Residential System Sizing Calculation

Summary

Steve & Kendra Condo
339 SW Marynik Drive
High Springs, FL

Project Title:
Condo Residence

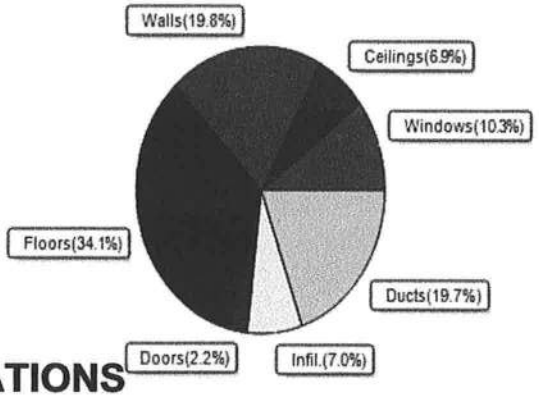
6/6/2022

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	**33424**	**Btuh**	**Total cooling load calculation**	**26077**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	100.0	33424	Sensible (SHR = 0.70)	83.2	17900
Heat Pump + Auxiliary(0.0kW)	100.0	33424	Latent	167.9	7672
			Total (Electric Heat Pump)	98.1	25572

WINTER CALCULATIONS

Winter Heating Load (for 2155 sqft)

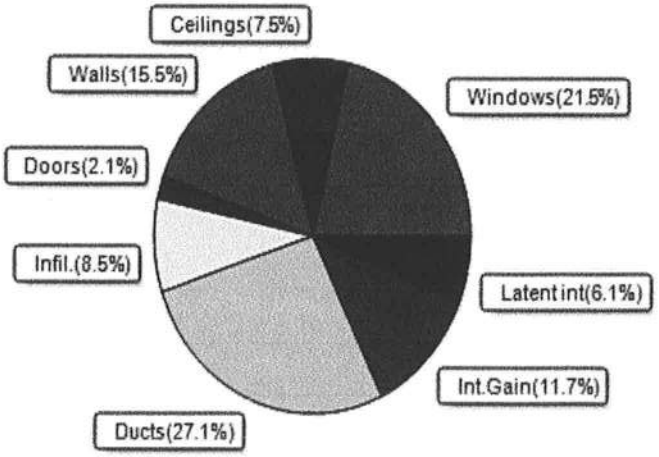
Load component			Load	
Window total	240	sqft	3456	Btuh
Wall total	1865	sqft	6621	Btuh
Door total	40	sqft	736	Btuh
Ceiling total	2263	sqft	2297	Btuh
Floor total	2155	sqft	11407	Btuh
Infiltration	53	cfm	2326	Btuh
Duct loss			6581	Btuh
Subtotal			**33424**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**33424**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 2155 sqft)

Load component			Load	
Window total	240	sqft	5616	Btuh
Wall total	1865	sqft	4046	Btuh
Door total	40	sqft	552	Btuh
Ceiling total	2263	sqft	1953	Btuh
Floor total			0	Btuh
Infiltration	40	cfm	829	Btuh
Internal gain			3040	Btuh
Duct gain			5471	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**21507**	**Btuh**
Latent gain(ducts)			1595	Btuh
Latent gain(infiltration)			1375	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1600	Btuh
Total latent gain			**4570**	**Btuh**
TOTAL HEAT GAIN			**26077**	**Btuh**



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COLUMBIA COUNTY BUILDING DEPARTMENT
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PLANS EXAMINER

EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 6 / 6 / 2022

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Steve & Kendra Condo
339 SW Marynik Drive
High Springs, FL

Project Title:
Condo Residence
Building Type: User

6/6/2022

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 0.25	Vinyl	0.36	W	30.0	14.4	432 Btuh
2	2, NFRC 0.25	Vinyl	0.36	W	6.0	14.4	86 Btuh
3	2, NFRC 0.25	Vinyl	0.36	W	30.0	14.4	432 Btuh
4	2, NFRC 0.25	Vinyl	0.36	W	30.0	14.4	432 Btuh
5	2, NFRC 0.25	Vinyl	0.36	W	4.0	14.4	58 Btuh
6	2, NFRC 0.25	Vinyl	0.36	S	3.0	14.4	43 Btuh
7	2, NFRC 0.25	Vinyl	0.36	E	18.0	14.4	259 Btuh
8	2, NFRC 0.25	Vinyl	0.36	E	30.0	14.4	432 Btuh
9	2, NFRC 0.25	TIM	0.36	E	40.0	14.4	576 Btuh
10	2, NFRC 0.25	Vinyl	0.36	E	30.0	14.4	432 Btuh
11	2, NFRC 0.25	Vinyl	0.36	N	4.0	14.4	58 Btuh
12	2, NFRC 0.25	Vinyl	0.36	N	15.0	14.4	216 Btuh
	Window Total				240.0(sqft)		3456 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	77	3.55	272 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	142	3.55	504 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	36	3.55	128 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	78	3.55	277 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	54	3.55	192 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	179	3.55	636 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	36	3.55	128 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	186	3.55	660 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	187	3.55	664 Btuh
10	Frame - Wood	- Adj	(0.089)	13.0/0.0	117	3.55	415 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	185	3.55	657 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	120	3.55	426 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	80	3.55	282 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	389	3.55	1381 Btuh
	Wall Total				1865(sqft)		6621 Btuh

