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Residential System Sizing Calculation

Summary

Gator & Lori David
209 SW Poppy Glen
Lake City, FL 32024

Project Title:
1756 Model - Lot 49 Emerald Cove

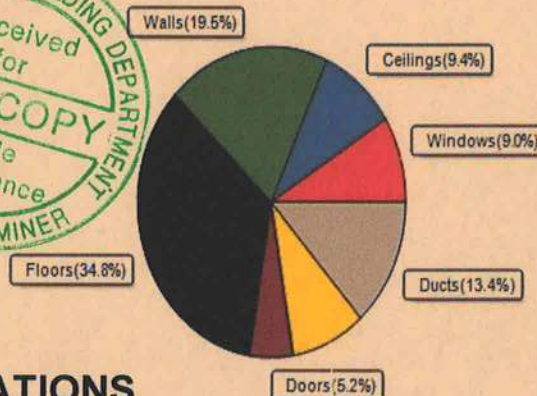
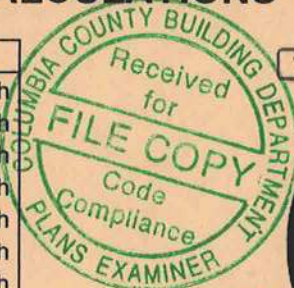
6/12/2020

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 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			23869	Btuh	
Total cooling load calculation			18030	Btuh	
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	150.8	36000	Sensible (SHR = 0.85)	201.8	30600
Heat Pump + Auxiliary(0.0kW)	150.8	36000	Latent	188.3	5400
			Total (Electric Heat Pump)	199.7	36000

WINTER CALCULATIONS

Winter Heating Load (for 1756 sqft)

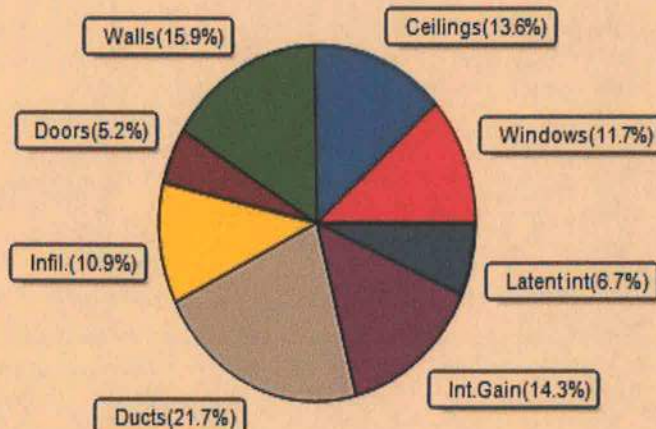
Load component		Load	
Window total	163 sqft	2152	Btuh
Wall total	1343 sqft	4649	Btuh
Door total	78 sqft	1244	Btuh
Ceiling total	1756 sqft	2237	Btuh
Floor total	1756 sqft	8307	Btuh
Infiltration	48 cfm	2081	Btuh
Duct loss		3198	Btuh
Subtotal		23869	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		23869	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1756 sqft)

Load component		Load	
Window total	163 sqft	2108	Btuh
Wall total	1343 sqft	2867	Btuh
Door total	78 sqft	933	Btuh
Ceiling total	1756 sqft	2461	Btuh
Floor total		0	Btuh
Infiltration	36 cfm	741	Btuh
Internal gain		2580	Btuh
Duct gain		3472	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		15162	Btuh
Latent gain(ducts)		438	Btuh
Latent gain(infiltration)		1230	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		2868	Btuh
TOTAL HEAT GAIN		18030	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

[Signature]
6-12-20

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Gator & Lori David
209 SW Poppy Glen
Lake City, FL 32024

