

Residential System Sizing Calculation

Summary

Project Title:
Behr Residence

, FL

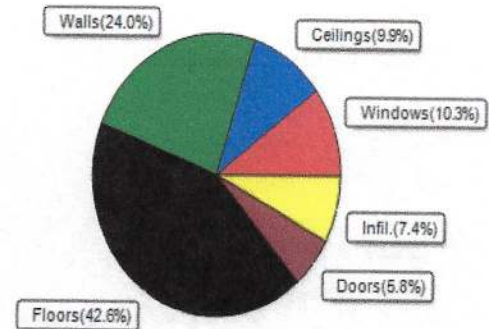
2/22/2024

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	15411	Btuh	Total cooling load calculation	11737	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	194.7	30000	Sensible (SHR = 0.85)	239.2	25500
Heat Pump + Auxiliary(0.0kW)	194.7	30000	Latent	417.8	4500
			Total (Electric Heat Pump)	255.6	30000

WINTER CALCULATIONS

Winter Heating Load (for 1120 sqft)

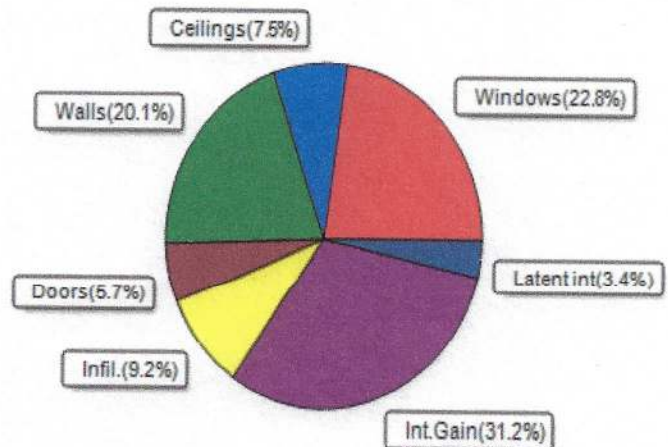
Load component		Load
Window total	153 sqft	1591 Btuh
Wall total	1042 sqft	3701 Btuh
Door total	56 sqft	889 Btuh
Ceiling total	1120 sqft	1523 Btuh
Floor total	1120 sqft	6561 Btuh
Infiltration	26 cfm	1145 Btuh
Duct loss		0 Btuh
Subtotal		15411 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm		0 Btuh
TOTAL HEAT LOSS		15411 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1120 sqft)

Load component		Load
Window total	153 sqft	2681 Btuh
Wall total	1042 sqft	2359 Btuh
Door total	56 sqft	667 Btuh
Ceiling total	1120 sqft	885 Btuh
Floor total		0 Btuh
Infiltration	20 cfm	408 Btuh
Internal gain		3660 Btuh
Duct gain		0 Btuh
Sens. Ventilation Ex:0 cfm; Sup:0 cfm		0 Btuh
Blower Load		0 Btuh
Total sensible gain		10660 Btuh
Latent gain(ducts)		0 Btuh
Latent gain(infiltration)		677 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		400 Btuh
Total latent gain		1077 Btuh
TOTAL HEAT GAIN		11737 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