Doors	Type	Storm	Ueff.	Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)	20	18.4	368 Btuh
2	Insulated - Garage,	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	2263	1.0	2297 Btuh
	Ceiling Total			2263(sqft)		2297Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	241.7 ft(perim.)	47.2	11407 Btuh
	Floor Total			2155 sqft		11407 Btuh

	Envelope Subtotal:	24517 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Steve & Kendra Condo
339 SW Marynik Drive
High Springs, FL

Project Title:
Condo Residence
Building Type: User

6/6/2022

Infiltration	Type Natural	Wholehouse	ACH 0.16	Volume(cuft) 19395	Wall Ratio 1.00	CFM= 53.1	2326 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)				(DLM of 0.245)		6581 Btuh
All Zones	**Sensible Subtotal All Zones**						**33424 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	33424 Btuh 0 Btuh 33424 Btuh

EQUIPMENT

1. Electric Heat Pump	#	33424 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

Steve & Kendra Condo
339 SW Marynik Drive
High Springs, FL

Project Title:
Condo Residence

6/6/2022

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	0.25, 0.36		No	No	W	1.5ft.	1.0ft.	30.0	1.5	28.5	12	31	901 Btuh
2	2 NFRC	0.25, 0.36		No	No	W	8.5ft.	1.0ft.	6.0	6.0	0.0	12	31	73 Btuh
3	2 NFRC	0.25, 0.36		No	No	W	1.5ft.	1.0ft.	30.0	1.5	28.5	12	31	901 Btuh
4	2 NFRC	0.25, 0.36		No	No	W	1.5ft.	1.0ft.	30.0	1.5	28.5	12	31	901 Btuh
5	2 NFRC	0.25, 0.36		No	No	W	1.5ft.	1.0ft.	4.0	1.0	3.0	12	31	105 Btuh
6	2 NFRC	0.25, 0.36		No	No	S	1.5ft.	1.0ft.	3.0	3.0	0.0	12	14	36 Btuh
7	2 NFRC	0.25, 0.36		No	No	E	12.5f	1.0ft.	18.0	18.0	0.0	12	31	218 Btuh
8	2 NFRC	0.25, 0.36		No	No	E	12.5f	1.0ft.	30.0	30.0	0.0	12	31	363 Btuh
9	2 NFRC	0.25, 0.36		No	No	E	12.5f	1.0ft.	40.0	40.0	0.0	12	31	484 Btuh
10	2 NFRC	0.25, 0.36		No	No	E	1.5ft.	1.0ft.	30.0	1.5	28.5	12	31	901 Btuh
11	2 NFRC	0.25, 0.36		No	No	N	1.5ft.	1.0ft.	4.0	0.0	4.0	12	12	48 Btuh
12	2 NFRC	0.25, 0.36		No	No	N	1.5ft.	1.0ft.	15.0	0.0	15.0	12	12	181 Btuh
	Excursion													505 Btuh
	Window Total								240 (sqft)					5616 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.09	13.0/0.0	76.5	2.3	173 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	142.0	2.3	321 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	36.0	2.3	81 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	78.0	2.3	177 Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	54.0	2.3	122 Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	179.0	2.3	405 Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	36.0	2.3	81 Btuh
8	Frame - Wood - Ext	0.09	13.0/0.0	186.0	2.3	421 Btuh
9	Frame - Wood - Adj	0.09	13.0/0.0	187.0	1.7	315 Btuh
10	Frame - Wood - Adj	0.09	13.0/0.0	117.0	1.7	197 Btuh
11	Frame - Wood - Ext	0.09	13.0/0.0	185.0	2.3	419 Btuh
12	Frame - Wood - Ext	0.09	13.0/0.0	120.0	2.3	272 Btuh
13	Frame - Wood - Ext	0.09	13.0/0.0	79.5	2.3	180 Btuh
14	Frame - Wood - Ext	0.09	13.0/0.0	389.0	2.3	880 Btuh
	Wall Total			1865 (sqft)		4046 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	20.0	13.8	276 Btuh
2	Insulated - Garage	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	2263.0	0.86	1953 Btuh
	Ceiling Total			2263 (sqft)		1953 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	2155 (ft-perimeter)	0.0	0 Btuh
	Floor Total		2155.0 (sqft)		0 Btuh

		Envelope Subtotal:	12167 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Steve & Kendra Condo
339 SW Marynik Drive
High Springs, FL

Project Title: Condo Residence

Climate:FL_GAINESVILLE_REGIONAL_A

6/6/2022

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 19395	Wall Ratio 1	CFM= 39.8		Load 829	Btuh
Internal gain		Occupants 8	Btuh/occupant X 230		+	Appliance 1200	Load 3040	Btuh
					Sensible Envelope Load:		16035	Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.341)		5471	Btuh
					Sensible Load All Zones		**21507**	**Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Steve & Kendra Condo
339 SW Marynik Drive
High Springs, FL

Project Title: Condo Residence

Climate:FL_GAINESVILLE_REGIONAL_A

6/6/2022

WHOLE HOUSE TOTALS

	Sensible Envelope Load All Zones	**16035 Btuh**
	Sensible Duct Load	5471 Btuh
	Total Sensible Zone Loads	**21507 Btuh**
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
Whole House	**Total sensible gain**	**21507 Btuh**
Totals for Cooling	Latent infiltration gain (for 51 gr. humidity difference)	1375 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1595 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**4570 Btuh**
	TOTAL GAIN	**26077 Btuh**

EQUIPMENT

1. Central Unit	#	25572 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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