Project Title:
1756 Model - Lot 49 Emerald Cove

6/12/2020

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

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	0.22, 0.33	No	No	N		1.5ft	1.3ft	45.0	0.0	45.0	11	11	490 Btuh
2	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	20.0	0.0	20.0	11	11	218 Btuh
3	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	9.0	0.0	9.0	11	11	98 Btuh
4	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	16.0	0.0	16.0	11	27	440 Btuh
5	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	54.0	54.0	0.0	11	13	588 Btuh
6	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	15.0	15.0	0.0	11	13	163 Btuh
7	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	4.0	0.0	4.0	11	27	110 Btuh
	Window Total								163 (sqft)					2108 Btuh
Walls	Type	U-Value				R-Value		Area(sqft)			HTM		Load	
						Cav/Sheath								
1	Frame - Wood - Ext	0.09				13.0/0.6		396.0			2.2		871 Btuh	
2	Frame - Wood - Ext	0.09				13.0/0.6		266.0			2.2		585 Btuh	
3	Frame - Wood - Ext	0.09				13.0/0.6		235.0			2.2		517 Btuh	
4	Frame - Wood - Ext	0.09				13.0/0.6		278.0			2.2		611 Btuh	
5	Frame - Wood - Adj	0.09				13.0/0.0		168.2			1.7		284 Btuh	
	Wall Total								1343 (sqft)					2867 Btuh
Doors	Type	U-Value				R-Value		Area (sqft)			HTM		Load	
1	Insulated - Exterior							40.0			12.0		480 Btuh	
2	Insulated - Exterior							20.0			12.0		240 Btuh	
3	Insulated - Garage							17.8			12.0		213 Btuh	
	Door Total								78 (sqft)					933 Btuh
Ceilings	Type/Color/Surface	U-Value				R-Value		Area(sqft)			HTM		Load	
1	Vented Attic/Light/Shingle	0.032				30.0/0.0		1756.0			1.40		2461 Btuh	
	Ceiling Total								1756 (sqft)					2461 Btuh
Floors	Type	U-Value				R-Value		Size			HTM		Load	
1	Slab On Grade					0.0		1756 (ft-perimeter)			0.0		0 Btuh	
	Floor Total								1756.0 (sqft)					0 Btuh
	Envelope Subtotal:												8369 Btuh	
Infiltration	Type	Average ACH				Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural	0.14				15804		1		35.6		741 Btuh		
Internal gain	Occupants				Btuh/occupant			Appliance		Load				
	6				X 230			+		1200	2580 Btuh			
	Sensible Envelope Load:												11690 Btuh	
Duct load	Extremely sealed, Supply(R6.0-Attic), Return(R6.0-Attic)										(DGM of 0.297)		3472 Btuh	
	Sensible Load All Zones												15162 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Gator & Lori David
209 SW Poppy Glen
Lake City, FL 32024

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
1756 Model - Lot 49 Emerald Cove

6/12/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	11690 Btuh
	Sensible Duct Load	3472 Btuh
	Total Sensible Zone Loads	15162 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	15162 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1230 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	438 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2868 Btuh
	TOTAL GAIN	18030 Btuh

EQUIPMENT

1. Central Unit	#	36000 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

Gator & Lori David
209 SW Poppy Glen
Lake City, FL 32024

Project Title:
1756 Model - Lot 49 Emerald Cove
Building Type: User

6/12/2020

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.22	Vinyl	0.33	N	45.0		13.2	594 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	20.0		13.2	264 Btuh
3	2, NFRC 0.22	Vinyl	0.33	N	9.0		13.2	119 Btuh
4	2, NFRC 0.22	Vinyl	0.33	E	16.0		13.2	211 Btuh
5	2, NFRC 0.22	Vinyl	0.33	S	54.0		13.2	713 Btuh
6	2, NFRC 0.22	Vinyl	0.33	S	15.0		13.2	198 Btuh
7	2, NFRC 0.22	Vinyl	0.33	W	4.0		13.2	53 Btuh
	Window Total					163.0(sqft)		2152 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	396		3.45	1366 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	266		3.45	917 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	235		3.45	810 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	278		3.45	959 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	168		3.55	597 Btuh
	Wall Total					1343(sqft)		4649 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		40		16.0	640 Btuh
2	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
3	Insulated - Garage,	n	(0.400)		18		16.0	284 Btuh
	Door Total					78(sqft)		1244Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load	
1	Vented Attic/L/Shing	(0.032)	30.0/0.0	1756		1.3	2237 Btuh	
	Ceiling Total					1756(sqft)		2237Btuh
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load	
1	Slab On Grade	(1.180)	0.0	176.0 ft(perim.)		47.2	8307 Btuh	
	Floor Total					1756 sqft		8307 Btuh
	Envelope Subtotal:							18589 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	Load	
	Natural		0.18	15804	1.00	47.5	2081 Btuh	
Duct load	Extremely sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.155)						3198 Btuh	
All Zones	Sensible Subtotal All Zones							23869 Btuh