

Dedicated Outdoor Air System (DOAS) Sizing Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

Air System Information

Air System Name HVAC Burner
Equipment Class TERM
Air System Type VRF

Number of zones 1
Floor Area 1442.4 ft²
Location Chicago IAP, Illinois

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Heating Coil Sizing Data

Max coil load 22.7 MBH
Coil CFM at Des Htg 283 CFM
Max coil CFM 283 CFM
Water flow @ 20.0 °F drop N/A

Load occurs at Des Htg
Ent. DB / Lvg DB -6.0 / 70.0 °F

Ventilation Fan Sizing Data

Actual max CFM 283 CFM
Standard CFM 277 CFM
Actual max CFM/ft² 0.20 CFM/ft²

Fan motor BHP 0.00 BHP
Fan motor kW 0.00 kW
Fan static 0.00 in wg

Exhaust Fan Sizing Data

Actual max CFM 283 CFM
Standard CFM 277 CFM
Actual max CFM/ft² 0.20 CFM/ft²

Fan motor BHP 0.00 BHP
Fan motor kW 0.00 kW
Fan static 0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM 283 CFM
CFM/ft² 0.20 CFM/ft²

CFM/person 9.45 CFM/person

Zone Sizing Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

Air System Information

Air System Name HVAC Burner
Equipment Class TERM
Air System Type VRF

Number of zones 1
Floor Area 1442.4 ft²
Location Chicago IAP, Illinois

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft ²
Zone 1	48.3	39.1	78.3 / 65.8	59.0 / 57.6	-	Jul 1600	1.33

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (CFM)
Zone 1	42.0	69.1 / 89.8	-	1924	0.000	0.000	283

VRF Outdoor Unit Sizing Data

	Cooling [MBH]	Cooling [Tons]	Heating [MBH]
Peak Coincident Indoor Unit Loads	39.1	3.3	42.0
Estimated Piping / Line Losses	0.0	0.0	0.0
Total Required ODU Capacity	39.1	3.3	42.0

Note: VRF piping / line losses are based on typical loss factors for this class of equipment. Actual line loss varies widely from one product to another. Therefore, when selecting equipment it is critical to consult manufacturer's guidance to utilize actual line loss data.

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
Zone 1	37.4	Jul 1600	44.5	1442.4

Zone Sizing Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
BOTH AREA	1	2.2	Jul 1500	104	2.6	87.1	1.19
JUICE BAR, WAREWASH, EMP	1	6.1	Jul 1700	288	5.5	303.6	0.95
MERCHANDISE AREA-1	1	2.2	Jul 1800	106	2.4	92.7	1.14
MERCHANDISE AREA-2	1	2.8	Jul 1700	143	3.8	133.3	1.07
RESTROOM	1	1.0	Jul 1800	62	1.6	46.0	1.35
SPACE-1	1	3.5	Jul 1700	168	2.8	109.3	1.53
SPACE-2	1	3.9	Jul 1000	187	4.2	75.2	2.48
SPACE-3	1	8.1	Jul 1800	450	11.9	325.9	1.38
SPACE-4	1	1.9	Jul 1700	103	2.7	95.1	1.09
SPACE-5	1	1.2	Jul 1700	72	1.9	35.2	2.05
STORAGE	1	3.3	Jul 1000	157	3.4	109.3	1.44
UTILITY	1	1.8	Jul 1000	84	1.8	29.7	2.84

Ventilation Sizing Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
Design Ventilation Airflow Rate **283** CFM

2. Space Ventilation Analysis

2.1 Zone: Zone 1

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
BOTH AREA	1	87.1	1.0	103.9	5.00	0.06	0.0	0.0	10.2
JUICE BAR, WAREWASH, EMP	1	303.6	10.0	288.1	7.50	0.18	0.0	0.0	129.6
MERCHANDISE AREA-1	1	92.7	4.0	105.6	5.00	0.06	0.0	0.0	25.6
MERCHANDISE AREA-2	1	133.3	4.0	143.2	5.00	0.06	0.0	0.0	28.0
RESTROOM	1	46.0	1.0	62.0	0.00	0.00	0.0	0.0	0.0
SPACE-1	1	109.3	1.0	167.7	5.00	0.06	0.0	0.0	11.6
SPACE-2	1	75.2	1.0	186.7	5.00	0.06	0.0	0.0	9.5
SPACE-3	1	325.9	2.0	450.0	5.00	0.06	0.0	0.0	29.6
SPACE-4	1	95.1	2.0	103.2	5.00	0.06	0.0	0.0	15.7
SPACE-5	1	35.2	2.0	72.1	5.00	0.06	0.0	0.0	12.1
STORAGE	1	109.3	1.0	157.3	5.00	0.06	0.0	0.0	11.6
UTILITY	1	29.7	1.0	84.3	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				1924.1					283.4

