Residential System Sizing Calculation

Summary

Project Title:
Aldridge

, FL

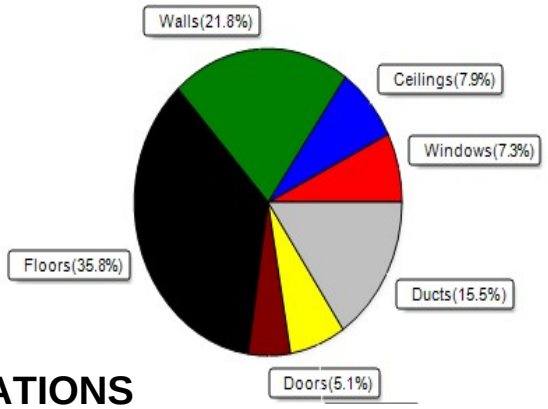
8/25/2021

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	**29933**	**Btuh**	**Total cooling load calculation**	**26343**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	100.2	30000	Sensible (SHR = 0.85)	113.9	25500
Heat Pump + Auxiliary(0.0kW)	100.2	30000	Latent	113.7	4500
			Total (Electric Heat Pump)	113.9	30000

WINTER CALCULATIONS

Winter Heating Load (for 1853 sqft)

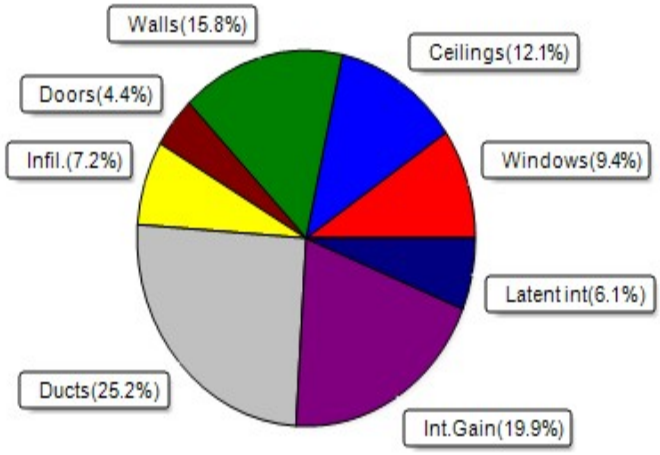
Load component			Load	
Window total	209	sqft	2174	Btuh
Wall total	1835	sqft	6514	Btuh
Door total	96	sqft	1536	Btuh
Ceiling total	1853	sqft	2361	Btuh
Floor total	1853	sqft	10714	Btuh
Infiltration	46	cfm	2000	Btuh
Duct loss			4634	Btuh
Subtotal			**29933**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**29933**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 1853 sqft)

Load component			Load	
Window total	209	sqft	2485	Btuh
Wall total	1835	sqft	4152	Btuh
Door total	96	sqft	1152	Btuh
Ceiling total	1853	sqft	3187	Btuh
Floor total			0	Btuh
Infiltration	34	cfm	713	Btuh
Internal gain			5240	Btuh
Duct gain			5455	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**22384**	**Btuh**
Latent gain(ducts)			1177	Btuh
Latent gain(infiltration)			1182	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1600	Btuh
Total latent gain			**3959**	**Btuh**
TOTAL HEAT GAIN			**26343**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 7-1-21

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Aldridge

, FL

8/25/2021

Reference City: Gainesville, FL Temperature Difference: 19.0F(TMY3 99%) Humidity difference: 51gr.

Component Loads for Whole House

	Type*						Overhang		Window Area(sqft)			HTM		Load	
Window	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.	32.0	0.0	32.0	9	9	293	Btuh
2	2 NFRC	0.20, 0.26		No	No	N	9.5ft.	2.3ft.	16.0	0.0	16.0	9	9	146	Btuh
3	2 NFRC	0.20, 0.26		No	No	N	11.5f	2.3ft.	36.0	0.0	36.0	9	9	329	Btuh
4	2 NFRC	0.20, 0.26		No	No	N	1.5ft.	2.3ft.	15.0	0.0	15.0	9	9	137	Btuh
5	2 NFRC	0.20, 0.26		No	No	E	1.5ft.	2.3ft.	15.0	0.0	15.0	9	24	363	Btuh
6	2 NFRC	0.20, 0.26		No	No	E	1.5ft.	2.3ft.	3.0	0.0	3.0	9	24	73	Btuh
7	2 NFRC	0.20, 0.26		No	No	S	7.5ft.	2.3ft.	64.0	64.0	0.0	9	11	585	Btuh
8	2 NFRC	0.20, 0.26		No	No	S	1.5ft.	2.3ft.	8.0	8.0	0.0	9	11	73	Btuh
9	2 NFRC	0.20, 0.26		No	No	W	1.5ft.	2.3ft.	8.0	0.0	8.0	9	24	194	Btuh
10	2 NFRC	0.20, 0.26		No	No	W	1.5ft.	2.3ft.	12.0	0.0	12.0	9	24	291	Btuh
	Window Total								209 (sqft)					2485	Btuh

