

Residential System Sizing Calculation

Summary

Project Title:
Stilwell Residence

, FL

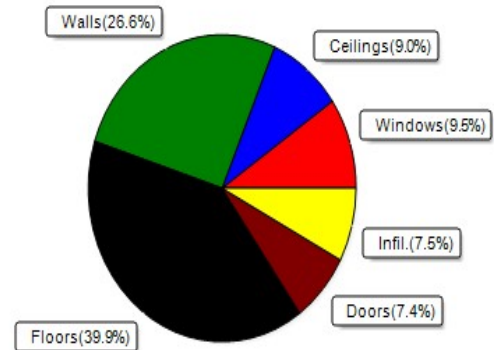
6/3/2024

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	19875 Btuh	Total cooling load calculation	15472 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	75.5 15000	Sensible (SHR = 0.75)	168.0 22500
Heat Pump + Auxiliary(0.0kW)	75.5 15000	Latent	360.1 7500
		Total (Electric Heat Pump)	193.9 30000

WINTER CALCULATIONS

Winter Heating Load (for 1318 sqft)

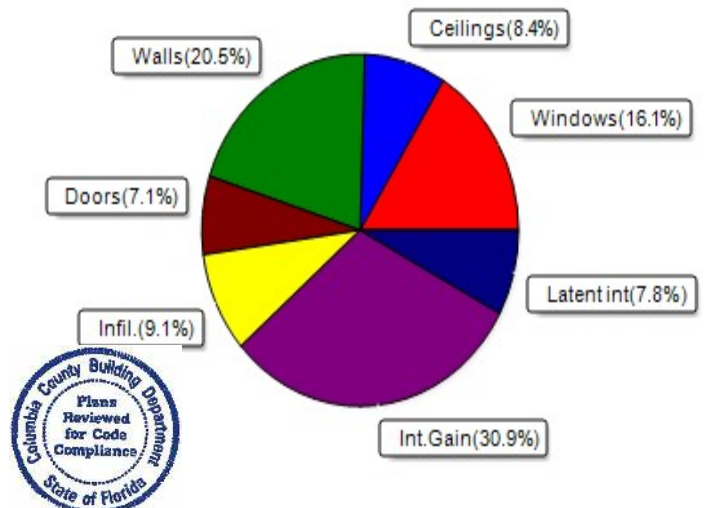
Load component	Load
Window total 182 sqft	1896 Btuh
Wall total 1250 sqft	5291 Btuh
Door total 80 sqft	1472 Btuh
Ceiling total 1318 sqft	1793 Btuh
Floor total 1318 sqft	7930 Btuh
Infiltration 34 cfm	1493 Btuh
Duct loss	0 Btuh
Subtotal	19875 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	19875 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1318 sqft)

Load component	Load
Window total 182 sqft	2497 Btuh
Wall total 1250 sqft	3177 Btuh
Door total 80 sqft	1104 Btuh
Ceiling total 1318 sqft	1300 Btuh
Floor total	0 Btuh
Infiltration 26 cfm	532 Btuh
Internal gain	4780 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	13389 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	883 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2083 Btuh
TOTAL HEAT GAIN	15472 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 8-6-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Stilwell Residence

