Residential System Sizing Calculation

Summary

Project Title:
IC Construction - Star Lake Spec

, FL

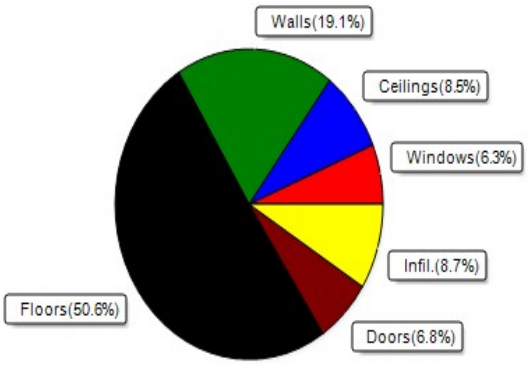
7/18/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 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	**39010**	**Btuh**	**Total cooling load calculation**	**27215**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	123.0	48000	Sensible (SHR = 0.75)	155.2	36000
Heat Pump + Auxiliary(0.0kW)	123.0	48000	Latent	299.1	12000
			Total (Electric Heat Pump)	176.4	48000

WINTER CALCULATIONS

Winter Heating Load (for 3026 sqft)

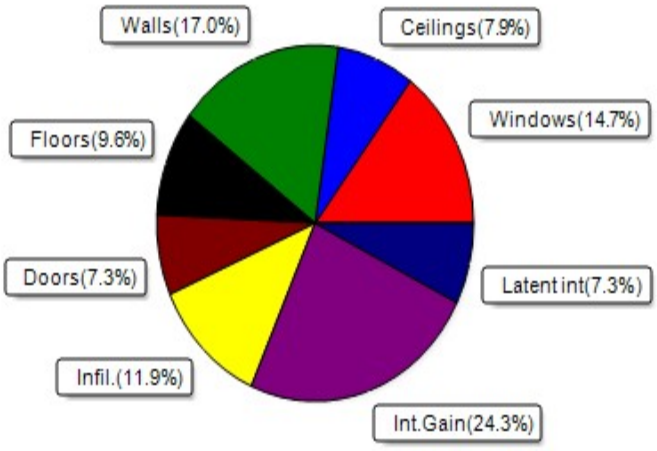
Load component			Load	
Window total	235	sqft	2444	Btuh
Wall total	2102	sqft	7462	Btuh
Door total	144	sqft	2650	Btuh
Ceiling total	3026	sqft	3316	Btuh
Floor total	See detail report		19734	Btuh
Infiltration	78	cfm	3404	Btuh
Duct loss			0	Btuh
Subtotal			**39010**	**Btuh**
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			**39010**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 3026 sqft)

Load component			Load	
Window total	235	sqft	4011	Btuh
Wall total	2102	sqft	4624	Btuh
Door total	144	sqft	1987	Btuh
Ceiling total	3026	sqft	2156	Btuh
Floor total			2612	Btuh
Infiltration	58	cfm	1213	Btuh
Internal gain			6600	Btuh
Duct gain			0	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			**23202**	**Btuh**
Latent gain(ducts)			0	Btuh
Latent gain(infiltration)			2012	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			2000	Btuh
Total latent gain			**4012**	**Btuh**
TOTAL HEAT GAIN			**27215**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 7/18/24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
IC Construction - Star Lake Spec

