

Residential System Sizing Calculation

Summary

Project Title:
Futral Residence

, FL

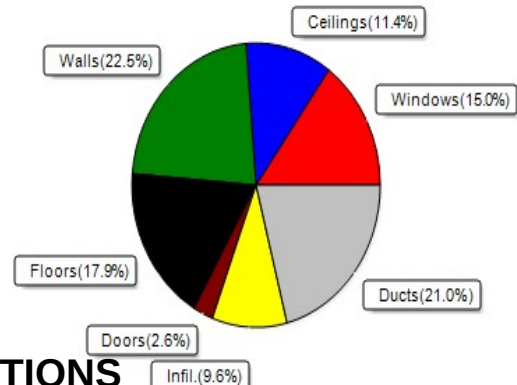
12/6/2022

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	14621 Btuh	Total cooling load calculation	18260 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	205.2 30000	Sensible (SHR = 0.85)	165.4 25500
Heat Pump + Auxiliary(0.0kW)	205.2 30000	Latent	158.3 4500
		Total (Electric Heat Pump)	164.3 30000

WINTER CALCULATIONS

Winter Heating Load (for 1305 sqft)

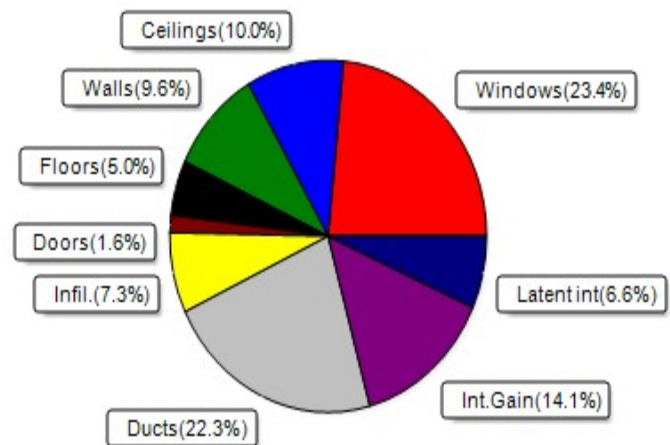
Load component	Load
Window total 211 sqft	2194 Btuh
Wall total 1093 sqft	3284 Btuh
Door total 24 sqft	384 Btuh
Ceiling total 1305 sqft	1662 Btuh
Floor total 1305 sqft	2618 Btuh
Infiltration 32 cfm	1411 Btuh
Duct loss	3068 Btuh
Subtotal	14621 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	14621 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1305 sqft)

Load component	Load
Window total 211 sqft	4282 Btuh
Wall total 1093 sqft	1757 Btuh
Door total 24 sqft	288 Btuh
Ceiling total 1305 sqft	1829 Btuh
Floor total	916 Btuh
Infiltration 24 cfm	503 Btuh
Internal gain	2580 Btuh
Duct gain	3264 Btuh
Sens. Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	15418 Btuh
Latent gain(ducts)	808 Btuh
Latent gain(infiltration)	834 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2842 Btuh
TOTAL HEAT GAIN	18260 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

12-6-22

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Futral Residence

, FL

12/6/2022

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	W		1.5ft	2.3ft	60.0	0.0	60.0	9	24	1453	Btuh		
2	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	6.0	0.0	6.0	9	9	55	Btuh		
3	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	3.0	0.0	3.0	9	9	27	Btuh		
4	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	16.0	0.0	16.0	9	9	146	Btuh		
5	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	96.0	0.0	96.0	9	24	2325	Btuh		
6	2 NFRC	0.20, 0.26	No	No	S		1.5ft	2.3ft	30.0	30.0	0.0	9	11	274	Btuh		
	Window Total								211 (sqft)					4282 Btuh			
Walls	Type						U-Value		R-Value		Area(sqft)		HTM		Load		
									Cav/Sheath								
	1	Frame - Wood - Ext						0.08		19.0/0.6		205.5		1.6		330 Btuh	
	2	Frame - Wood - Ext						0.08		19.0/0.6		373.3		1.6		600 Btuh	
	3	Frame - Wood - Ext						0.08		19.0/0.6		145.5		1.6		234 Btuh	
	4	Frame - Wood - Ext						0.08		19.0/0.6		368.3		1.6		592 Btuh	
	Wall Total										1093 (sqft)				1757 Btuh		
Doors	Type								Area (sqft)		HTM		Load				
	1	Insulated - Exterior								24.0		12.0		288 Btuh			
	Door Total								24 (sqft)				288 Btuh				
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)		HTM		Load		
	1	Vented Attic/Light/Metal						0.032		30.0/0.0		1305.0		1.40		1829 Btuh	
	Ceiling Total										1305 (sqft)				1829 Btuh		
Floors	Type								R-Value		Size		HTM		Load		
	1	Raised - Open								19.0		1305 (sqft)		0.7		916 Btuh	
	Floor Total										1305.0 (sqft)				916 Btuh		
	Envelope Subtotal:													9071 Btuh			
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural						0.12		11745		1		24.1		503 Btuh		
Internal gain							Occupants		Btuh/occupant		Appliance				Load		
							6		X 230		+		1200		2580 Btuh		
	Sensible Envelope Load:													12154 Btuh			
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.269)													3264 Btuh			
	Sensible Load All Zones													15418 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Futral Residence

, FL

12/6/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	12154 Btuh
	Sensible Duct Load	3264 Btuh
	Total Sensible Zone Loads	15418 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	15418 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	834 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	808 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2842 Btuh
	TOTAL GAIN	18260 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

Project Title:
Futral Residence
Building Type: User

, FL

12/6/2022

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	W	60.0		10.4	624 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	6.0		10.4	62 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	3.0		10.4	31 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	16.0		10.4	166 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	96.0		10.4	998 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
	Window Total				211.0(sqft)			2194 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.075)	19.0/0.6	206		3.01	618 Btuh
2	Frame - Wood	- Ext	(0.075)	19.0/0.6	373		3.01	1122 Btuh
3	Frame - Wood	- Ext	(0.075)	19.0/0.6	146		3.01	437 Btuh
4	Frame - Wood	- Ext	(0.075)	19.0/0.6	368		3.01	1107 Btuh
	Wall Total				1093(sqft)			3284 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
	Door Total				24(sqft)			384Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/L/Metal		(0.032)	30.0/0.0	1305		1.3	1662 Btuh
	Ceiling Total				1305(sqft)			1662Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Raised - Open		(0.050)	19.0	1305.0 sqft		2.0	2618 Btuh
	Floor Total				1305 sqft			2618 Btuh
	Envelope Subtotal:							10142 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	11745	1.00	32.2		1411 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)						(DLM of 0.266)	3068 Btuh
All Zones	Sensible Subtotal All Zones							14621 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Futral Residence
Building Type: User

12/6/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	14621 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	14621 Btuh

EQUIPMENT

1. Electric Heat Pump	#	30000 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