

***HPA Energy Lab Conference Rm
HVAC Load Analysis***

for

Flansburg Architects
Boston, MA



Prepared By:

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Saturday, August 09, 2008



General Project Data Input

General Project Information

Project file name: C:\Chas\Hakalau Current Projects\HPA Energy Lab\HPA
Conference Rm.CHV
Project title: HPA Energy Lab Conference Rm
Project city, state, ZIP: Waimea, Hawaii
Designed by: Chas Cavedoni
Project date: August 2008
Weather reference city: HONOLULU, HAWAII, USA
Client name: Flansburg Architects
Client address: Boston, MA
Company name: HAKALAU ENGINEERING, LLC.
Company representative: Chas Cavedoni
Company address: PO Box 252
Company city: Hakalau, HI 96710
Company phone: (808) 961-6202
Company fax: (808) 961-6202

Barometric pressure: 29.907 in.Hg.
Altitude: 13 feet
Latitude: 21 Degrees
Mean daily temperature range: 11 Degrees
Starting & ending time for HVAC load calculations: 8am - 6pm
Number of unique zones in this project: 1

Building Default Values

Calculations performed: Cooling loads only
Lighting requirements: 1.00 Watts per square foot
Equipment requirements: 0.50 Watts per square foot
People sensible load multiplier: 250 Btuh per person
People latent load multiplier: 200 Btuh per person
Zone sensible safety factor: 0 %
Zone latent safety factor: 0 %
Zone heating safety factor: 0 %
People diversity factor: 100 %
Lighting profile number: 2
Equipment profile number: 3
People profile number: 1
Building default ceiling height: 13.00 feet
Building default wall height: 14.00 feet

Internal Operating Load Profiles (C = 100)

	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0	0	0	0	0	0	25	25	50	C	C	C	C	C	C	C	C	75	50	25	0	0	0	0
2	0	0	0	0	0	0	75	75	C	C	C	C	C	C	C	C	C	C	75	75	50	25	25	25
3	25	25	25	25	25	25	75	75	C	C	C	C	C	C	C	C	C	75	75	50	25	25	25	25
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C



General Project Data Input (cont'd)

Building-Level Design Conditions

Design Month	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Diff	In/Outdoor Correction
August	87	75	60%	76	31.09	-2
Winter	62			75		

Master Roofs

Roof No.	ASHRAE Roof#	Roof U-Fac	Dark Color	Susp. Ceil
1	1	0.053	No	No

Master Walls

Wall No.	ASHRAE Group	Wall U-Fac	Wall Color
1	G	0.091	L

Master Partitions

Partition No.	Partition U-Factor	Cool T-D	Heat T-D
1	0.100	10	0

Master Glass

Glass No.	Summer U-Factor	Winter U-Factor	Glass Shd.Coef.	Interior Shading	Interior Shd.Coef
1	0.750	0.790	0.730	4	0.000
2	0.750	0.790	0.730	4	0.000
3	0.750	0.790	0.730	4	0.000

Master Shading Devices

Shade No.	Dist Horiz Overh Projects	Dist Beyond Right W.Edge	Dist Beyond Left W.Edge	Dist Overh Above Wind	Dist Right Fin Proj	Dist R-Fin Beyond W.Edge	Ht Of Right Fin	Dist Left Fin Proj	Dist L-Fin Beyond W.Edge	Ht Of Left Fin
1	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00



Building Summary Loads

Building peaks in August at 10am.

Bldg Load Descriptions	Area Quan	Sen Loss	%Tot Loss	Lat Gain	Sen Gain	Net Gain	%Net Gain
Roof	525	0	0.00	0	696	696	1.41
Wall	452	0	0.00	0	738	738	1.49
Glass	451	0	0.00	0	24,101	24,101	48.79
Floor Slab	0	0	0.00	0	0	0	0.00
Skin Loads		0	0.00	0	25,535	25,535	51.69
Lighting	378	0	0.00	0	1,290	1,290	2.61
Equipment	189	0	0.00	0	645	645	1.31
People	16	0	0.00	3,200	4,000	7,200	14.58
Partition	252	0	0.00	0	252	252	0.51
Cool. Pret.	0	0	0.00	0	0	0	0.00
Heat. Pret.	0	0	0.00	0	0	0	0.00
Cool. Vent.	320	0	0.00	10,117	2,463	12,579	25.47
Heat. Vent.	0	0	0.00	0	0	0	0.00
Cool. Infil.	0	0	0.00	0	0	0	0.00
Heat. Infil.	0	0	0.00	0	0	0	0.00
Draw-Thru Fan	0	0	0.00	0	514	514	1.04
Blow-Thru Fan	0	0	0.00	0	0	0	0.00
Reserve Cap.	0	0	0.00	0	0	0	0.00
Reheat Cap.	0	0	0.00	0	0	0	0.00
Supply Duct	0	0	0.00	0	921	921	1.86
Return Duct	0	0	0.00	0	461	461	0.93
Misc. Supply	0	0	0.00	0	0	0	0.00
Misc. Return	0	0	0.00	0	0	0	0.00
Building Totals		0	0.00	13,317	36,081	49,397	100.00

Building Summary	Sen Loss	%Tot Loss	Lat Gain	Sen Gain	Net Gain	%Net Gain
Ventilation	0	0.00	10,117	2,463	12,579	25.47
Infiltration	0	0.00	0	0	0	0.00
Pretreated Air	0	0.00	0	0	0	0.00
Zone Loads	0	0.00	3,200	31,722	34,922	70.70
Plenum Loads	0	0.00	0	0	0	0.00
Fan & Duct Loads	0	0.00	0	1,896	1,896	3.84
Building Totals	0	0.00	13,317	36,081	49,397	100.00

Check Figures

Total Building Supply Air (based on a 18° TD):	1,675 CFM
Total Building Vent. Air (19.10% of Supply):	320 CFM
Total Conditioned Air Space:	378 Sq.ft
Supply Air Per Unit Area:	4.4322 CFM/Sq.ft
Area Per Cooling Capacity:	91.8 Sq.ft/Ton
Cooling Capacity Per Area:	0.0109 Tons/Sq.ft
Heating Capacity Per Area:	0.00 Btuh/Sq.ft
Total Heating Required With Outside Air:	0 Btuh
Total Cooling Required With Outside Air:	4.12 Tons



Building Pie Charts

Building peaks in August at 10am.

