

Residential System Sizing Calculation

Summary

Duane & Kathy Palme
Gum Swamp Road
Lake City, FL 32055

Project Title:
Palme Residence

31

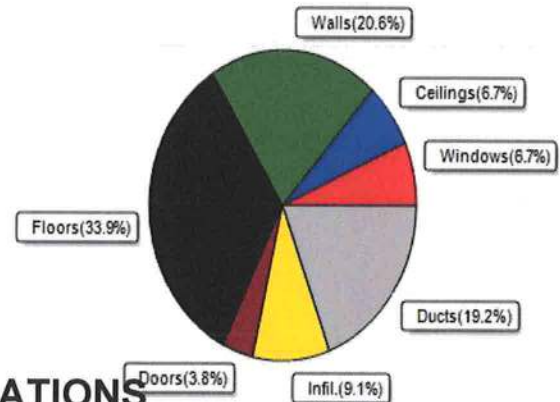
2/26/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)			
Winter design temperature(MJ8 99%/Cu)	33 F	Summer design temperature(MJ8 99%/Cu)	99 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	37 F	Summer temperature difference	24 F
Total heating load calculation	18023 Btuh	Total cooling load calculation	17677 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	106.5 19189	Sensible (SHR = 0.75)	80.7 11678
Heat Pump + Auxiliary(0.0kW)	106.5 19189	Latent	121.6 3893
		Total (Electric Heat Pump)	88.1 15570

WINTER CALCULATIONS

Winter Heating Load (for 1176 sqft)

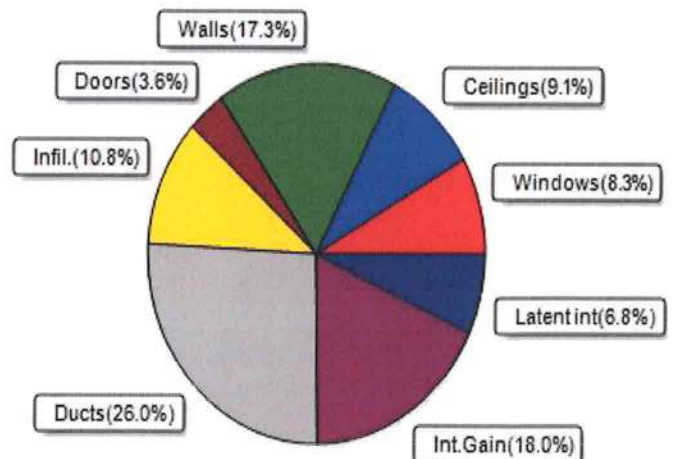
Load component		Load
Window total	90 sqft	1199 Btuh
Wall total	1130 sqft	3711 Btuh
Door total	40 sqft	681 Btuh
Ceiling total	1294 sqft	1215 Btuh
Floor total	1176 sqft	6112 Btuh
Infiltration	41 cfm	1644 Btuh
Duct loss		3461 Btuh
Subtotal		18023 Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS		18023 Btuh



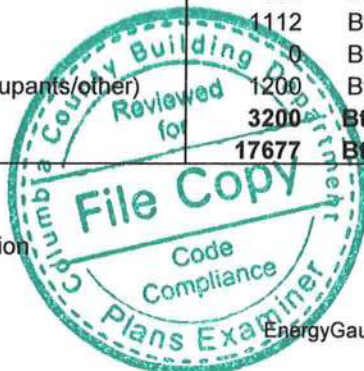
SUMMER CALCULATIONS

Summer Cooling Load (for 1176 sqft)

Load component		Load
Window total	90 sqft	1472 Btuh
Wall total	1130 sqft	3059 Btuh
Door total	40 sqft	644 Btuh
Ceiling total	1294 sqft	1609 Btuh
Floor total		0 Btuh
Infiltration	30 cfm	800 Btuh
Internal gain		3180 Btuh
Duct gain		3714 Btuh
Sens. Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		14477 Btuh
Latent gain(ducts)		888 Btuh
Latent gain(infiltration)		1112 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		1200 Btuh
Total latent gain		3200 Btuh
TOTAL HEAT GAIN		17677 Btuh



8th Edition



EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 2 / 26 / 2024

W. C. [Signature]

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Duane & Kathy Palme
Gum Swamp Road
Lake City, FL 32055

