

Residential System Sizing Calculation

Summary

Beck Addition
824 SW CR 138
Ft. white, FL 32038-

Project Title:
1203042

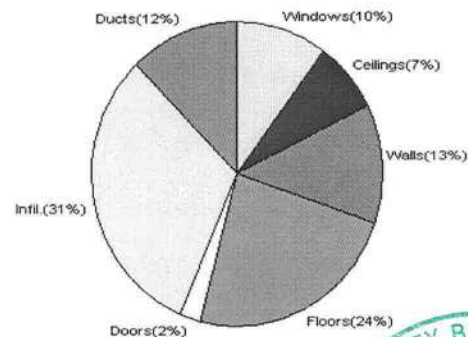
3/21/2012

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(54gr.)			
Winter design temperature(MJ8 99%)	33 F	Summer design temperature(MJ8 99%)	92 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	37 F	Summer temperature difference	17 F
Total heating load calculation	44090 Btuh	Total cooling load calculation	46710 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	127.0 56000	Sensible (SHR = 0.75)	120.7 42000
Heat Pump + Auxiliary(0.0kW)	127.0 56000	Latent	117.5 14000
		Total (Electric Heat Pump)	119.9 56000

WINTER CALCULATIONS

Winter Heating Load (for 2339 sqft)

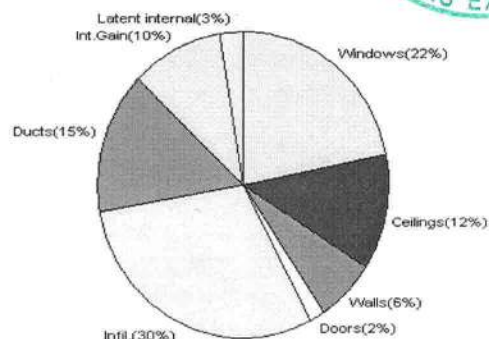
Load component		Load	
Window total	354 sqft	4580	Btuh
Wall total	1976 sqft	5651	Btuh
Door total	73 sqft	1085	Btuh
Ceiling total	2779 sqft	3283	Btuh
Floor total	2339 sqft	10478	Btuh
Infiltration	336 cfm	13618	Btuh
Duct loss		5395	Btuh
Subtotal		44090	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		44090	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2339 sqft)

Load component		Load	
Window total	354 sqft	10214	Btuh
Wall total	1976 sqft	2963	Btuh
Door total	73 sqft	821	Btuh
Ceiling total	2779 sqft	5748	Btuh
Floor total		0	Btuh
Infiltration	252 cfm	4693	Btuh
Internal gain		4780	Btuh
Duct gain		5580	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		34798	Btuh
Latent gain(ducts)		1497	Btuh
Latent gain(infiltration)		9215	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		11912	Btuh
TOTAL HEAT GAIN		46710	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE:

C. J. BERNSELEY
3/21/12

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Beck Addition
824 SW CR 138
Ft. white, FL 32038-

Project Title:
1203042
Building Type: User

3/21/2012

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 F (MJ8 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.35	Metal	0.35	S	24.0		12.9	311 Btuh
2	2, NFRC 0.35	Metal	0.35	SW	24.0		12.9	311 Btuh
3	2, NFRC 0.35	Metal	0.35	W	24.0		12.9	311 Btuh
4	2, NFRC 0.35	Metal	0.35	SW	48.0		12.9	622 Btuh
5	2, NFRC 0.35	Metal	0.35	SW	26.7		12.9	345 Btuh
6	2, NFRC 0.35	Metal	0.35	N	24.0		12.9	311 Btuh
7	2, NFRC 0.35	Metal	0.35	NE	24.0		12.9	311 Btuh
8	2, NFRC 0.35	Metal	0.35	E	24.0		12.9	311 Btuh
9	2, NFRC 0.35	Metal	0.35	NE	90.0		12.9	1166 Btuh
10	2, NFRC 0.35	Metal	0.35	SE	9.0		12.9	117 Btuh
11	2, NFRC 0.35	Metal	0.35	SE	36.0		12.9	466 Btuh
Window Total					353.7(sqft)			4580 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	31		2.86	89 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	535		2.86	1529 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	31		2.86	89 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	400		2.86	1144 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	31		2.86	89 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	513		2.86	1466 Btuh
7	Frame - Wood	- Ext	(0.077)	19.0/0.0	31		2.86	89 Btuh
8	Frame - Wood	- Ext	(0.077)	19.0/0.0	405		2.86	1158 Btuh
Wall Total					1976(sqft)			5651 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		13		14.8	197 Btuh
2	Insulated - Exterior,	n	(0.400)		20		14.8	296 Btuh
3	Insulated - Exterior,	n	(0.400)		20		14.8	296 Btuh
4	Insulated - Exterior,	n	(0.400)		20		14.8	296 Btuh
Door Total					73(sqft)			1085Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value		Area	X	HTM=	Load
1	Unvent Attic/D/Shing	(0.032)	30.0/0.0		2339		1.2	2756 Btuh
2	Cathedral/D/Shing	(0.032)	30.0/0.0		440		1.2	527 Btuh
Ceiling Total					2779(sqft)			3283Btuh
Floors	Type	Ueff.	R-Value		Size	X	HTM=	Load
1	Slab On Grade	(1.180)	0.0		240.0 ft(perim.)		43.7	10478 Btuh
Floor Total					2339 sqft			10478 Btuh
Envelope Subtotal:								25077 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.86	23390	1.00	336.2		13618 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Beck Addition
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Project Title:
1203042
Building Type: User

3/21/2012

Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.139)	5395 Btuh
All Zones	Sensible Subtotal All Zones	44090 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	44090 Btuh 0 Btuh 44090 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	56000 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

Beck Addition
824 SW CR 138
Ft. white, FL 32038-

Project Title:
1203042

3/21/2012

Reference City: Gainesville, FL

Temperature Difference: 17.0F(MJ8 99%)

Humidity difference: 54gr.

