

Dedicated Outdoor Air System (DOAS) Sizing Summary for Sistema_cen_24h

Project Name: 1701P HAP_Olivillo_v2 170214 OG
Prepared by: INGHO fm

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Air System Information

Air System Name Sistema_cen_24h
Equipment Class TERM
Air System Type VRF

Number of zones 1
Floor Area 70,5 m²
Location Cádiz, Spain

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone L/s Sizing Sum of space airflow rates
Space L/s Sizing Individual peak space loads

NOTE: No other data is applicable for a Terminal Units air system without a Dedicated Outdoor Air System (DOAS).

Ventilation Sizing Summary for Sistema_cen_24h

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1. Summary

Ventilation Sizing Method Sum of Space OA Airflows

2. Space Ventilation Analysis

2.1 Zone: Zone 1

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
Zone 1									
P1_Com_Cen	1	9,7	0,0	166,3	12,50	0,00	0,0	0,0	0,0
P2_Com_Cen	1	9,7	0,0	153,3	12,50	0,00	0,0	0,0	0,0
P3_Com_Cen	1	9,7	0,0	166,0	12,50	0,00	0,0	0,0	0,0
P4_Com_Cen	1	9,7	0,0	167,9	12,50	0,00	0,0	0,0	0,0
PB_Com_cent	1	11,3	0,0	182,4	8,00	0,00	0,0	0,0	0,0
NS1_CGBT	1	20,4	0,0	93,9	2,00	0,00	0,0	0,0	0,0
Totals (incl. Space Multipliers)				929,7					0,0

Air System Design Load Summary for Sistema_cen_24h

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,0 °C / 22,9 °C			HEATING OA DB / WB 4,2 °C / 1,8 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	2 m²	167	-	2 m²	-	-
Wall Transmission	5 m²	11	-	5 m²	38	-
Roof Transmission	10 m²	47	-	10 m²	86	-
Window Transmission	2 m²	42	-	2 m²	113	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	71 m²	276	-	71 m²	1443	-
Partitions	207 m²	546	-	207 m²	2855	-
Ceiling	61 m²	238	-	61 m²	1244	-
Overhead Lighting	705 W	647	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	7500 W	7370	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	7% / 7%	654	0	4%	231	0
>> Total Zone Loads	-	9998	0	-	6010	0
Zone Conditioning	-	9601	0	-	5756	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	0 L/s	0	-	0 L/s	0	-
Ventilation Load	0 L/s	0	0	0 L/s	0	0
Ventilation Fan Load	0 L/s	0	-	0 L/s	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	9601	0	-	5756	0
Terminal Unit Cooling	-	9601	0	-	0	0
Terminal Unit Heating	-	0	-	-	5756	-
>> Total Conditioning	-	9601	0	-	5756	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Space Design Load Summary for Sistema_cen_24h

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TABLE 1.1.A. Component Loads For Space "P1_Com_Cen" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,0 °C / 22,9 °C OCCUPIED T-STAT 23,9 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 4,2 °C / 1,8 °C OCCUPIED T-STAT 21,1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	10 m²	38	-	10 m²	199	-
Partitions	37 m²	97	-	37 m²	507	-
Ceiling	10 m²	38	-	10 m²	199	-
Overhead Lighting	97 W	97	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1500 W	1500	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	7% / 7%	124	0	4%	36	0
>> Total Zone Loads	-	1894	0	-	940	0

TABLE 1.1.B. Envelope Loads For Space "P1_Com_Cen" In Zone "Zone 1"						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·K))	Coeff.	(W)	(W)	(W)

Space Design Load Summary for Sistema_cen_24h

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TABLE 1.2.A. Component Loads For Space "P2_Com_Cen" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600 COOLING OA DB / WB 32,5 °C / 22,8 °C OCCUPIED T-STAT 23,9 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 4,2 °C / 1,8 °C OCCUPIED T-STAT 21,1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	10 m²	36	-	10 m²	199	-
Partitions	39 m²	100	-	39 m²	542	-
Ceiling	10 m²	36	-	10 m²	199	-
Overhead Lighting	97 W	79	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1500 W	1379	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	7% / 7%	114	0	4%	38	0
>> Total Zone Loads	-	1745	0	-	977	0

TABLE 1.2.B. Envelope Loads For Space "P2_Com_Cen" In Zone "Zone 1"						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·K))	Coeff.	(W)	(W)	(W)

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TABLE 1.3.A. Component Loads For Space "P3_Com_Cen" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,0 °C / 22,9 °C OCCUPIED T-STAT 23,9 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 4,2 °C / 1,8 °C OCCUPIED T-STAT 21,1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	10 m²	38	-	10 m²	199	-
Partitions	35 m²	93	-	35 m²	487	-
Ceiling	10 m²	38	-	10 m²	199	-
Overhead Lighting	97 W	97	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1500 W	1500	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	7% / 7%	124	0	4%	35	0
>> Total Zone Loads	-	1890	0	-	920	0

TABLE 1.3.B. Envelope Loads For Space "P3_Com_Cen" In Zone "Zone 1"						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·K))	Coeff.	(W)	(W)	(W)

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TABLE 1.4.A. Component Loads For Space "P4_Com_Cen" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,0 °C / 22,9 °C OCCUPIED T-STAT 23,9 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 4,2 °C / 1,8 °C OCCUPIED T-STAT 21,1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	10 m²	47	-	10 m²	86	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	10 m²	38	-	10 m²	199	-
Partitions	39 m²	104	-	39 m²	544	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	97 W	97	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1500 W	1500	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	7% / 7%	125	0	4%	33	0
>> Total Zone Loads	-	1911	0	-	862	0

TABLE 1.4.B. Envelope Loads For Space "P4_Com_Cen" In Zone "Zone 1"

				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·K))	Coeff.	(W)	(W)	(W)
H EXPOSURE						
ROOF	10	0,527	-	47	-	86

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,0 °C / 22,9 °C OCCUPIED T-STAT 23,9 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 4,2 °C / 1,8 °C OCCUPIED T-STAT 21,1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	2 m²	167	-	2 m²	-	-
Wall Transmission	5 m²	11	-	5 m²	38	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	2 m²	42	-	2 m²	113	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	11 m²	44	-	11 m²	231	-
Partitions	7 m²	19	-	7 m²	98	-
Ceiling	11 m²	44	-	11 m²	231	-
Overhead Lighting	113 W	113	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1500 W	1500	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	7% / 7%	136	0	4%	28	0
>> Total Zone Loads	-	2076	0	-	740	0

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

				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·K))	Coeff.	(W)	(W)	(W)
NNE EXPOSURE						
WALL	5	0,437	-	11	-	38
WINDOW 1	2	3,339	0,811	42	167	113

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TABLE 1.6.A. Component Loads For Space "NS1_CGBT" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 33,0 °C / 22,9 °C OCCUPIED T-STAT 23,9 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 4,2 °C / 1,8 °C OCCUPIED T-STAT 21,1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	20 m²	80	-	20 m²	418	-
Partitions	49 m²	129	-	49 m²	676	-
Ceiling	20 m²	80	-	20 m²	418	-
Overhead Lighting	204 W	164	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	7% / 7%	32	0	4%	60	0
>> Total Zone Loads	-	485	0	-	1572	0

TABLE 1.6.B. Envelope Loads For Space "NS1_CGBT" In Zone "Zone 1"						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·K))	Coeff.	(W)	(W)	(W)