, FL

7/18/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
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	0.33, 0.26		No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	12	12	356	Btuh
2	2 NFRC	0.33, 0.26		No	No	N	1.5ft	2.3ft	52.0	0.0	52.0	12	12	618	Btuh
3	2 NFRC	0.33, 0.26		No	No	N	1.5ft	2.3ft	52.0	0.0	52.0	12	12	618	Btuh
4	2 NFRC	0.33, 0.26		No	No	E	1.5ft	2.3ft	20.0	0.0	20.0	12	37	735	Btuh
5	2 NFRC	0.33, 0.26		No	No	E	1.5ft	2.3ft	8.0	0.0	8.0	12	37	294	Btuh
6	2 NFRC	0.33, 0.26		No	No	E	1.5ft	2.3ft	6.0	0.0	6.0	12	37	221	Btuh
7	2 NFRC	0.33, 0.26		No	No	E	1.5ft	2.3ft	9.0	0.0	9.0	12	37	331	Btuh
8	2 NFRC	0.33, 0.26		No	No	S	1.5ft	2.3ft	12.0	12.0	0.0	12	14	143	Btuh
9	2 NFRC	0.33, 0.26		No	No	S	1.5ft	2.3ft	25.0	25.0	0.0	12	14	297	Btuh
10	2 NFRC	0.33, 0.26		No	No	S	1.5ft	2.3ft	15.0	15.0	0.0	12	14	178	Btuh
11	2 NFRC	0.33, 0.26		No	No	W	1.5ft	2.3ft	6.0	0.0	6.0	12	37	221	Btuh
	Window Total								235 (sqft)					4011	Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load	
1	Frame - Wood - Ext	0.09	13.0/0.0	121.5	2.3	275	Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	63.0	2.3	143	Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	90.7	2.3	205	Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	63.0	2.3	143	Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	50.0	2.3	113	Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	27.0	2.3	61	Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	92.0	2.3	208	Btuh
8	Frame - Wood - Ext	0.09	13.0/0.0	115.0	2.3	260	Btuh
9	Frame - Wood - Ext	0.09	13.0/0.0	63.0	2.3	143	Btuh
10	Frame - Wood - Ext	0.09	13.0/0.0	130.0	2.3	294	Btuh
11	Frame - Wood - Ext	0.09	13.0/0.0	63.0	2.3	143	Btuh
12	Frame - Wood - Ext	0.09	13.0/0.0	118.5	2.3	268	Btuh
13	Frame - Wood - Adj	0.09	13.0/0.0	230.5	1.7	389	Btuh
14	Frame - Wood - Ext	0.09	13.0/0.0	138.3	2.3	313	Btuh
15	Frame - Wood - Ext	0.09	13.0/0.0	54.0	2.3	122	Btuh
16	Frame - Wood - Ext	0.09	13.0/0.0	83.0	2.3	188	Btuh
17	Frame - Wood - Ext	0.09	13.0/0.0	96.0	2.3	217	Btuh
18	Frame - Wood - Ext	0.09	13.0/0.0	66.0	2.3	149	Btuh
19	Frame - Wood - Ext	0.09	13.0/0.0	129.0	2.3	292	Btuh
20	Frame - Wood - Ext	0.09	13.0/0.0	18.0	2.3	41	Btuh
21	Frame - Wood - Ext	0.09	13.0/0.0	60.0	2.3	136	Btuh
22	Frame - Wood - Ext	0.09	13.0/0.0	18.0	2.3	41	Btuh
23	Frame - Wood - Ext	0.09	13.0/0.0	111.0	2.3	251	Btuh
24	Frame - Wood - Ext	0.09	13.0/0.0	101.3	2.3	229	Btuh
	Wall Total			2102 (sqft)		4624	Btuh

Doors	Type	Area (sqft)	HTM	Load	
1	Insulated - Exterior	96.0	13.8	1325	Btuh
2	Insulated - Garage	20.0	13.8	276	Btuh
3	Insulated - Exterior	28.0	13.8	386	Btuh
	Door Total	144 (sqft)		1987	Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
IC Construction - Star Lake Spec
, FL

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Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	SnglAsmb no airsp/DarkShingle	0.027	0.0/40.0	2541.0	0.71	1810 Btuh
2	SnglAsmb no airsp/DarkShingle	0.027	0.0/40.0	485.0	0.71	345 Btuh
	Ceiling Total			3026 (sqft)		2156 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	2541 (ft-perimeter)	0.0	0 Btuh
2	Raised Wood - Adj		0.0	485 (sqft)	5.4	2612 Btuh
	Floor Total			3026.0 (sqft)		2612 Btuh
				Envelope Subtotal:		15390 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.13	26749	1	58.2	1213 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		10	X 230	+	4300	6600 Btuh
				Sensible Envelope Load:		23202 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi)			(DGM of 0.000)		0 Btuh
				Sensible Load All Zones		**23202 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
IC Construction - Star Lake Spec
, FL

