (sqft)					3058 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.09	13.0/0.0	499.0	2.7	1351 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	258.0	2.7	698 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	423.0	2.7	1145 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	247.0	2.7	669 Btuh
	Wall Total			1427 (sqft)		3863 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	20.0	16.1	322 Btuh
2	Insulated - Exterior	20.0	16.1	322 Btuh
	Door Total	40 (sqft)		644 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/DarkShingle/RB	0.025	38.0/0.0	1675.3	1.24	2083 Btuh
	Ceiling Total			1675 (sqft)		2083 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	1523 (ft-perimeter)	0.0	0 Btuh
	Floor Total		1523.0 (sqft)		0 Btuh
			Envelope Subtotal:		9648 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.17	13707	1	39.4	1036 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		5	X 230	+	1400	2550 Btuh
				Sensible Envelope Load:		13234 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.356)		4717 Btuh
				Sensible Load All Zones		**17950 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Melodie Tessier
Pinemount Road
Lake City, FL

Project Title: Tessier Res
Climate:FL_GAINESVILLE_REGIONAL_A

4/3/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**13234**	**Btuh**
	Sensible Duct Load	4717	Btuh
	Total Sensible Zone Loads	**17950**	**Btuh**
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0	Btuh
	Blower	0	Btuh
	Total sensible gain	**17950**	**Btuh**
	Latent infiltration gain (for 54 gr. humidity difference)	1440	Btuh
	Latent ventilation gain	0	Btuh
	Latent duct gain	1135	Btuh
	Latent occupant gain (5.0 people @ 200 Btuh per person)	1000	Btuh
	Latent other gain	0	Btuh
	Latent total gain	**3575**	**Btuh**
	TOTAL GAIN	**21526**	**Btuh**

EQUIPMENT

1. Central Unit	#	19523 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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