2-22-24

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

, FL

Project Title:
Behr Residence
Building Type: User

2/22/2024

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	6.0		10.4	62 Btuh
2	2, NFRC 0.20	Vinyl	0.26	W	6.0		10.4	62 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	12.0		10.4	125 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	10.0		10.4	104 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	40.0		10.4	416 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	15.0		10.4	156 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	40.0		10.4	416 Btuh
8	2, NFRC 0.20	Vinyl	0.26	W	24.0		10.4	250 Btuh
Window Total					153.0(sqft)			1591 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	89		3.55	318 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	39		3.55	138 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	133		3.55	470 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	303		3.55	1075 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	208		3.55	738 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	271		3.55	962 Btuh
Wall Total					1042(sqft)			3701 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		18		16.0	284 Btuh
2	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior, n		(0.400)		18		16.0	284 Btuh
Door Total					56(sqft)			889Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/L/Metal		(0.034)	30.0/0.0	1120		1.4	1523 Btuh
Ceiling Total					1120(sqft)			1523Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	139.0 ft(perim.)		47.2	6561 Btuh
Floor Total					1120 sqft			6561 Btuh
Envelope Subtotal:								14265 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	10080	1.00	26.1		1145 Btuh
Duct load	Average sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)							0 Btuh
All Zones	Sensible Subtotal All Zones							15411 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Behr Residence
Building Type: User

, FL

2/22/2024

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	15411 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	15411 Btuh

EQUIPMENT

1. Electric Heat Pump	#	30000 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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Behr Residence

, FL

2/22/2024

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		6.5ft	2.3ft	6.0	0.0	6.0	9	9	55	Btuh				
2	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	6.0	0.0	6.0	9	24	145	Btuh				
3	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	12.0	0.0	12.0	9	9	110	Btuh				
4	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	10.0	0.0	10.0	9	9	91	Btuh				
5	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	40.0	0.0	40.0	9	24	969	Btuh				
6	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	15.0	0.0	15.0	9	24	363	Btuh				
7	2 NFRC	0.20, 0.26	No	No	S		1.5ft	2.3ft	40.0	40.0	0.0	9	11	366	Btuh				
8	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	24.0	0.0	24.0	9	24	581	Btuh				
Window Total									153 (sqft)					2681 Btuh					
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load						
								Cav/Sheath											
1	Frame - Wood - Ext						0.09	13.0/0.0	89.5		2.3		203 Btuh						
2	Frame - Wood - Ext						0.09	13.0/0.0	39.0		2.3		88 Btuh						
3	Frame - Wood - Ext						0.09	13.0/0.0	132.5		2.3		300 Btuh						
4	Frame - Wood - Ext						0.09	13.0/0.0	302.8		2.3		685 Btuh						
5	Frame - Wood - Ext						0.09	13.0/0.0	207.8		2.3		470 Btuh						
6	Frame - Wood - Ext						0.09	13.0/0.0	271.0		2.3		613 Btuh						
Wall Total									1042 (sqft)					2359 Btuh					
Doors	Type								Area (sqft)	HTM		Load							
1	Insulated - Exterior								17.8	12.0		213 Btuh							
2	Insulated - Exterior								20.0	12.0		240 Btuh							
3	Insulated - Exterior								17.8	12.0		213 Btuh							
Door Total									56 (sqft)					667 Btuh					
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load						
1	SnglAsmb w airsp/Light/Metal						0.034	30.0/0.0	1120.0		0.79		885 Btuh						
Ceiling Total									1120 (sqft)					885 Btuh					
Floors	Type						R-Value		Size		HTM		Load						
1	Slab On Grade						0.0		1120 (ft-perimeter)		0.0		0 Btuh						
Floor Total									1120.0 (sqft)					0 Btuh					
Envelope Subtotal:														6592 Btuh					
Infiltration	Type						Average ACH	Volume(cuft)		Wall Ratio	CFM=		Load						
Natural														0.12	10080	1	19.6	408	Btuh
Internal gain						Occupants	Btuh/occupant		Appliance				Load						
2														X	230	+	3200	3660	Btuh
Sensible Envelope Load:														10660 Btuh					
Duct load	Average sealed, Supply(R6.0-Condi), Return(R6.0-Condi)								(DGM of 0.000)				0 Btuh						
	Sensible Load All Zones														10660 Btuh				

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title:
Behr Residence

Climate: FL_GAINESVILLE_REGIONAL_A

, FL

2/22/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	10660 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	10660 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	10660 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	677 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	1077 Btuh
	TOTAL GAIN	11737 Btuh

EQUIPMENT

1. Central Unit	#	30000 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