

Residential System Sizing Calculation

Summary

Julia Moore

Lake City, FL

Project Title:
Moore Project

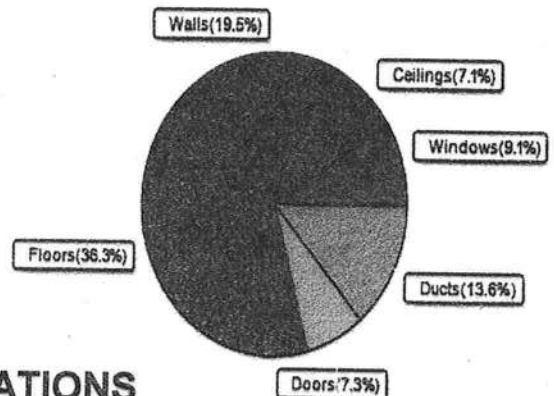
9/13/2022

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (76F) Humidity difference(47gr.)			
Winter design temperature(MJ8 99%)	33 F	Summer design temperature(MJ8 99%)	92 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	37 F	Summer temperature difference	17 F
Total heating load calculation	13959 Btuh	Total cooling load calculation	11410 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	171.9 24000	Sensible (SHR = 0.75)	201.1 18000
Heat Pump + Auxiliary(0.0kW)	171.9 24000	Latent	244.0 6000
		Total (Electric Heat Pump)	210.3 24000

WINTER CALCULATIONS

Winter Heating Load (for 847 sqft)

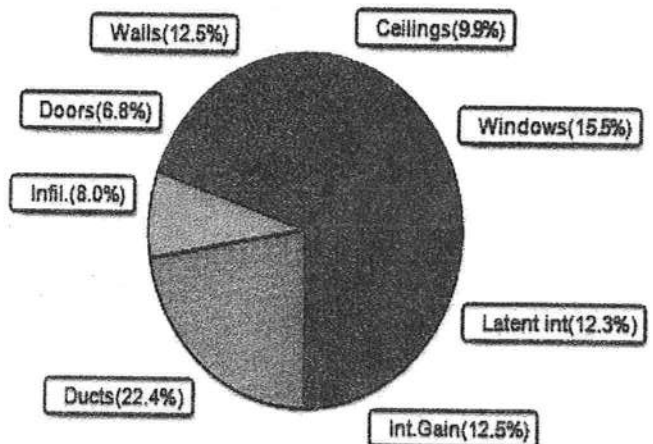
Load component		Load
Window total	104 sqft	1273 Btuh
Wall total	996 sqft	2727 Btuh
Door total	60 sqft	1021 Btuh
Ceiling total	847 sqft	998 Btuh
Floor total	847 sqft	5065 Btuh
Infiltration	24 cfm	980 Btuh
Duct loss		1896 Btuh
Subtotal		13959 Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS		13959 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 847 sqft)

Load component		Load
Window total	104 sqft	1770 Btuh
Wall total	996 sqft	1430 Btuh
Door total	60 sqft	773 Btuh
Ceiling total	847 sqft	1132 Btuh
Floor total		0 Btuh
Infiltration	18 cfm	338 Btuh
Internal gain		1430 Btuh
Duct gain		2079 Btuh
Sens. Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		8951 Btuh
Latent gain(ducts)		482 Btuh
Latent gain(infiltration)		577 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		1400 Btuh
Total latent gain		2459 Btuh
TOTAL HEAT GAIN		11410 Btuh



8th Edition



EnergyGauge® System Sizing

PREPARED BY: *Julia Moore*

DATE: 9/13/22

EnergyGauge® / USRCZB v7.0.05

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Julia Moore
Lake City, FL

Project Title:
Moore Project
Building Type: User

9/13/2022

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 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 0.21	Metal	0.33	N	9.3		12.2	114 Btuh
2	2, NFRC 0.21	Metal	0.33	E	45.0		12.2	549 Btuh
3	2, NFRC 0.21	Metal	0.33	E	18.0		12.2	220 Btuh
4	2, NFRC 0.21	Metal	0.33	S	19.0		12.2	231 Btuh
5	2, NFRC 0.21	Metal	0.33	W	13.0		12.2	159 Btuh
Window Total					104.3(sqft)			1273 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.074)	19.0/1.0	251		2.74	686 Btuh
2	Frame - Wood	- Ext	(0.074)	19.0/1.0	217		2.74	594 Btuh
3	Frame - Wood	- Ext	(0.074)	19.0/1.0	221		2.74	605 Btuh
4	Frame - Wood	- Ext	(0.074)	19.0/1.0	307		2.74	841 Btuh
Wall Total					996(sqft)			2727 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		40		17.0	681 Btuh
2	Insulated - Exterior, n		(0.460)		20		17.0	340 Btuh
Door Total					60(sqft)			1021Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value		Area	X	HTM=	Load
1	Sloped ce/M/Metal	(0.032)	30.0/0.0		847		1.2	998 Btuh
Ceiling Total					847(sqft)			998Btuh
Floors	Type	Ueff.	R-Value		Size	X	HTM=	Load
1	Slab On Grade	(1.180)	0.0		116.0 ft(perim.)		43.7	5065 Btuh
Floor Total					847 sqft			5065 Btuh
Envelope Subtotal:								11083 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=			
	Natural	0.17	8466	1.00	24.2	980 Btuh		
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.157)						1896 Btuh	
All Zones	Sensible Subtotal All Zones							13959 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Julia Moore
Lake City, FL

