

Air System Sizing Summary for Sistema N2

Project Name: Tribunales San Lorenzo

02/22/2022

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Air System Information

Air System Name: **Sistema N2**
Air System Type:..... **Fan Coils/WSHPs**

Number of zones: **11**
Floor Area:..... **229.6** sqm
Location:..... **San Lorenzo, Argentina**

Sizing Calculation Information

Calculation Months:.....**Jan to Dec**

Calculation method: **Transfer Function Method**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible kW	Design Airflow L/s	Time of Peak Load	Maximum Heating Load kW	Zone Floor Area sqm	Zone L/(s-sqm)
*N2 - 2.03 Entrevistas	1.6	119	Jan 1500	1.4	15.7	7.56
*N2 - Pasillo	1.5	108	Jan 1400	1.9	10.0	10.80
*N2 - Sala Audiencias	3.3	242	Jan 1500	2.0	18.8	12.89
*N2 2.01 Empleado	0.9	69	Jan 1700	1.0	10.7	6.49
*N2 2.02 Asesor Menores	1.2	88	Jan 1700	1.3	12.0	7.31
*N2 2.04 Conc. Acusas	2.8	207	Jan 1500	1.6	21.3	9.73
*N2 2.05 Juez	2.0	150	Jan 1500	1.5	11.7	12.79
*N2 2.06 Secretaria	1.4	102	Feb 1700	1.3	8.8	11.63
*N2 Hall A	7.6	566	Jan 1400	7.6	79.0	7.16
*N2 Hall B	3.3	248	Jan 1400	4.4	26.5	9.36
*N2 M. Entrada Única	1.2	89	Jan 1700	1.4	15.1	5.91

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Loads kW	Sensible Coil Load kW	Coil Entering DB/WB C	Coil Leaving DB/WB C	Time of Peak Load
*N2 - 2.03 Entrevistas	2.5	1.8	25.5 / 18.9	13.3 / 12.7	Jan 1500
*N2 - Pasillo	2.2	1.6	25.4 / 18.6	13.1 / 12.5	Jan 1400
*N2 - Sala Audiencias	4.8	3.6	25.4 / 18.6	13.1 / 12.5	Dec 1500
*N2 2.01 Empleado	1.5	1.0	25.5 / 19.1	13.3 / 12.8	Jan 1600
*N2 2.02 Asesor Menores	1.8	1.3	25.4 / 18.9	13.1 / 12.6	Jan 1600
*N2 2.04 Conc. Acusas	4.2	3.0	25.5 / 18.8	13.3 / 12.7	Dec 1500
*N2 2.05 Juez	3.0	2.2	25.4 / 18.5	13.1 / 12.5	Dec 1500
*N2 2.06 Secretaria	2.1	1.5	25.4 / 18.4	12.9 / 12.3	Feb 1500
*N2 Hall A	14.6	9.3	26.7 / 20.1	13.1 / 12.6	Jan 1500
*N2 Hall B	5.0	3.6	25.5 / 18.8	13.3 / 12.7	Jan 1400
*N2 M. Entrada Única	1.9	1.3	25.3 / 19.1	13.3 / 12.7	Dec 1700

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load kW	Heating Coil Ent/Lvg DB C	Fan Design Airflow L/s	Fan Motor BHP	Fan Motor kW	Vent Design Airflow L/s
*N2 - 2.03 Entrevistas	1.7	19.3 / 31.0	119	0.00	0.00	12
*N2 - Pasillo	2.2	19.3 / 36.0	108	0.00	0.00	11
*N2 - Sala Audiencias	2.6	19.3 / 28.3	242	0.00	0.00	24
*N2 2.01 Empleado	1.1	19.2 / 32.9	69	0.00	0.00	7
*N2 2.02 Asesor Menores	1.6	19.3 / 34.2	88	0.00	0.00	9
*N2 2.04 Conc. Acusas	2.1	19.1 / 27.7	207	0.00	0.00	21
*N2 2.05 Juez	1.9	19.1 / 29.6	150	0.00	0.00	15
*N2 2.06 Secretaria	1.6	19.2 / 31.8	102	0.00	0.00	10
*N2 Hall A	10.7	17.0 / 32.7	566	0.00	0.00	113
*N2 Hall B	5.0	19.2 / 35.9	248	0.00	0.00	25
*N2 M. Entrada Única	1.6	19.1 / 33.8	89	0.00	0.00	9

