

Residential System Sizing Calculation

Summary

Project Title:
Tuell Residence

, FL

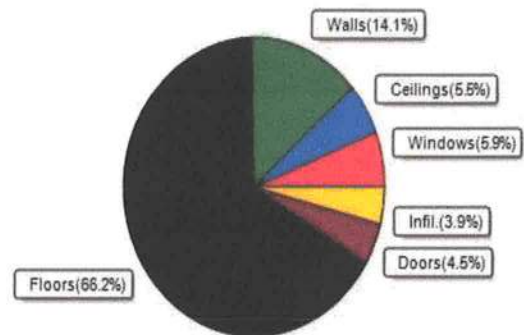
7/21/2023

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	14342 Btuh	Total cooling load calculation	10318 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	83.7 12000	Sensible (SHR = 0.85)	106.4 10200
Heat Pump + Auxiliary(0.0kW)	83.7 12000	Latent	247.6 1800
		Total (Electric Heat Pump)	116.3 12000

WINTER CALCULATIONS

Winter Heating Load (for 617 sqft)

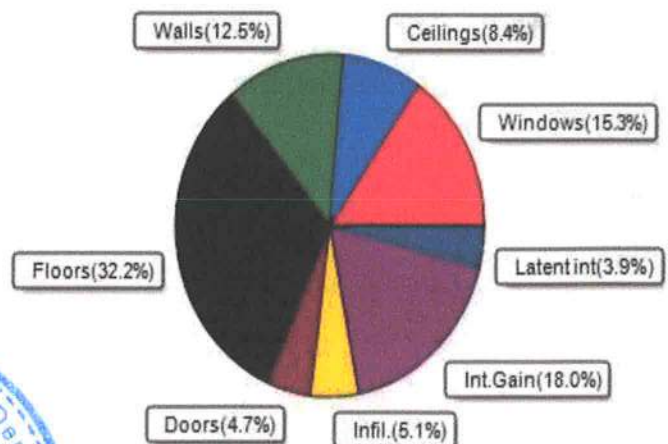
Load component		Load	
Window total	82 sqft	849	Btuh
Wall total	569 sqft	2020	Btuh
Door total	40 sqft	640	Btuh
Ceiling total	617 sqft	786	Btuh
Floor total	617 sqft	9493	Btuh
Infiltration	13 cfm	553	Btuh
Duct loss		0	Btuh
Subtotal		14342	Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
TOTAL HEAT LOSS		14342	Btuh



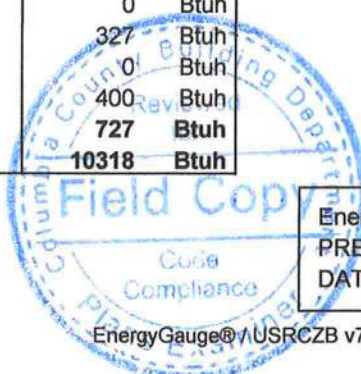
SUMMER CALCULATIONS

Summer Cooling Load (for 617 sqft)

Load component		Load	
Window total	82 sqft	1579	Btuh
Wall total	569 sqft	1288	Btuh
Door total	40 sqft	480	Btuh
Ceiling total	617 sqft	865	Btuh
Floor total		3323	Btuh
Infiltration	9 cfm	197	Btuh
Internal gain		1860	Btuh
Duct gain		0	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		9591	Btuh
Latent gain(ducts)		0	Btuh
Latent gain(infiltration)		327	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		400	Btuh
Total latent gain		727	Btuh
TOTAL HEAT GAIN		10318	Btuh



8th Edition



EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

7-21-23

EnergyGauge® / USRCZB v7.5.01

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Tuell Residence

, FL

7/21/2023

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	W	1.5ft	2.3ft	15.0	0.0	15.0	9	24	363 Btuh
2	2 NFRC	0.20	0.26	No	No	N	1.5ft	2.3ft	15.0	0.0	15.0	9	9	137 Btuh
3	2 NFRC	0.20	0.26	No	No	N	1.5ft	2.3ft	6.7	0.0	6.7	9	9	61 Btuh
4	2 NFRC	0.20	0.26	No	No	W	1.5ft	2.3ft	6.0	0.0	6.0	9	24	145 Btuh
5	2 NFRC	0.20	0.26	No	No	N	1.5ft	2.3ft	6.0	0.0	6.0	9	9	55 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	E	1.5ft	2.3ft	30.0	0.0	30.0	9	24	727 Btuh
Excursion														18 Btuh
Window Total									82 (sqft)					1579 Btuh
Walls	Type					U-Value		R-Value		Area(sqft)		HTM		Load
								Cav/Sheath						
1	Frame - Wood - Ext					0.09		13.0/0.0		65.0		2.3		147 Btuh
2	Frame - Wood - Ext					0.09		13.0/0.0		173.0		2.3		392 Btuh
3	Frame - Wood - Ext					0.09		13.0/0.0		58.0		2.3		131 Btuh
4	Frame - Wood - Ext					0.09		13.0/0.0		63.3		2.3		143 Btuh
5	Frame - Wood - Ext					0.09		13.0/0.0		209.7		2.3		475 Btuh
Wall Total									569 (sqft)					1288 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/Med/Metal					0.032		30.0/0.0		617.0		1.40		865 Btuh
Ceiling Total									617 (sqft)					865 Btuh
Floors	Type							R-Value		Size		HTM		Load
1	Raised - Open							0.0		617 (sqft)		5.4		3323 Btuh
Floor Total									617.0 (sqft)					3323 Btuh
Envelope Subtotal:														7534 Btuh
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load
	Natural					0.11		4936		1		9.5		197 Btuh
Internal gain						Occupants		Btuh/occupant				Appliance		Load
						2		X 230		+		1400		1860 Btuh
Sensible Envelope Load:														9591 Btuh
Duct load	NA, Supply(R0.0-None), Return(R0.0-None)										(DGM of 0.000)			0 Btuh
Sensible Load All Zones														9591 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Tuell Residence

, FL

7/21/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	9591 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	9591 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	9591 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	327 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (2.0 people @ 200 Btuh per person)	400 Btuh
	Latent other gain	0 Btuh
	Latent total gain	727 Btuh
	TOTAL GAIN	10318 Btuh

EQUIPMENT

1. Central Unit	#	12000 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:
Tuell Residence
Building Type: User

, FL

7/21/2023

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	W	15.0		10.4	156 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	15.0		10.4	156 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	6.7		10.4	69 Btuh
4	2, NFRC 0.20	Vinyl	0.26	W	6.0		10.4	62 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	6.0		10.4	62 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	3.0		10.4	31 Btuh
7	2, NFRC 0.20	Vinyl	0.26	E	30.0		10.4	312 Btuh
Window Total					81.7(sqft)			849 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	65		3.55	231 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	173		3.55	614 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	58		3.55	206 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	225 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	210		3.55	744 Btuh
Wall Total					569(sqft)			2020 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/M/Metal		(0.032)	30.0/0.0	617		1.3	786 Btuh
Ceiling Total					617(sqft)			786Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Raised - Open		(0.385)	0.0	617.0	sqft	15.4	9493 Btuh
Floor Total					617	sqft		9493 Btuh
Envelope Subtotal:								13788 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.15	4936	1.00	12.6		553 Btuh
Duct load	NA, R0.0, Supply(), Return() (DLM of 0.000)							0 Btuh
All Zones	Sensible Subtotal All Zones							14342 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Tuell Residence
Building Type: User

7/21/2023

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	14342 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	14342 Btuh

EQUIPMENT

1. Electric Heat Pump	#	12000 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