Walls	Type	U-Value	R-Value	Area(sqft)	HTM	Load	
			Cav/Sheath				
1	Frame - Wood - Ext	0.09	13.0/0.0	157.0	2.3	355	Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	27.0	2.3	61	Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	77.3	2.3	175	Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	21.7	2.3	49	Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	96.0	2.3	217	Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	130.5	2.3	295	Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	100.5	2.3	227	Btuh
8	Frame - Wood - Ext	0.09	13.0/0.0	123.0	2.3	278	Btuh
9	Frame - Wood - Ext	0.09	13.0/0.0	43.5	2.3	98	Btuh
10	Frame - Wood - Ext	0.09	13.0/0.0	199.5	2.3	452	Btuh
11	Frame - Wood - Ext	0.09	13.0/0.0	43.5	2.3	98	Btuh
12	Frame - Wood - Ext	0.09	13.0/0.0	39.0	2.3	88	Btuh
13	Frame - Wood - Ext	0.09	13.0/0.0	223.7	2.3	506	Btuh
14	Frame - Wood - Ext	0.09	13.0/0.0	39.0	2.3	88	Btuh
15	Frame - Wood - Ext	0.09	13.0/0.0	82.0	2.3	186	Btuh
16	Frame - Wood - Ext	0.09	13.0/0.0	252.0	2.3	570	Btuh
17	Frame - Wood - Ext	0.09	13.0/0.0	179.5	2.3	406	Btuh
	Wall Total			1835 (sqft)		4152	Btuh

Doors	Type	Area (sqft)	HTM	Load	
1	Insulated - Exterior	48.0	12.0	576	Btuh
2	Insulated - Exterior	24.0	12.0	288	Btuh
3	Wood - Exterior	24.0	12.0	288	Btuh
	Door Total	96 (sqft)		1152	Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load	
1	Vented Attic/DarkShingle	0.032	30.0/0.0	1853.0	1.72	3187	Btuh
	Ceiling Total			1853 (sqft)		3187	Btuh

Floors	Type	R-Value	Size	HTM	Load	
1	Slab On Grade	0.0	1853 (ft-perimeter)	0.0	0	Btuh
	Floor Total		1853.0 (sqft)		0	Btuh

Envelope Subtotal:	10976	Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Aldridge

Climate:FL_GAINESVILLE_REGIONAL_A

, FL

8/25/2021

Infiltration	Type	Average ACH		Volume(cuft)		Wall Ratio		CFM=	Load	
	Natural	0.12		16677		1		34.3	713	Btuh
Internal gain		Occupants		Btuh/occupant				Appliance	Load	
		8	X	230	+			3400	5240	Btuh
							Sensible Envelope Load:		16928	Btuh
Duct load	Averagesealed, Supply(R6.0-Attic), Return(R6.0-Attic)						(DGM of 0.322)		5455	Btuh
							Sensible Load All Zones		**22384**	**Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Aldridge
Climate:FL_GAINESVILLE_REGIONAL_A

, FL

8/25/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**16928**	**Btuh**
	Sensible Duct Load	5455	Btuh
	Total Sensible Zone Loads	**22384**	**Btuh**
	Sensible ventilation	0	Btuh
	Blower	0	Btuh
	Total sensible gain	**22384**	**Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	1182	Btuh
	Latent ventilation gain	0	Btuh
	Latent duct gain	1177	Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600	Btuh
	Latent other gain	0	Btuh
	Latent total gain	**3959**	**Btuh**
	TOTAL GAIN	**26343**	**Btuh**

EQUIPMENT

1. Central Unit	#	30000 Btuh

*Key: Window types (Panes - 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:
Aldridge
, FL Building Type: User

8/25/2021

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 0.20	Vinyl	0.26	N	32.0	10.4	333 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	16.0	10.4	166 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	36.0	10.4	374 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	15.0	10.4	156 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	15.0	10.4	156 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	3.0	10.4	31 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	64.0	10.4	666 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	8.0	10.4	83 Btuh
9	2, NFRC 0.20	Vinyl	0.26	W	8.0	10.4	83 Btuh
10	2, NFRC 0.20	Vinyl	0.26	W	12.0	10.4	125 Btuh
	Window Total				209.0(sqft)		2174 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	157	3.55	557 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	27	3.55	96 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	77	3.55	275 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	22	3.55	77 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	96	3.55	341 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	131	3.55	463 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	101	3.55	357 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	123	3.55	437 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	44	3.55	154 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	200	3.55	708 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	44	3.55	154 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	39	3.55	138 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	224	3.55	794 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	39	3.55	138 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	82	3.55	291 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	252	3.55	895 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	180	3.55	637 Btuh
	Wall Total				1835(sqft)		6514 Btuh

Doors	Type	Storm	Ueff.	Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)	48	16.0	768 Btuh
2	Insulated - Exterior,	n	(0.400)	24	16.0	384 Btuh
3	Wood - Exterior,	n	(0.400)	24	16.0	384 Btuh
	Door Total			96(sqft)		1536Btuh

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Vented Attic/D/Shing	(0.032)	30.0/0.0	1853	1.3	2361 Btuh
	Ceiling Total			1853(sqft)		2361Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	227.0 ft(perim.)	47.2	10714 Btuh
	Floor Total			1853 sqft		10714 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Aldridge
, FL Building Type: User

8/25/2021

	Envelope Subtotal:	23298 Btuh
Infiltration	Type Wholehouse ACH Volume(cuft) Wall Ratio CFM= Natural 0.16 16677 1.00 45.7	2000 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.183)	4634 Btuh
All Zones	**Sensible Subtotal All Zones**	**29933 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29933 Btuh 0 Btuh 29933 Btuh

EQUIPMENT

1. Electric Heat Pump	#	30000 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