System Design Load Summary for Sistema N2

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	DESIGN COOLING			DESIGN HEATING		
	Jan 1500 OA DB / WB 37 C / 28 C			Design Heating Day OA DB / WB -0.6 C / -3.2 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	119 sqm	8105	-	119 sqm	-	-
Wall Transmission	125 sqm	2614	-	125 sqm	4744	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	119 sqm	2241	-	119 sqm	4554	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	201 sqm	404	-	201 sqm	1451	-
Partitions/Ceilings	567 sqm	2968	-	567 sqm	9682	-
Overhead Lighting	1837 W	1837	-	0 W	0	-
Electric Equipment	3989 W	3988	-	0 W	0	-
People	41	2865	2015	0	0	0
Infiltration	-	1713	3323	-	4844	1
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>>Total Zone Loads	-	26734	5338	-	25275	1
Thermostat and Pulldown Adjustment	-	-472	0	-	-42	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Ventilation Load	255 L/s	3932	7830	255 L/s	6768	0
Supply Fan Load	- L/s	0	-	- L/s	0	-
>> Total System Loads	-	30194	13169	-	32001	1
Terminal Unit Cooling	-	30194	13175	-	0	0
Terminal Unit Heating	-	0	-	-	32001	-
>> Total Coil Loads	-	30194	13175	-	32001	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

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*N2 - 2.03 Entrevistas	DESIGN COOLING			DESIGN HEATING		
	Jan 1500			Design Heating Day		
	OA DB / WB 37 C / 28 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	4 sqm	449	-	4 sqm	-	-
Wall Transmission	7 sqm	149	-	7 sqm	279	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	4 sqm	67	-	4 sqm	136	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	16 sqm	31	-	16 sqm	120	-
Partitions/Ceilings	52 sqm	251	-	52 sqm	821	-
Overhead Lighting	126 W	126	-	0 W	0	-
Electric Equipment	314 W	314	-	0 W	0	-
People	3	215	180	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	1603	180	-	1357	0

*N2 - Pasillo	DESIGN COOLING			DESIGN HEATING		
	Jan 1400			Design Heating Day		
	OA DB / WB 36.6 C / 27.9 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	5 sqm	346	-	5 sqm	-	-
Wall Transmission	23 sqm	605	-	23 sqm	865	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	5 sqm	84	-	5 sqm	177	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	10 sqm	19	-	10 sqm	77	-
Partitions/Ceilings	41 sqm	188	-	41 sqm	751	-
Overhead Lighting	80 W	80	-	0 W	0	-
Electric Equipment	0 W	0	-	0 W	0	-
People	2	135	70	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	1458	70	-	1870	0

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*N2 - Sala Audiencias	DESIGN COOLING			DESIGN HEATING		
	Jan 1500			Design Heating Day		
	OA DB / WB 37 C / 28 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	12 sqm	1661	-	12 sqm	-	-
Wall Transmission	17 sqm	267	-	17 sqm	637	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	12 sqm	219	-	12 sqm	445	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	19 sqm	37	-	19 sqm	144	-
Partitions/Ceilings	43 sqm	224	-	43 sqm	738	-
Overhead Lighting	150 W	150	-	0 W	0	-
Electric Equipment	282 W	282	-	0 W	0	-
People	6	431	360	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	3271	360	-	1965	0

*N2 2.01 Empleado	DESIGN COOLING			DESIGN HEATING		
	Jan 1700			Design Heating Day		
	OA DB / WB 35.8 C / 27.7 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	0 sqm	0	-	0 sqm	-	-
Wall Transmission	0 sqm	0	-	0 sqm	0	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	0 sqm	0	-	0 sqm	0	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	11 sqm	22	-	11 sqm	82	-
Partitions/Ceilings	45 sqm	286	-	45 sqm	880	-
Overhead Lighting	86 W	86	-	0 W	0	-
Electric Equipment	400 W	400	-	0 W	0	-
People	2	144	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	937	120	-	962	0

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*N2 2.02 Asesor Menores	DESIGN COOLING			DESIGN HEATING		
	Jan 1700			Design Heating Day		
	OA DB / WB 35.8 C / 27.7 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	1 sqm	72	-	1 sqm	-	-
Wall Transmission	7 sqm	176	-	7 sqm	279	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	1 sqm	16	-	1 sqm	35	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	12 sqm	25	-	12 sqm	92	-
Partitions/Ceilings	47 sqm	297	-	47 sqm	915	-
Overhead Lighting	96 W	96	-	0 W	0	-
Electric Equipment	360 W	360	-	0 W	0	-
People	2	144	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	1185	120	-	1321	0