Project Title:
Moore Project
Building Type: User

9/13/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	13959 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	13959 Btuh

EQUIPMENT

1. Electric Heat Pump	#	24000 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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Julia Moore

Project Title:
Moore Project

Lake City, FL

9/13/2022

Reference City: Gainesville, FL (Defaults)
Humidity difference: 47gr

Temperature Difference: 17.0F(MJ8 99%)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Whole House

Window	Panes	Type*						Overhang		Window Area(sqft)			HTM		Load
		SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded		
1	2 NFRC	0.21,	0.33	B-L	No	N	1.3ft	3.0ft	9.3	0.0	9.3	8	8	72 Btuh	
2	2 NFRC	0.21,	0.33	B-L	No	E	1.3ft	3.0ft	45.0	0.0	45.0	8	19	847 Btuh	
3	2 NFRC	0.21,	0.33	B-L	No	E	1.3ft	3.0ft	18.0	0.0	18.0	8	19	339 Btuh	
4	2 NFRC	0.21,	0.33	B-L	No	S	1.3ft	3.0ft	19.0	10.7	8.3	8	9	158 Btuh	
5	2 NFRC	0.21,	0.33	B-L	No	W	1.3ft	3.0ft	13.0	0.0	13.0	8	19	245 Btuh	
		Excursion												109 Btuh	
		Window Total								104 (sqft)				1770 Btuh	
Walls	Type						U-Value		R-Value		Area(sqft)	HTM		Load	
1	Frame - Wood	Ext					0.07		19.0/1.0		250.7	1.4	360 Btuh		
2	Frame - Wood	Ext					0.07		19.0/1.0		217.0	1.4	312 Btuh		
3	Frame - Wood	Ext					0.07		19.0/1.0		221.0	1.4	317 Btuh		
4	Frame - Wood	Ext					0.07		19.0/1.0		307.0	1.4	441 Btuh		
		Wall Total										996 (sqft)		1430 Btuh	
Doors	Type										Area (sqft)	HTM		Load	
1	Insulated - Exterior										40.0	12.9	515 Btuh		
2	Insulated - Exterior										20.0	12.9	258 Btuh		
		Door Total										60 (sqft)		773 Btuh	
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)	HTM		Load	
1	Vented Attic/Med/Metal						0.032		30.0/0.0		846.6	1.34	1132 Btuh		
		Ceiling Total										847 (sqft)		1132 Btuh	
Floors	Type						R-Value		Size			HTM		Load	
1	Slab On Grade						0.0			847 (ft-perimeter)		0.0	0 Btuh		
		Floor Total										846.6 (sqft)		0 Btuh	
Envelope Subtotal:														5104 Btuh	
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load
	Natural						0.13		8466	1		18.1	338 Btuh		
Internal gain							Occupants		Btuh/occupant		Appliance		Load		
							1	X	230	+		1200	1430 Btuh		
Sensible Envelope Load:														6872 Btuh	
Duct load	Average sealed,	Supply(R6.0-Attic), Return(R6.0-Attic)												Load	
Sensible Load All Zones														8951 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Julia Moore
Lake City, FL

Project Title:
Moore Project

Climate: FL_GAINESVILLE_REGIONAL_A

9/13/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	6872 Btuh
	Sensible Duct Load	2079 Btuh
	Total Sensible Zone Loads	8951 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	8951 Btuh
	Latent infiltration gain (for 47 gr. humidity difference)	577 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	482 Btuh
	Latent occupant gain (1.0 people @ 200 Btuh per person)	200 Btuh
	Latent other gain	1200 Btuh
	Latent total gain	2459 Btuh
	TOTAL GAIN	11410 Btuh

EQUIPMENT

1. Central Unit	#	24000 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(1/2))
(Ornt - compass orientation)



Version 8