Air System Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600 COOLING OA DB / WB 91.0 °F / 74.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	200 ft²	6078	-	200 ft²	-	-
Wall Transmission	4831 ft²	4288	-	4831 ft²	20488	-
Roof Transmission	1442 ft²	2967	-	1442 ft²	4260	-
Window Transmission	200 ft²	1469	-	200 ft²	8938	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	473 ft²	1770	-	473 ft²	10773	-
Floor Transmission	1317 ft²	0	-	1317 ft²	0	-
Partitions	3396 ft²	0	-	3396 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1226 W	3633	-	0	0	-
Task Lighting	1154 W	3649	-	0	0	-
Electric Equipment	910 W	2923	-	0	0	-
People	30	5765	3600	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	4881	180	0%	0	0
>> Total Zone Loads	-	37423	3780	-	44459	0
Zone Conditioning	-	34656	3780	-	42361	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Exhaust Fan Load	283 CFM	0	-	283 CFM	0	-
Ventilation Load	283 CFM	4470	5376	283 CFM	22384	0
Ventilation Fan Load	283 CFM	0	-	283 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	39126	9156	-	64745	0
Heating Coil	-	0	-	-	22704	-
Terminal Unit Cooling	-	39118	9201	-	0	0
Terminal Unit Heating	-	0	-	-	42041	-
>> Total Conditioning	-	39118	9201	-	64745	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Zone Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 91.0 °F / 74.0 °F			HEATING OA DB / WB -6.0 °F / -7.2 °F		
	OCCUPIED T-STAT 75.0 °F			OCCUPIED T-STAT 70.0 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	200 ft²	6078	-	200 ft²	-	-
Wall Transmission	4831 ft²	4288	-	4831 ft²	20488	-
Roof Transmission	1442 ft²	2967	-	1442 ft²	4260	-
Window Transmission	200 ft²	1469	-	200 ft²	8938	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	473 ft²	1770	-	473 ft²	10773	-
Floor Transmission	1317 ft²	0	-	1317 ft²	0	-
Partitions	3396 ft²	0	-	3396 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1226 W	3633	-	0	0	-
Task Lighting	1154 W	3649	-	0	0	-
Electric Equipment	910 W	2923	-	0	0	-
People	30	5765	3600	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	4881	180	0%	0	0
>> Total Zone Loads	-	37423	3780	-	44459	0

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.1.A. Component Loads For Space "BOTH AREA" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 90.4 °F / 73.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	10 ft²	485	-	10 ft²	-	-
Wall Transmission	347 ft²	321	-	347 ft²	1473	-
Roof Transmission	87 ft²	181	-	87 ft²	257	-
Window Transmission	10 ft²	70	-	10 ft²	447	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	62	-	18 ft²	399	-
Floor Transmission	87 ft²	0	-	87 ft²	0	-
Partitions	187 ft²	0	-	187 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	74 W	217	-	0	0	-
Task Lighting	70 W	219	-	0	0	-
Electric Equipment	50 W	160	-	0	0	-
People	1	190	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	286	6	0%	0	0
>> Total Zone Loads	-	2190	126	-	2576	0

TABLE 1.1.B. Envelope Loads For Space "BOTH AREA" In Zone "Zone 1"

				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(ft²)	(BTU/(hr-ft²-°F))	Coeff.	(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	84	0.056	-	50	-	357
DOOR	18	0.300	-	62	-	399
S EXPOSURE						
WALL	102	0.056	-	86	-	431
E EXPOSURE						
WALL	76	0.056	-	98	-	321
WINDOW 1	10	0.588	0.811	70	485	447
W EXPOSURE						
WALL	86	0.056	-	87	-	364
H EXPOSURE						
ROOF	87	0.039	-	181	-	257