*N2 2.04 Conc. Acusas	DESIGN COOLING			DESIGN HEATING		
	Jan 1500			Design Heating Day		
	OA DB / WB 37 C / 28 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	8 sqm	750	-	8 sqm	-	-
Wall Transmission	15 sqm	368	-	15 sqm	579	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	8 sqm	148	-	8 sqm	302	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	21 sqm	42	-	21 sqm	163	-
Partitions/Ceilings	39 sqm	181	-	39 sqm	574	-
Overhead Lighting	170 W	170	-	0 W	0	-
Electric Equipment	852 W	852	-	0 W	0	-
People	4	287	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	2800	240	-	1617	0

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*N2 2.05 Juez	DESIGN COOLING			DESIGN HEATING		
	Jan 1500			Design Heating Day		
	OA DB / WB 37 C / 28 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	5 sqm	750	-	5 sqm	-	-
Wall Transmission	18 sqm	334	-	18 sqm	668	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	5 sqm	104	-	5 sqm	212	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	12 sqm	23	-	12 sqm	90	-
Partitions/Ceilings	32 sqm	173	-	32 sqm	567	-
Overhead Lighting	94 W	93	-	0 W	0	-
Electric Equipment	400 W	400	-	0 W	0	-
People	2	144	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	2021	120	-	1537	0

*N2 2.06 Secretaria	DESIGN COOLING			DESIGN HEATING		
	Feb 1700			Design Heating Day		
	OA DB / WB 35.8 C / 27.7 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	2 sqm	127	-	2 sqm	-	-
Wall Transmission	17 sqm	429	-	17 sqm	661	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	2 sqm	43	-	2 sqm	92	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	9 sqm	18	-	9 sqm	67	-
Partitions/Ceilings	26 sqm	152	-	26 sqm	472	-
Overhead Lighting	70 W	70	-	0 W	0	-
Electric Equipment	400 W	400	-	0 W	0	-
People	2	144	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	1382	120	-	1292	0

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*N2 Hall A	DESIGN COOLING			DESIGN HEATING		
	Jan 1400			Design Heating Day		
	OA DB / WB 36.6 C / 27.9 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	56 sqm	3081	-	56 sqm	-	-
Wall Transmission	4 sqm	93	-	4 sqm	153	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	56 sqm	1014	-	56 sqm	2138	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	50 sqm	101	-	50 sqm	326	-
Partitions/Ceilings	123 sqm	561	-	123 sqm	1823	-
Overhead Lighting	632 W	632	-	0 W	0	-
Electric Equipment	395 W	395	-	0 W	0	-
People	10	674	352	0	0	0
Infiltration	-	1092	2159	-	3177	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	7644	2511	-	7617	0

*N2 Hall B	DESIGN COOLING			DESIGN HEATING		
	Jan 1400			Design Heating Day		
	OA DB / WB 36.6 C / 27.9 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	27 sqm	1011	-	27 sqm	-	-
Wall Transmission	5 sqm	76	-	5 sqm	183	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	27 sqm	483	-	27 sqm	1018	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	26 sqm	53	-	26 sqm	173	-
Partitions/Ceilings	75 sqm	404	-	75 sqm	1311	-
Overhead Lighting	212 W	212	-	0 W	0	-
Electric Equipment	133 W	132	-	0 W	0	-
People	6	404	211	0	0	0
Infiltration	-	573	1163	-	1667	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	3349	1374	-	4353	0

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*N2 M. Entrada Única	DESIGN COOLING			DESIGN HEATING		
	Jan 1700			Design Heating Day		
	OA DB / WB 35.8 C / 27.7 C			OA DB / WB -0.6 C / -3.2 C		
	Thermostat Setpoint 24.0 C			Thermostat Setpoint 21.5 C		
Zone Loads based on TFM	Details	Sensible W	Latent W	Details	Sensible W	Latent W
Window and Skylight Solar Loads	0 sqm	0	-	0 sqm	-	-
Wall Transmission	12 sqm	191	-	12 sqm	439	-
Roof Transmission	0 sqm	0	-	0 sqm	0	-
Window Transmission	0 sqm	0	-	0 sqm	0	-
Skylight Transmission	0 sqm	0	-	0 sqm	0	-
Door Loads	0 sqm	0	-	0 sqm	0	-
Floor Transmission	15 sqm	32	-	15 sqm	116	-
Partitions/Ceilings	45 sqm	266	-	45 sqm	829	-
Overhead Lighting	121 W	121	-	0 W	0	-
Electric Equipment	453 W	453	-	0 W	0	-
People	2	144	120	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	1206	120	-	1383	0