, FL

6/3/2024

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

Window	Type*					Overhang		Window Area(sqft)			HTM		Load			
	Panes	SHGC	U	InSh	IS Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded				
1	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	9.0	0.0	9.0	9	9	82	Btuh		
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	20.0	0.0	20.0	9	9	183	Btuh		
3	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	30.0	0.0	30.0	9	24	727	Btuh		
4	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	6.0	0.0	6.0	9	24	145	Btuh		
5	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	40.0	40.0	0.0	9	11	366	Btuh		
6	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	45.0	45.0	0.0	9	11	412	Btuh		
7	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	13.3	13.3	0.0	9	11	122	Btuh		
8	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	15.0	0.0	15.0	9	24	363	Btuh		
9	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	4.0	0.0	4.0	9	24	97	Btuh		
	Window Total							182 (sqft)					2497 Btuh			
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load			
							Cav/Sheath									
1	Frame - Steel - Ext						0.11	13.0/0.0	183.0		2.9		524 Btuh			
2	Frame - Steel - Ext						0.11	13.0/0.0	288.0		2.9		824 Btuh			
3	Frame - Steel - Ext						0.11	13.0/0.0	313.7		2.9		898 Btuh			
4	Frame - Steel - Ext						0.11	13.0/0.0	125.0		2.9		358 Btuh			
5	Frame - Wood - Adj						0.09	13.0/0.0	340.0		1.7		573 Btuh			
	Wall Total							1250 (sqft)					3177 Btuh			
Doors	Type								Area (sqft)		HTM		Load			
1	Insulated - Exterior								40.0		13.8		552 Btuh			
2	Insulated - Exterior								20.0		13.8		276 Btuh			
3	Insulated - Garage								20.0		13.8		276 Btuh			
	Door Total							80 (sqft)					1104 Btuh			
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load			
1	SnglAsmb w airsp/DarkMetal						0.034	30.0/0.0	1318.0		0.99		1300 Btuh			
	Ceiling Total							1318 (sqft)					1300 Btuh			
Floors	Type						R-Value		Size		HTM		Load			
1	Slab On Grade						0.0		1318 (ft-perimeter)		0.0		0 Btuh			
	Floor Total							1318.0 (sqft)					0 Btuh			
	Envelope Subtotal:												8077 Btuh			
Infiltration	Type	Average ACH					Volume(cuft)		Wall Ratio		CFM=		Load			
	Natural	0.13					11862		1		25.5		532 Btuh			
Internal gain	Occupants						Btuh/occupant		Appliance		Load					
	6						X 230		+		3400		4780 Btuh			
	Sensible Envelope Load:												13389 Btuh			
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi)												(DGM of 0.000)		0 Btuh	
	Sensible Load All Zones												13389 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Stilwell Residence

, FL

6/3/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	13389 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	13389 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	13389 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	883 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2083 Btuh
	TOTAL GAIN	15472 Btuh

EQUIPMENT

1. Central Unit	#	30000 Btuh
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*Key: Window types (Panels - 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

, FL

Project Title:
Stilwell Residence
Building Type: User

6/3/2024

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 0.20	Vinyl	0.26	N	9.0		10.4	94 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	20.0		10.4	208 Btuh
3	2, NFRC 0.20	Vinyl	0.26	E	30.0		10.4	312 Btuh
4	2, NFRC 0.20	Vinyl	0.26	E	6.0		10.4	62 Btuh
5	2, NFRC 0.20	Vinyl	0.26	S	40.0		10.4	416 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	45.0		10.4	468 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	13.3		10.4	139 Btuh
8	2, NFRC 0.20	Vinyl	0.26	W	15.0		10.4	156 Btuh
9	2, NFRC 0.20	Vinyl	0.26	W	4.0		10.4	42 Btuh
	Window Total				182.3(sqft)			1896 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Steel	- Ext	(0.112)	13.0/0.0	183		4.49	822 Btuh
2	Frame - Steel	- Ext	(0.112)	13.0/0.0	288		4.49	1293 Btuh
3	Frame - Steel	- Ext	(0.112)	13.0/0.0	314		4.49	1408 Btuh
4	Frame - Steel	- Ext	(0.112)	13.0/0.0	125		4.49	561 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	340		3.55	1207 Btuh
	Wall Total				1250(sqft)			5291 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
2	Insulated - Exterior,	n	(0.460)		20		18.4	368 Btuh
3	Insulated - Garage,	n	(0.460)		20		18.4	368 Btuh
	Door Total				80(sqft)			1472Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Metal		(0.034)	30.0/0.0	1318		1.4	1793 Btuh
	Ceiling Total				1318(sqft)			1793Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	168.0 ft(perim.)		47.2	7930 Btuh
	Floor Total				1318 sqft			7930 Btuh
	Envelope Subtotal:							18381 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.17	11862	1.00	34.0		1493 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones							19875 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Stilwell Residence
Building Type: User

6/3/2024

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	19875 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	19875 Btuh

EQUIPMENT

1. Electric Heat Pump	#	15000 Btuh
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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