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	0.35, 0.35	No	No	S		1.5ft	2.0ft	24.0	24.0	0.0	13	16	319	Btuh
2	2 NFRC	0.35, 0.35	No	No	SW		1.5ft	2.0ft	24.0	1.9	22.1	13	31	712	Btuh
3	2 NFRC	0.35, 0.35	No	No	W		1.5ft	2.0ft	24.0	0.0	24.0	13	40	953	Btuh
4	2 NFRC	0.35, 0.35	No	No	SW		1.5ft	2.0ft	48.0	5.6	42.4	13	31	1390	Btuh
5	2 NFRC	0.35, 0.35	No	No	SW		1.5ft	1.0ft	26.7	5.9	20.8	13	31	723	Btuh
6	2 NFRC	0.35, 0.35	No	No	N		1.5ft	2.0ft	24.0	0.0	24.0	13	13	319	Btuh
7	2 NFRC	0.35, 0.35	No	No	NE		1.5ft	2.0ft	24.0	0.0	24.0	13	29	707	Btuh
8	2 NFRC	0.35, 0.35	No	No	E		1.5ft	2.0ft	24.0	0.0	24.0	13	40	953	Btuh
9	2 NFRC	0.35, 0.35	No	No	NE		1.5ft	2.0ft	90.0	0.0	90.0	13	29	2652	Btuh
10	2 NFRC	0.35, 0.35	No	No	SE		1.5ft	2.0ft	9.0	1.4	7.6	13	31	254	Btuh
11	2 NFRC	0.35, 0.35	No	No	SE		1.5ft	2.0ft	36.0	2.8	33.2	13	31	1067	Btuh
Excursion														164	Btuh
Window Total									354 (sqft)					10214	Btuh
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
								Cav/Sheath							
1	Frame - Wood - Ext						0.08	19.0/0.0	31.0		1.5		46 Btuh		
2	Frame - Wood - Ext						0.08	19.0/0.0	534.7		1.5		802 Btuh		
3	Frame - Wood - Ext						0.08	19.0/0.0	31.0		1.5		46 Btuh		
4	Frame - Wood - Ext						0.08	19.0/0.0	400.0		1.5		600 Btuh		
5	Frame - Wood - Ext						0.08	19.0/0.0	31.0		1.5		46 Btuh		
6	Frame - Wood - Ext						0.08	19.0/0.0	512.7		1.5		769 Btuh		
7	Frame - Wood - Ext						0.08	19.0/0.0	31.0		1.5		46 Btuh		
8	Frame - Wood - Ext						0.08	19.0/0.0	405.0		1.5		607 Btuh		
Wall Total									1976 (sqft)					2963	Btuh
Doors	Type								Area (sqft)	HTM		Load			
1	Insulated - Exterior								13.3	11.2		149 Btuh			
2	Insulated - Exterior								20.0	11.2		224 Btuh			
3	Insulated - Exterior								20.0	11.2		224 Btuh			
4	Insulated - Exterior								20.0	11.2		224 Btuh			
Door Total									73 (sqft)			821 Btuh			
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)	HTM		Load			
1	Unvented Attic/DarkShingle						0.032	30.0/0.0	2339.0	2.29		5363 Btuh			
2	Cath/Sngl Assem/DarkShingle						0.032	30.0/0.0	440.0	0.87		384 Btuh			
Ceiling Total									2779 (sqft)			5748 Btuh			
Floors	Type						R-Value		Size	HTM		Load			
1	Slab On Grade						0.0		2339 (ft-perimeter)	0.0		0 Btuh			
Floor Total									2339.0 (sqft)			0 Btuh			
Envelope Subtotal:														19746 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

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824 SW CR 138
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Project Title:
1203042

Climate:FL_GAINESVILLE_REGIONAL_A

3/21/2012

Infiltration	Type Natural	Average ACH 0.65	Volume(cuft) 23390	Wall Ratio 1	CFM= 252.1	Load 4693 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
	Sensible Envelope Load:					29218 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.191)					5580 Btuh
	Sensible Load All Zones					34798 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Beck Addition
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Project Title:
1203042

Climate:FL_GAINESVILLE_REGIONAL_A

3/21/2012

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	29218 Btuh
	Sensible Duct Load	5580 Btuh
	Total Sensible Zone Loads	34798 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	34798 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	9215 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1497 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	11912 Btuh
	TOTAL GAIN	46710 Btuh

EQUIPMENT

1. Central Unit	#	56000 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