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.2.A. Component Loads For Space "JUICE BAR, WAREWASH, EMP" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 90.4 °F / 73.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(BTU/hr)	(BTU/hr)	Details	(BTU/hr)	(BTU/hr)
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	849 ft²	728	-	849 ft²	3599	-
Roof Transmission	304 ft²	585	-	304 ft²	897	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	42 ft²	155	-	42 ft²	958	-
Floor Transmission	304 ft²	0	-	304 ft²	0	-
Partitions	529 ft²	0	-	529 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	258 W	772	-	0	0	-
Task Lighting	243 W	772	-	0	0	-
Electric Equipment	100 W	322	-	0	0	-
People	10	1947	1200	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	792	60	0%	0	0
>> Total Zone Loads	-	6074	1260	-	5453	0

TABLE 1.2.B. Envelope Loads For Space "JUICE BAR, WAREWASH, EMP" In Zone "Zone 1"						
	Area	U-Value	Shade	COOLING	COOLING	HEATING
	(ft²)	(BTU/(hr-ft²-°F))	Coeff.	TRANS	SOLAR	TRANS
				(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	340	0.056	-	212	-	1443
DOOR	21	0.300	-	78	-	479
S EXPOSURE						
WALL	361	0.056	-	342	-	1532
E EXPOSURE						
WALL	63	0.056	-	87	-	267
DOOR	21	0.300	-	78	-	479
W EXPOSURE						
WALL	84	0.056	-	87	-	356
H EXPOSURE						
ROOF	304	0.039	-	585	-	897

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.3.A. Component Loads For Space "MERCHANDISE AREA-1" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 89.0 °F / 73.5 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(BTU/hr)	(BTU/hr)	Details	(BTU/hr)	(BTU/hr)
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	378 ft²	379	-	378 ft²	1603	-
Roof Transmission	93 ft²	157	-	93 ft²	274	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	73	-	21 ft²	479	-
Floor Transmission	93 ft²	0	-	93 ft²	0	-
Partitions	396 ft²	0	-	396 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	79 W	238	-	0	0	-
Task Lighting	74 W	237	-	0	0	-
Electric Equipment	20 W	65	-	0	0	-
People	4	788	480	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	290	24	0%	0	0
>> Total Zone Loads	-	2227	504	-	2356	0

TABLE 1.3.B. Envelope Loads For Space "MERCHANDISE AREA-1" In Zone "Zone 1"						
	Area	U-Value	Shade	COOLING	COOLING	HEATING
	(ft²)	(BTU/(hr-ft²-°F))	Coeff.	TRANS	SOLAR	TRANS
				(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	105	0.056	-	68	-	444
DOOR	21	0.300	-	73	-	479
S EXPOSURE						
WALL	126	0.056	-	127	-	533
E EXPOSURE						
WALL	74	0.056	-	105	-	313
W EXPOSURE						
WALL	74	0.056	-	79	-	313
H EXPOSURE						
ROOF	93	0.039	-	157	-	274

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.4.A. Component Loads For Space "MERCHANDISE AREA-2" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 90.4 °F / 73.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(BTU/hr)	(BTU/hr)	Details	(BTU/hr)	(BTU/hr)
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	458 ft²	398	-	458 ft²	1943	-
Roof Transmission	133 ft²	257	-	133 ft²	394	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	63 ft²	233	-	63 ft²	1436	-
Floor Transmission	133 ft²	0	-	133 ft²	0	-
Partitions	331 ft²	0	-	331 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	113 W	339	-	0	0	-
Task Lighting	107 W	339	-	0	0	-
Electric Equipment	20 W	64	-	0	0	-
People	4	779	480	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	361	24	0%	0	0
>> Total Zone Loads	-	2770	504	-	3773	0

TABLE 1.4.B. Envelope Loads For Space "MERCHANDISE AREA-2" In Zone "Zone 1"						
	Area	U-Value	Shade	COOLING	COOLING	HEATING
	(ft²)	(BTU/(hr-ft²-°F))	Coeff.	TRANS	SOLAR	TRANS
				(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	191	0.056	-	119	-	809
S EXPOSURE						
WALL	170	0.056	-	161	-	720
DOOR	21	0.300	-	78	-	479
E EXPOSURE						
WALL	49	0.056	-	68	-	207
DOOR	21	0.300	-	78	-	479
W EXPOSURE						
WALL	49	0.056	-	50	-	207
DOOR	21	0.300	-	78	-	479
H EXPOSURE						
ROOF	133	0.039	-	257	-	394

