

Residential System Sizing Calculation

Summary

Project Title:
Gianoulis Residence

, FL

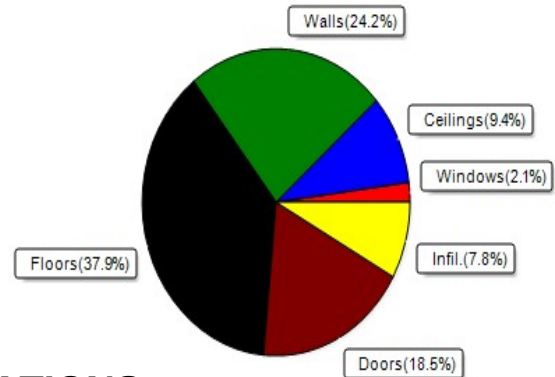
9/16/2024

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	17427 Btuh	Total cooling load calculation	12263 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	137.7 24000	Sensible (SHR = 0.75)	168.9 18000
Heat Pump + Auxiliary(0.0kW)	137.7 24000	Latent	373.3 6000
		Total (Electric Heat Pump)	195.7 24000

WINTER CALCULATIONS

Winter Heating Load (for 1205 sqft)

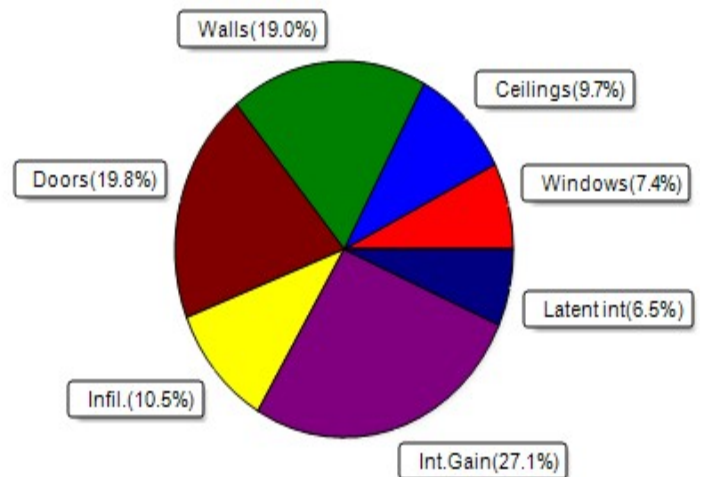
Load component	Load
Window total 35 sqft	359 Btuh
Wall total 1050 sqft	4226 Btuh
Door total 176 sqft	3230 Btuh
Ceiling total 1205 sqft	1639 Btuh
Floor total 1205 sqft	6608 Btuh
Infiltration 31 cfm	1365 Btuh
Duct loss	0 Btuh
Subtotal	17427 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	17427 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1205 sqft)

Load component	Load
Window total 35 sqft	908 Btuh
Wall total 1050 sqft	2330 Btuh
Door total 176 sqft	2423 Btuh
Ceiling total 1205 sqft	1188 Btuh
Floor total	0 Btuh
Infiltration 23 cfm	486 Btuh
Internal gain	3320 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	10655 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	807 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	800 Btuh
Total latent gain	1607 Btuh
TOTAL HEAT GAIN	12263 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

9-16-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Gianoulis Residence

, FL

9/16/2024

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	4.5	0.0	4.5	9	9	41	Btuh
2	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	30.0	0.0	30.0	9	24	727	Btuh
	Excursion												141	Btuh
	Window Total							35 (sqft)					908	Btuh
Walls	Type				U-Value	R-Value		Area(sqft)			HTM		Load	
						Cav/Sheath								
1	Frame - Steel - Ext				0.11	13.0/0.0		265.5			2.9		760	Btuh
2	Frame - Steel - Ext				0.10	19.0/0.0		294.4			2.1		633	Btuh
3	Frame - Wood - Adj				0.09	13.0/0.0		250.0			1.7		422	Btuh
4	Frame - Steel - Ext				0.10	19.0/0.0		240.0			2.1		516	Btuh
	Wall Total							1050 (sqft)					2330	Btuh
Doors	Type				U-Value	R-Value		Area (sqft)			HTM		Load	
1	Insulated - Exterior							35.6			13.8		491	Btuh
2	Insulated - Garage							20.0			13.8		276	Btuh
3	Insulated - Exterior							40.0			13.8		552	Btuh
4	Insulated - Exterior							40.0			13.8		552	Btuh
5	Insulated - Exterior							40.0			13.8		552	Btuh
	Door Total							176 (sqft)					2423	Btuh
Ceilings	Type/Color/Surface				U-Value	R-Value		Area(sqft)			HTM		Load	
1	SnglAsmb no airsp/DarkMetal				0.034	30.0/0.0		1205.0			0.99		1188	Btuh
	Ceiling Total							1205 (sqft)					1188	Btuh
Floors	Type				U-Value	R-Value		Size			HTM		Load	
1	Slab On Grade					0.0		1205 (ft-perimeter)			0.0		0	Btuh
	Floor Total							1205.0 (sqft)					0	Btuh
	Envelope Subtotal:												6849 Btuh	
Infiltration	Type				Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural				0.13		10845		1		23.3		486	Btuh
Internal gain					Occupants		Btuh/occupant				Appliance		Load	
					4		X 230		+		2400		3320	Btuh
	Sensible Envelope Load:												10655 Btuh	
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)												0 Btuh	
	Sensible Load All Zones												10655 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Gianoulis Residence

, FL

9/16/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	10655 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	10655 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	10655 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	807 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	1607 Btuh
	TOTAL GAIN	12263 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:
Gianoulis Residence
Building Type: User

, FL

9/16/2024

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	4.5		10.4	47 Btuh
2	2, NFRC 0.20	Vinyl	0.26	E	30.0		10.4	312 Btuh
	Window Total				34.5(sqft)			359 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Steel	- Ext	(0.112)	13.0/0.0	266		4.49	1192 Btuh
2	Frame - Steel	- Ext	(0.100)	19.0/0.0	294		4.02	1183 Btuh
3	Frame - Wood	- Adj	(0.089)	13.0/0.0	250		3.55	888 Btuh
4	Frame - Steel	- Ext	(0.100)	19.0/0.0	240		4.02	964 Btuh
	Wall Total				1050(sqft)			4226 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		36		18.4	654 Btuh
2	Insulated - Garage,	n	(0.460)		20		18.4	368 Btuh
3	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
4	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
5	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
	Door Total				176(sqft)			3230Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Metal		(0.034)	30.0/0.0	1205		1.4	1639 Btuh
	Ceiling Total				1205(sqft)			1639Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	140.0 ft(perim.)		47.2	6608 Btuh
	Floor Total				1205 sqft			6608 Btuh
	Envelope Subtotal:							16062 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.17	10845	1.00	31.1		1365 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones							17427 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Gianoulis Residence
Building Type: User

9/16/2024

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	17427 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	17427 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