Project Title:
Palme Residence
Building Type: User

2/26/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%/Cu)
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 0.25	Vinyl	0.36	W	60.0		13.3	799 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	15.0		13.3	200 Btuh
3	2, NFRC 0.25	Vinyl	0.36	S	6.0		13.3	80 Btuh
4	2, NFRC 0.25	Vinyl	0.36	E	9.0		13.3	120 Btuh
	Window Total					90.0(sqft)		1199 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	298		3.28	979 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	231		3.28	759 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	369		3.28	1212 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	232		3.28	762 Btuh
	Wall Total					1130(sqft)		3711 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		17.0	340 Btuh
2	Insulated - Exterior, n		(0.460)		20		17.0	340 Btuh
	Door Total					40(sqft)		681Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	1294		0.94	1215 Btuh
	Ceiling Total					1294(sqft)		1215Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	140.0 ft(perim.)		43.7	6112 Btuh
	Floor Total					1176 sqft		6112 Btuh
	Envelope Subtotal:							12918 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.23	10584	1.00	40.6		1644 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)						(DLM of 0.238)	3461 Btuh
All Zones	Sensible Subtotal All Zones							18023 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Duane & Kathy Palme
Gum Swamp Road
Lake City, FL 32055

Project Title:
Palme Residence
Building Type: User

2/26/2024

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	18023 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	18023 Btuh

EQUIPMENT

1. Electric Heat Pump	#	19189 Btuh
-----------------------	---	------------

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

Duane & Kathy Palme
Gum Swamp Road
Lake City, FL 32055

Project Title:
Palme Residence

2/26/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 54gr.

Temperature Difference: 24.0F(MJ8 99%/Cu)
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	0.25, 0.36	No	No	No	W	10.5f	1.0ft.	60.0	60.0	0.0	14	33	834	Btuh
2	2 NFRC	0.25, 0.36	No	No	No	S	1.0ft.	3.0ft.	15.0	8.0	7.0	14	16	222	Btuh
3	2 NFRC	0.25, 0.36	No	No	No	S	1.0ft.	4.0ft.	6.0	3.4	2.6	14	16	89	Btuh
4	2 NFRC	0.25, 0.36	No	No	No	E	1.5ft.	1.0ft.	9.0	0.7	8.3	14	33	281	Btuh
	Excursion													46	Btuh
	Window Total								90 (sqft)					1472 Btuh	
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.09	13.0/0.0	298.0			2.7		807 Btuh		
2	Frame - Wood - Ext					0.09	13.0/0.0	231.0			2.7		625 Btuh		
3	Frame - Wood - Ext					0.09	13.0/0.0	369.0			2.7		999 Btuh		
4	Frame - Wood - Ext					0.09	13.0/0.0	232.0			2.7		628 Btuh		
	Wall Total								1130 (sqft)					3059 Btuh	
Doors	Type							Area (sqft)			HTM		Load		
1	Insulated - Exterior							20.0			16.1		322 Btuh		
2	Insulated - Exterior							20.0			16.1		322 Btuh		
	Door Total								40 (sqft)					644 Btuh	
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load		
1	Vented Attic/DarkShingle/RB					0.025	38.0/0.0	1293.6			1.24		1609 Btuh		
	Ceiling Total								1294 (sqft)					1609 Btuh	
Floors	Type						R-Value	Size			HTM		Load		
1	Slab On Grade						0.0	1176 (ft-perimeter)			0.0		0 Btuh		
	Floor Total								1176.0 (sqft)					0 Btuh	
	Envelope Subtotal:													6784 Btuh	
Infiltration	Type					Average ACH	Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural					0.17	10584	1	30.4		800 Btuh				
Internal gain						Occupants	Btuh/occupant		Appliance		Load				
	gain					6	X 230	+	1800		3180 Btuh				
	Sensible Envelope Load:													10763 Btuh	
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)										(DGM of 0.345)		3714 Btuh		
	Sensible Load All Zones													14477 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Duane & Kathy Palme
Gum Swamp Road
Lake City, FL 32055

Project Title:
Palme Residence

Climate:FL_GAINESVILLE_REGIONAL_A

2/26/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	10763 Btuh
	Sensible Duct Load	3714 Btuh
	Total Sensible Zone Loads	14477 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	14477 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	1112 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	888 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3200 Btuh
	TOTAL GAIN	17677 Btuh

EQUIPMENT

1. Central Unit	#	15570 Btuh
-----------------	---	------------

*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