

Residential System Sizing Calculation

Summary

Project Title:
Judd Residence

, FL

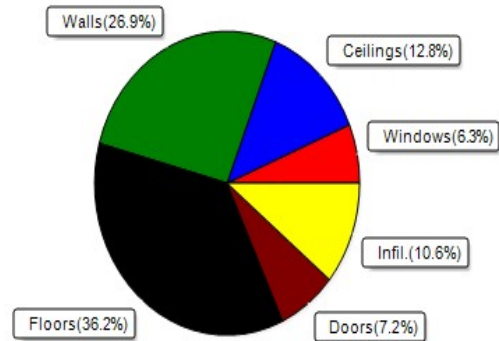
10/1/2024

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	25541 Btuh	Total cooling load calculation	20458 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	141.0 36000	Sensible (SHR = 0.75)	156.5 27000
Heat Pump + Auxiliary(0.0kW)	141.0 36000	Latent	280.6 9000
		Total (Electric Heat Pump)	176.0 36000

WINTER CALCULATIONS

Winter Heating Load (for 2400 sqft)

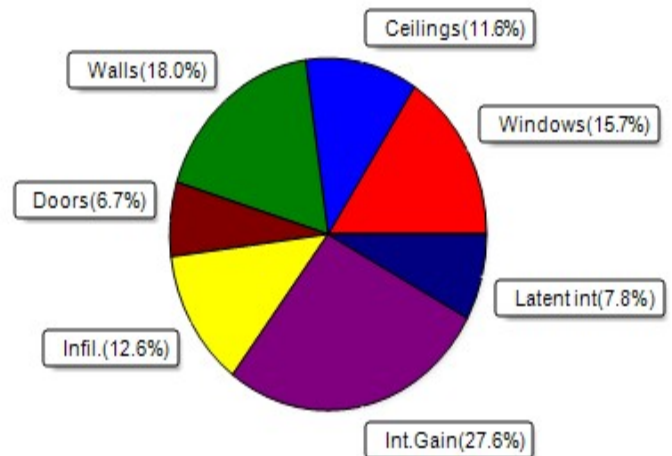
Load component	Load
Window total 154 sqft	1596 Btuh
Wall total 1711 sqft	6869 Btuh
Door total 100 sqft	1840 Btuh
Ceiling total 2400 sqft	3264 Btuh
Floor total 2400 sqft	9251 Btuh
Infiltration 62 cfm	2719 Btuh
Duct loss	0 Btuh
Subtotal	25541 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	25541 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2400 sqft)

Load component	Load
Window total 154 sqft	3220 Btuh
Wall total 1711 sqft	3675 Btuh
Door total 100 sqft	1380 Btuh
Ceiling total 2400 sqft	2367 Btuh
Floor total	0 Btuh
Infiltration 47 cfm	969 Btuh
Internal gain	5640 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	17250 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1608 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	3208 Btuh
TOTAL HEAT GAIN	20458 Btuh