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.5.A. Component Loads For Space "RESTROOM" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 89.0 °F / 73.5 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
SPACE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	259 ft²	264	-	259 ft²	1098	-
Roof Transmission	46 ft²	78	-	46 ft²	136	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	61	-	18 ft²	399	-
Floor Transmission	46 ft²	0	-	46 ft²	0	-
Partitions	138 ft²	0	-	138 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	39 W	118	-	0	0	-
Task Lighting	37 W	118	-	0	0	-
Electric Equipment	20 W	65	-	0	0	-
People	1	197	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	135	6	0%	0	0
>> Total Zone Loads	-	1035	126	-	1633	0

TABLE 1.5.B. Envelope Loads For Space "RESTROOM" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	65	0.056	-	42	-	275
DOOR	18	0.300	-	61	-	399
S EXPOSURE						
WALL	82	0.056	-	83	-	349
E EXPOSURE						
WALL	56	0.056	-	79	-	237
W EXPOSURE						
WALL	56	0.056	-	60	-	237
H EXPOSURE						
ROOF	46	0.039	-	78	-	136

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.6.A. Component Loads For Space "SPACE-1" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 90.4 °F / 73.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	385 ft²	370	-	385 ft²	1631	-
Roof Transmission	109 ft²	211	-	109 ft²	323	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	35 ft²	129	-	35 ft²	798	-
Floor Transmission	30 ft²	0	-	30 ft²	0	-
Partitions	266 ft²	0	-	266 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	93 W	278	-	0	0	-
Task Lighting	87 W	278	-	0	0	-
Electric Equipment	500 W	1612	-	0	0	-
People	1	195	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	461	6	0%	0	0
>> Total Zone Loads	-	3534	126	-	2752	0

TABLE 1.6.B. Envelope Loads For Space "SPACE-1" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr·ft²·°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	113	0.056	-	71	-	480
S EXPOSURE						
WALL	96	0.056	-	91	-	406
DOOR	18	0.300	-	65	-	399
E EXPOSURE						
WALL	79	0.056	-	109	-	335
DOOR	18	0.300	-	65	-	399
W EXPOSURE						
WALL	97	0.056	-	100	-	410
H EXPOSURE						
ROOF	109	0.039	-	211	-	323

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.7.A. Component Loads For Space "SPACE-2" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1000 COOLING OA DB / WB 77.1 °F / 70.1 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	35 ft²	2408	-	35 ft²	-	-
Wall Transmission	270 ft²	272	-	270 ft²	1147	-
Roof Transmission	75 ft²	65	-	75 ft²	222	-
Window Transmission	35 ft²	46	-	35 ft²	1564	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	56 ft²	37	-	56 ft²	1277	-
Floor Transmission	30 ft²	0	-	30 ft²	0	-
Partitions	181 ft²	0	-	181 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	64 W	175	-	0	0	-
Task Lighting	60 W	183	-	0	0	-
Electric Equipment	20 W	62	-	0	0	-
People	1	173	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	513	6	0%	0	0
>> Total Zone Loads	-	3935	126	-	4210	0

TABLE 1.7.B. Envelope Loads For Space "SPACE-2" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	48	0.056	-	30	-	201
DOOR	18	0.300	-	12	-	399
S EXPOSURE						
WALL	44	0.056	-	39	-	187
DOOR	21	0.300	-	14	-	479
E EXPOSURE						
WALL	81	0.056	-	85	-	342
WINDOW 1	25	0.588	0.811	33	1720	1117
WINDOW 2	10	0.588	0.811	13	688	447
W EXPOSURE						
WALL	98	0.056	-	119	-	416
DOOR	18	0.300	-	12	-	399
H EXPOSURE						
ROOF	75	0.039	-	65	-	222

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.8.A. Component Loads For Space "SPACE-3" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 89.0 °F / 73.5 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	120 ft²	2529	-	120 ft²	-	-
Wall Transmission	872 ft²	780	-	872 ft²	3697	-
Roof Transmission	326 ft²	552	-	326 ft²	963	-
Window Transmission	120 ft²	818	-	120 ft²	5363	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	81 ft²	280	-	81 ft²	1835	-
Floor Transmission	326 ft²	0	-	326 ft²	0	-
Partitions	606 ft²	0	-	606 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	277 W	837	-	0	0	-
Task Lighting	261 W	833	-	0	0	-
Electric Equipment	20 W	65	-	0	0	-
People	2	394	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1063	12	0%	0	0
>> Total Zone Loads	-	8149	252	-	11857	0

