

Residential System Sizing Calculation

Summary

Project Title:
DIY Magnolia Model

, FL

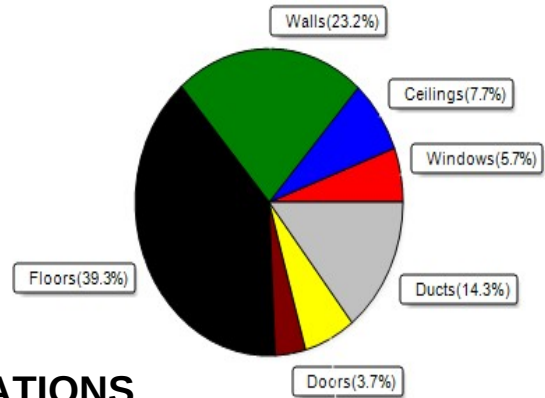
2/7/2023

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	17166 Btuh	Total cooling load calculation	16029 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	139.8 24000	Sensible (SHR = 0.85)	150.4 20400
Heat Pump + Auxiliary(0.0kW)	139.8 24000	Latent	146.2 3600
		Total (Electric Heat Pump)	149.7 24000

WINTER CALCULATIONS

Winter Heating Load (for 1032 sqft)

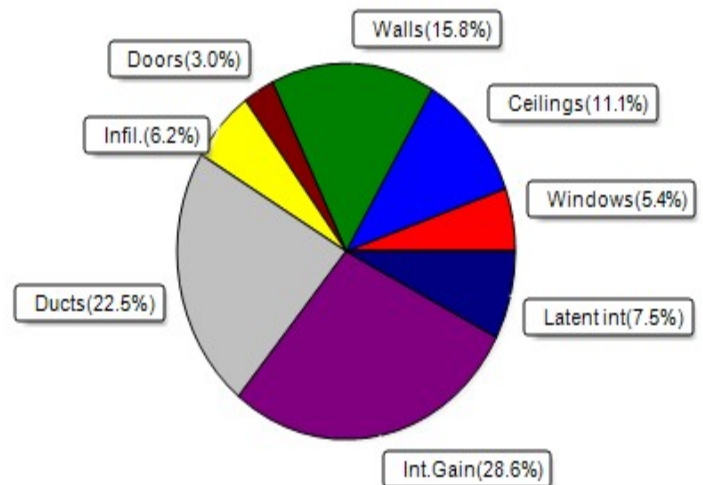
Load component	Load
Window total 94 sqft	978 Btuh
Wall total 1153 sqft	3976 Btuh
Door total 40 sqft	640 Btuh
Ceiling total 1032 sqft	1315 Btuh
Floor total 1032 sqft	6750 Btuh
Infiltration 24 cfm	1055 Btuh
Duct loss	2453 Btuh
Subtotal	17166 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	17166 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1032 sqft)

Load component	Load
Window total 94 sqft	860 Btuh
Wall total 1153 sqft	2535 Btuh
Door total 40 sqft	480 Btuh
Ceiling total 1032 sqft	1775 Btuh
Floor total	0 Btuh
Infiltration 18 cfm	376 Btuh
Internal gain	4580 Btuh
Duct gain	2960 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	13566 Btuh
Latent gain(ducts)	639 Btuh
Latent gain(infiltration)	624 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2463 Btuh
TOTAL HEAT GAIN	16029 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

2-7-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
DIY Magnolia Model

, FL

2/7/2023

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	2.3ft	15.0	0.0	15.0	9	9	137	Btuh
2	2 NFRC	0.20, 0.26	No	No	N	7.5ft	2.3ft	9.0	0.0	9.0	9	9	82	Btuh
3	2 NFRC	0.20, 0.26	No	No	N	7.5ft	2.3ft	10.0	0.0	10.0	9	9	91	Btuh
4	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	30.0	30.0	0.0	9	11	274	Btuh
5	2 NFRC	0.20, 0.26	No	No	S	7.5ft	2.3ft	30.0	30.0	0.0	9	11	274	Btuh
	Window Total							94 (sqft)					860 Btuh	
Walls	Type	U-Value					R-Value		Area(sqft)		HTM		Load	
							Cav/Sheath							
1	Frame - Wood - Ext	0.09					13.0/0.6		114.0		2.2		251 Btuh	
2	Frame - Wood - Ext	0.09					13.0/0.6		54.0		2.2		119 Btuh	
3	Frame - Wood - Ext	0.09					13.0/0.6		228.0		2.2		501 Btuh	
4	Frame - Wood - Ext	0.09					13.0/0.6		193.5		2.2		425 Btuh	
5	Frame - Wood - Ext	0.09					13.0/0.6		204.0		2.2		448 Btuh	
6	Frame - Wood - Ext	0.09					13.0/0.6		112.0		2.2		246 Btuh	
7	Frame - Wood - Ext	0.09					13.0/0.6		247.5		2.2		544 Btuh	
	Wall Total							1153 (sqft)				2535 Btuh		
Doors	Type	Area (sqft)					HTM		Load					
1	Insulated - Exterior	20.0					12.0		240 Btuh					
2	Insulated - Exterior	20.0					12.0		240 Btuh					
	Door Total							40 (sqft)		480 Btuh				
Ceilings	Type/Color/Surface	U-Value					R-Value		Area(sqft)		HTM		Load	
1	Vented Attic/DarkShingle	0.032					30.0/0.0		1032.0		1.72		1775 Btuh	
	Ceiling Total							1032 (sqft)				1775 Btuh		
Floors	Type	R-Value					Size		HTM		Load			
1	Slab On Grade	0.0					1032 (ft-perimeter)		0.0		0 Btuh			
	Floor Total							1032.0 (sqft)				0 Btuh		
	Envelope Subtotal:												5649 Btuh	
Infiltration	Type	Average ACH					Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural	0.12					9288		1		18.0		376 Btuh	
Internal gain	Occupants					Btuh/occupant		Appliance		Load				
	6					X 230		+		3200		4580 Btuh		
	Sensible Envelope Load:												10605 Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.279)												2960 Btuh	
	Sensible Load All Zones												13566 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
DIY Magnolia Model

, FL

2/7/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	10605 Btuh
	Sensible Duct Load	2960 Btuh
	Total Sensible Zone Loads	13566 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	13566 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	624 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	639 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2463 Btuh
	TOTAL GAIN	16029 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(½))
(Ornt - compass orientation)



Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
DIY Magnolia Model
Building Type: User

, FL

2/7/2023

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	15.0		10.4	156 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	9.0		10.4	94 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	10.0		10.4	104 Btuh
4	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
5	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
	Window Total				94.0(sqft)			978 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	114		3.45	393 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	54		3.45	186 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	228		3.45	786 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	194		3.45	667 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	204		3.45	703 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	112		3.45	386 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	248		3.45	853 Btuh
	Wall Total				1153(sqft)			3976 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
	Door Total				40(sqft)			640Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.032)	30.0/0.0	1032		1.3	1315 Btuh
	Ceiling Total				1032(sqft)			1315Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	143.0 ft(perim.)		47.2	6750 Btuh
	Floor Total				1032 sqft			6750 Btuh
	Envelope Subtotal:							13658 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	9288	1.00	24.1		1055 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)						(DLM of 0.167)	2453 Btuh
All Zones	Sensible Subtotal All Zones							17166 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
DIY Magnolia Model
Building Type: User

2/7/2023

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	17166 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	17166 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