8th Edition



EnergyGauge® / USRCZB v8.1.02

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Judd Residence

, FL

10/1/2024

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	30.0	0.0	30.0	9	9	274	Btuh	
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	4.5	0.0	4.5	9	9	41	Btuh	
3	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	20.0	20.0	0.0	9	11	183	Btuh	
4	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	9.0	9.0	0.0	9	11	82	Btuh	
5	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	30.0	0.0	30.0	9	24	727	Btuh	
6	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	30.0	0.0	30.0	9	24	727	Btuh	
7	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	30.0	0.0	30.0	9	24	727	Btuh	
	Excursion												459	Btuh	
	Window Total							154 (sqft)						3220	Btuh
Walls	Type	U-Value					R-Value		Area(sqft)		HTM		Load		
							Cav/Sheath								
1	Frame - Steel - Ext	0.10					19.0/0.0		415.5		2.1		893 Btuh		
2	Frame - Steel - Ext	0.10					19.0/0.0		126.0		2.1		271 Btuh		
3	Frame - Steel - Ext	0.10					19.0/0.0		260.0		2.1		559 Btuh		
4	Frame - Steel - Ext	0.10					19.0/0.0		86.0		2.1		185 Btuh		
5	Frame - Steel - Ext	0.10					19.0/0.0		421.0		2.1		905 Btuh		
6	Frame - Steel - Ext	0.10					19.0/0.0		96.0		2.1		206 Btuh		
7	Frame - Steel - Ext	0.10					19.0/0.0		210.0		2.1		451 Btuh		
8	Frame - Steel - Ext	0.10					19.0/0.0		96.0		2.1		206 Btuh		
	Wall Total					1711 (sqft)							3675 Btuh		
Doors	Type								Area (sqft)		HTM		Load		
1	Insulated - Exterior								20.0		13.8		276 Btuh		
2	Insulated - Exterior								40.0		13.8		552 Btuh		
3	Insulated - Exterior								40.0		13.8		552 Btuh		
	Door Total					100 (sqft)							1380 Btuh		
Ceilings	Type/Color/Surface	U-Value					R-Value		Area(sqft)		HTM		Load		
1	SnglAsmb no airsp/DarkMetal	0.034					30.0/0.0		2400.0		0.99		2367 Btuh		
	Ceiling Total					2400 (sqft)							2367 Btuh		
Floors	Type						R-Value		Size		HTM		Load		
1	Slab On Grade						0.0		2400 (ft-perimeter)		0.0		0 Btuh		
	Floor Total					2400.0 (sqft)							0 Btuh		
	Envelope Subtotal:												10641 Btuh		
Infiltration	Type	Average ACH					Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural	0.13					21600		1		46.5		969 Btuh		
Internal gain	Occupants					Btuh/occupant		Appliance		Load					
	8					X 230		+		3800		5640 Btuh			
	Sensible Envelope Load:												17250 Btuh		
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)												0 Btuh		
	Sensible Load All Zones												17250 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Judd Residence

, FL

10/1/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17250 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	17250 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17250 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1608 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3208 Btuh
	TOTAL GAIN	20458 Btuh

EQUIPMENT

1. Central Unit	#	36000 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

Project Title:
Judd Residence
Building Type: User

, FL

10/1/2024

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	30.0		10.4	312 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	4.5		10.4	47 Btuh
3	2, NFRC 0.20	Vinyl	0.26	S	20.0		10.4	208 Btuh
4	2, NFRC 0.20	Vinyl	0.26	S	9.0		10.4	94 Btuh
5	2, NFRC 0.20	Vinyl	0.26	W	30.0		10.4	312 Btuh
6	2, NFRC 0.20	Vinyl	0.26	W	30.0		10.4	312 Btuh
7	2, NFRC 0.20	Vinyl	0.26	W	30.0		10.4	312 Btuh
	Window Total				153.5(sqft)			1596 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Steel	- Ext	(0.100)	19.0/0.0	416		4.02	1669 Btuh
2	Frame - Steel	- Ext	(0.100)	19.0/0.0	126		4.02	506 Btuh
3	Frame - Steel	- Ext	(0.100)	19.0/0.0	260		4.02	1044 Btuh
4	Frame - Steel	- Ext	(0.100)	19.0/0.0	86		4.02	345 Btuh
5	Frame - Steel	- Ext	(0.100)	19.0/0.0	421		4.02	1691 Btuh
6	Frame - Steel	- Ext	(0.100)	19.0/0.0	96		4.02	386 Btuh
7	Frame - Steel	- Ext	(0.100)	19.0/0.0	210		4.02	843 Btuh
8	Frame - Steel	- Ext	(0.100)	19.0/0.0	96		4.02	386 Btuh
	Wall Total				1711(sqft)			6869 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
2	Insulated - Exterior, n		(0.460)		40		18.4	736 Btuh
3	Insulated - Exterior, n		(0.460)		40		18.4	736 Btuh
	Door Total				100(sqft)			1840Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Metal		(0.034)	30.0/0.0	2400		1.4	3264 Btuh
	Ceiling Total				2400(sqft)			3264Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	196.0 ft(perim.)		47.2	9251 Btuh
	Floor Total				2400 sqft			9251 Btuh
	Envelope Subtotal:							22821 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.17	21600	1.00	62.0		2719 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)							0 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Judd Residence
Building Type: User

10/1/2024

All Zones	Sensible Subtotal All Zones	25541 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	25541 Btuh 0 Btuh 25541 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	36000 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