TABLE 1.8.B. Envelope Loads For Space "SPACE-3" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	346	0.056	-	224	-	1468
WINDOW 1	120	0.588	0.811	818	2529	5363
S EXPOSURE						
WALL	424	0.056	-	429	-	1799
DOOR	42	0.300	-	146	-	958
E EXPOSURE						
WALL	52	0.056	-	74	-	222
DOOR	18	0.300	-	61	-	399
W EXPOSURE						
WALL	49	0.056	-	53	-	207
DOOR	21	0.300	-	73	-	479
H EXPOSURE						
ROOF	326	0.039	-	552	-	963

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.9.A. Component Loads For Space "SPACE-4" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 90.4 °F / 73.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	349 ft²	348	-	349 ft²	1481	-
Roof Transmission	95 ft²	183	-	95 ft²	281	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	42 ft²	155	-	42 ft²	958	-
Floor Transmission	95 ft²	0	-	95 ft²	0	-
Partitions	286 ft²	0	-	286 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	81 W	242	-	0	0	-
Task Lighting	76 W	242	-	0	0	-
Electric Equipment	20 W	64	-	0	0	-
People	2	389	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	244	12	0%	0	0
>> Total Zone Loads	-	1868	252	-	2719	0

TABLE 1.9.B. Envelope Loads For Space "SPACE-4" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	85	0.056	-	53	-	359
DOOR	21	0.300	-	78	-	479
S EXPOSURE						
WALL	106	0.056	-	100	-	448
E EXPOSURE						
WALL	90	0.056	-	124	-	381
W EXPOSURE						
WALL	69	0.056	-	71	-	292
DOOR	21	0.300	-	78	-	479
H EXPOSURE						
ROOF	95	0.039	-	183	-	281

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.10.A. Component Loads For Space "SPACE-5" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 90.4 °F / 73.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	198 ft²	181	-	198 ft²	839	-
Roof Transmission	35 ft²	68	-	35 ft²	104	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	42 ft²	155	-	42 ft²	958	-
Floor Transmission	35 ft²	0	-	35 ft²	0	-
Partitions	120 ft²	0	-	120 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	30 W	90	-	0	0	-
Task Lighting	28 W	90	-	0	0	-
Electric Equipment	20 W	64	-	0	0	-
People	2	389	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	156	12	0%	0	0
>> Total Zone Loads	-	1193	252	-	1900	0

TABLE 1.10.B. Envelope Loads For Space "SPACE-5" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	68	0.056	-	43	-	290
S EXPOSURE						
WALL	68	0.056	-	65	-	290
E EXPOSURE						
WALL	31	0.056	-	42	-	130
DOOR	21	0.300	-	78	-	479
W EXPOSURE						
WALL	31	0.056	-	32	-	130
DOOR	21	0.300	-	78	-	479
H EXPOSURE						
ROOF	35	0.039	-	68	-	104

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.11.A. Component Loads For Space "STORAGE" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1000			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 77.1 °F / 70.1 °F			HEATING OA DB / WB -6.0 °F / -7.2 °F		
	OCCUPIED T-STAT 75.0 °F			OCCUPIED T-STAT 70.0 °F		
SPACE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	25 ft²	1720	-	25 ft²	-	-
Wall Transmission	262 ft²	255	-	262 ft²	1112	-
Roof Transmission	109 ft²	94	-	109 ft²	323	-
Window Transmission	25 ft²	33	-	25 ft²	1117	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	39 ft²	26	-	39 ft²	878	-
Floor Transmission	109 ft²	0	-	109 ft²	0	-
Partitions	240 ft²	0	-	240 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	93 W	254	-	0	0	-
Task Lighting	87 W	266	-	0	0	-
Electric Equipment	20 W	62	-	0	0	-
People	1	173	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	432	6	0%	0	0
>> Total Zone Loads	-	3315	126	-	3429	0

TABLE 1.11.B. Envelope Loads For Space "STORAGE" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING	COOLING	HEATING
				TRANS	SOLAR	TRANS
				(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	57	0.056	-	36	-	240
DOOR	21	0.300	-	14	-	479
S EXPOSURE						
WALL	60	0.056	-	53	-	254
DOOR	18	0.300	-	12	-	399
E EXPOSURE						
WALL	60	0.056	-	63	-	256
WINDOW 1	25	0.588	0.811	33	1720	1117
W EXPOSURE						
WALL	85	0.056	-	103	-	362
H EXPOSURE						
ROOF	109	0.039	-	94	-	323