7/18/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**23202**	**Btuh**
	Sensible Duct Load	0	Btuh
	Total Sensible Zone Loads	**23202**	**Btuh**
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0	Btuh
	Blower	0	Btuh
	Total sensible gain	**23202**	**Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	2012	Btuh
	Latent ventilation gain	0	Btuh
	Latent duct gain	0	Btuh
	Latent occupant gain (10.0 people @ 200 Btuh per person)	2000	Btuh
	Latent other gain	0	Btuh
	Latent total gain	**4012**	**Btuh**
	TOTAL GAIN	**27215**	**Btuh**

EQUIPMENT

1. Central Unit	#	48000 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:
IC Construction - Star Lake Spec
, FL Building Type: User

7/18/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
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 0.33	Vinyl	0.26	N	30.0	10.4	312 Btuh
2	2, NFRC 0.33	Vinyl	0.26	N	52.0	10.4	541 Btuh
3	2, NFRC 0.33	Vinyl	0.26	N	52.0	10.4	541 Btuh
4	2, NFRC 0.33	Vinyl	0.26	E	20.0	10.4	208 Btuh
5	2, NFRC 0.33	Vinyl	0.26	E	8.0	10.4	83 Btuh
6	2, NFRC 0.33	Vinyl	0.26	E	6.0	10.4	62 Btuh
7	2, NFRC 0.33	Vinyl	0.26	E	9.0	10.4	94 Btuh
8	2, NFRC 0.33	Vinyl	0.26	S	12.0	10.4	125 Btuh
9	2, NFRC 0.33	Vinyl	0.26	S	25.0	10.4	260 Btuh
10	2, NFRC 0.33	Vinyl	0.26	S	15.0	10.4	156 Btuh
11	2, NFRC 0.33	Vinyl	0.26	W	6.0	10.4	62 Btuh
	Window Total				235.0(sqft)		2444 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	122	3.55	431 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	63	3.55	224 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	91	3.55	322 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	63	3.55	224 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	50	3.55	178 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	27	3.55	96 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	92	3.55	327 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	115	3.55	408 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	63	3.55	224 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	130	3.55	462 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	63	3.55	224 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	119	3.55	421 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	231	3.55	818 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	138	3.55	491 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	54	3.55	192 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	83	3.55	295 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	96	3.55	341 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	66	3.55	234 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	129	3.55	458 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	18	3.55	64 Btuh
21	Frame - Wood	- Ext	(0.089)	13.0/0.0	60	3.55	213 Btuh
22	Frame - Wood	- Ext	(0.089)	13.0/0.0	18	3.55	64 Btuh
23	Frame - Wood	- Ext	(0.089)	13.0/0.0	111	3.55	394 Btuh
24	Frame - Wood	- Ext	(0.089)	13.0/0.0	101	3.55	360 Btuh
	Wall Total				2102(sqft)		7462 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
IC Construction - Star Lake Spec
, FL Building Type: User
7/18/2024

Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		96	18.4	1766 Btuh
2	Insulated - Garage,	n	(0.460)		20	18.4	368 Btuh
3	Insulated - Exterior,	n	(0.460)		28	18.4	515 Btuh
	Door Total				144(sqft)		2650Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Single as/D/Shing		(0.027)	0.0/40.0	2541	1.1	2785 Btuh
2	Single as/D/Shing		(0.027)	0.0/40.0	485	1.1	532 Btuh
	Ceiling Total				3026(sqft)		3316Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	260.0 ft(perim.)	47.2	12272 Btuh
2	Raised Wood - Adj		(0.385)	0.0	485.0 sqft	15.4	7462 Btuh
	Floor Total				3026 sqft		19734 Btuh
					Envelope Subtotal:		35606 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.17	26749	1.00	77.6	3404 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)					(DLM of 0.000)	0 Btuh
All Zones					**Sensible Subtotal All Zones**		**39010 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss		39010 Btuh
	Ventilation Sens. Heat Loss	(Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss		39010 Btuh

EQUIPMENT

1. Electric Heat Pump	#	48000 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
IC Construction - Star Lake Spec
, FL Building Type: User

7/18/2024

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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