Space Design Load Summary for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

TABLE 1.12.A. Component Loads For Space "UTILITY" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1000 COOLING OA DB / WB 77.1 °F / 70.1 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -6.0 °F / -7.2 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	10 ft²	688	-	10 ft²	-	-
Wall Transmission	204 ft²	182	-	204 ft²	866	-
Roof Transmission	30 ft²	26	-	30 ft²	88	-
Window Transmission	10 ft²	13	-	10 ft²	447	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	12	-	18 ft²	399	-
Floor Transmission	30 ft²	0	-	30 ft²	0	-
Partitions	116 ft²	0	-	116 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	25 W	69	-	0	0	-
Task Lighting	24 W	72	-	0	0	-
Electric Equipment	100 W	311	-	0	0	-
People	1	173	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	232	6	0%	0	0
>> Total Zone Loads	-	1778	126	-	1800	0

TABLE 1.12.B. Envelope Loads For Space "UTILITY" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	60	0.056	-	38	-	254
DOOR	18	0.300	-	12	-	399
S EXPOSURE						
WALL	78	0.056	-	68	-	329
E EXPOSURE						
WALL	28	0.056	-	30	-	120
WINDOW 1	10	0.588	0.811	13	688	447
W EXPOSURE						
WALL	38	0.056	-	47	-	163
H EXPOSURE						
ROOF	30	0.039	-	26	-	88

System Psychrometrics for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

July DESIGN COOLING DAY, 1600

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	91.0	0.01458	283	400	4470	5376
Vent - Return Mixing	Outlet	91.0	0.01458	283	0	-	-
Vent. Heating Coil	Outlet	91.0	0.01458	283	400	0	-
Ventilation Fan	Outlet	91.0	0.01458	283	400	0	-
Cold Supply Duct	Outlet	91.0	0.01458	283	400	0	-
Zone Air	-	76.1	0.01046	283	1388	34656	3780
Return Plenum	Outlet	76.0	0.01046	283	1388	0	-
Exhaust Fan	Outlet	76.0	0.00000	283	1388	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.054 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4632.3 BTU/(hr-CFM)

Site Altitude = 673.0 ft

TABLE 2: ZONE DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Zone 1 (Cooling)							
Ventilation Air	-	-	-	283	-	-	-
Cooling Coil Inlet	-	78.3	0.01107	1924	0	-	-
Cooling Coil Outlet	-	59.0	0.01004	1924	0	39118	9201
Heating Coil Inlet	-	59.0	0.01004	1924	0	-	-
Heating Coil Outlet	-	59.0	0.01004	1924	0	0	-
Zone Air	-	76.1	0.01046	1924	1388	34656	-

System Psychrometrics for HVAC Burner

Project Name: 123_kablaza
Prepared by: D Lab

12/08/2024
10:48PM

WINTER DESIGN HEATING

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	-6.0	0.00029	283	400	-22384	0
Vent - Return Mixing	Outlet	-6.0	0.00029	283	0	-	-
Vent. Heating Coil	Outlet	70.0	0.00029	283	400	22704	-
Ventilation Fan	Outlet	70.0	0.00029	283	400	0	-
Cold Supply Duct	Outlet	70.0	0.00029	283	400	0	-
Zone Air	-	68.9	0.00029	283	400	-42361	0
Return Plenum	Outlet	68.9	0.00029	283	400	0	-
Exhaust Fan	Outlet	68.9	0.00000	283	400	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.054 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4632.3 BTU/(hr-CFM)

Site Altitude = 673.0 ft

TABLE 2: ZONE DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Zone 1 (Heating)							
Ventilation Air	-	-	-	283	-	-	-
Cooling Coil Inlet	-	69.1	0.00029	1924	0	-	-
Cooling Coil Outlet	-	69.1	0.00029	1924	0	0	0
Heating Coil Inlet	-	69.1	0.00029	1924	0	-	-
Heating Coil Outlet	-	89.8	0.00029	1924	0	42041	-
Zone Air	-	68.9	0.00029	1924	400	-42361	-

System Psychrometrics for HVAC Burner

Project Name: 123_kablaza

Prepared by: D Lab

12/08/2024

10:48PM

The psychrometric graph cannot be generated for this type of system.