

Air System Sizing Summary for AHU-01/02(Res) 100%AE

Project Name: HMCC - Foz do Iguaçu - CME-R00
Prepared by: Donatherm

06/06/2025
06:59

Air System Information

Air System Name **AHU-01/02(Res) 100%AE**
Equipment Class **CW AHU**
Air System Type **CAV/RH**

Number of zones **11**
Floor Area **416,4** m²
Location **Foz do Iguaçu, Brazil**

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**

Central Cooling Coil Sizing Data

Total coil load **239,2** kW
Sensible coil load **156,0** kW
Coil L/s at Dec 1500 **5865** L/s
Max block L/s **5865** L/s
Sum of peak zone L/s **5865** L/s
Sensible heat ratio **0,652**
m²/kW **1,7**
W/m² **574,3**
Water flow @ 5,5 °K rise **10,41** L/s

Load occurs at **Dec 1500**
OA DB / WB **34,6 / 22,8** °C
Entering DB / WB **34,6 / 22,8** °C
Leaving DB / WB **12,0 / 11,1** °C
Coil ADP **9,4** °C
Bypass Factor **0,100**
Resulting RH **47** %
Design supply temp. **12,8** °C
Zone T-stat Check **11 of 11** OK
Max zone temperature deviation **0,0** °K

Central Heating Coil Sizing Data

No central heating coil loads occurred during this calculation.

Supply Fan Sizing Data

Actual max L/s **5865** L/s
Standard L/s **5698** L/s
Actual max L/(s-m²) **14,09** L/(s-m²)

Fan motor BHP **n/a**
Fan motor kW **9,43** kW

Outdoor Ventilation Air Data

Design airflow L/s **5865** L/s
L/(s-m²) **14,09** L/(s-m²)

L/s/person **293,26** L/s/person

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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**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (L/s)	Minimum Supply Airflow (L/s)	Zone L/(s-m ²)	Reheat Coil Load (kW)	Reheat Coil Water L/s @ 11,1 °K	Zone Htg Unit Coil Load (kW)	Zone Htg Unit Water L/s @ 11,1 °K	Mixing Box Fan Airflow (L/s)
LL-Administração	67	67	6,99	0,7	0,01	0,0	0,00	0
LL-Arsenal	1560	1560	14,79	15,2	0,33	0,0	0,00	0
LL-Desinf. Endos.	80	80	6,67	0,8	0,02	0,0	0,00	0
LL-Insp. e Preparo	1762	1762	14,28	17,2	0,37	0,0	0,00	0
LL-Recep. Insumos	126	126	8,00	1,2	0,03	0,0	0,00	0
LL-Recep. Texteis	106	106	8,00	1,0	0,02	0,0	0,00	0
LS-Lav. Carrinhos	170	170	16,67	1,7	0,04	0,0	0,00	0
LS-Receb. Consig.	103	103	5,66	1,0	0,02	0,0	0,00	0
LS-Receb. end. flex.	82	82	6,24	0,8	0,02	0,0	0,00	0
LS-Recep. Material Sujo	74	74	6,56	0,7	0,02	0,0	0,00	0
LS-Recep. Sep. Lavagem	1736	1736	20,62	17,0	0,37	0,0	0,00	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m ²)
LL-Administração	0,7	Jan 1600	0,0	9,6
LL-Arsenal	16,9	Jan 1600	0,0	105,5
LL-Desinf. Endos.	0,8	Jan 1600	0,0	12,0
LL-Insp. e Preparo	19,1	Jan 1600	0,0	123,4
LL-Recep. Insumos	1,0	Jan 1600	0,0	15,7
LL-Recep. Texteis	0,9	Jan 1600	0,0	13,2
LS-Lav. Carrinhos	1,2	Jan 1600	0,0	10,2
LS-Receb. Consig.	1,1	Jan 1600	0,0	18,2
LS-Receb. end. flex.	0,9	Jan 1600	0,0	13,1
LS-Recep. Material Sujo	0,8	Jan 1600	0,0	11,3
LS-Recep. Sep. Lavagem	18,8	Jan 1600	0,0	84,2

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Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
LL-Administração							
LL-Administração	1	0,7	Jan 1600	67	0,0	9,6	6,99
LL-Arsenal							
LL-Arsenal	1	16,9	Jan 1600	1560	0,0	105,5	14,79
LL-Desinf. Endos.							
LL-Desinf. Endos.	1	0,8	Jan 1600	80	0,0	12,0	6,67
LL-Insp. e Preparo							
LL-Insp. e Preparo	1	19,1	Jan 1600	1762	0,0	123,4	14,28
LL-Recep. Insumos							
LL-Recep. Insumos	1	1,0	Jan 1600	126	0,0	15,7	8,00
LL-Recep. Texteis							
LL-Recep. Texteis	1	0,9	Jan 1600	106	0,0	13,2	8,00
LS-Lav. Carrinhos							
LS-Lav. Carrinhos	1	1,2	Jan 1600	170	0,0	10,2	16,67
LS-Receb. Consig.							
LS-Receb. Consig	1	1,1	Jan 1600	103	0,0	18,2	5,66
LS-Receb. end. flex.							
LS-Receb. end. flex.	1	0,9	Jan 1600	82	0,0	13,1	6,24
LS-Recep. Material Sujo							
LS-Recep. Material Sujo	1	0,8	Jan 1600	74	0,0	11,3	6,56
LS-Recep. Sep. Lavagem							
LS-Recep. Sep. Lavagem	1	18,8	Jan 1600	1736	0,0	84,2	20,62

Air System Design Load Summary for AHU-01/02(Res) 100%AE

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Dec 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 34,6 °C / 22,8 °C			HEATING OA DB / WB 3,2 °C / 1,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (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	0 m²	0	-	0 m²	0	-
Partitions	177 m²	2802	-	177 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	6662 W	6662	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	18238 W	18237	-	0	0	-
People	20	1436	1202	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	27303	0	-	0	0
Safety Factor	10% / 10%	5644	120	10%	0	0
>> Total Zone Loads	-	62084	1322	-	0	0
Zone Conditioning	-	62451	1322	-	-3565	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	5865 L/s	0	-	5865 L/s	0	-
Ventilation Load	5865 L/s	83670	81823	5865 L/s	70318	0
Supply Fan Load	5865 L/s	9431	-	5865 L/s	-9431	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	155552	83145	-	57322	0
Central Cooling Coil	-	156007	83145	-	0	0
Central Heating Coil	-	0	-	-	0	-
Terminal Reheat Coils	-	-455	-	-	57322	-
>> Total Conditioning	-	155552	83145	-	57322	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for LS-Ins. Alto Valor

Project Name: HMCC - Foz do Iguaçu - CME-R00
Prepared by: Donatherm

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Air System Information

Air System Name **LS-Ins. Alto Valor**
Equipment Class **CW AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **32,1** m²
Location **Foz do Iguaçu, Brazil**

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**

Central Cooling Coil Sizing Data

Total coil load **11,2** kW
Sensible coil load **7,5** kW
Coil L/s at Jan 1500 **275** L/s
Max block L/s **275** L/s
Sum of peak zone L/s **275** L/s
Sensible heat ratio **0,668**
m²/kW **2,9**
W/m² **348,1**
Water flow @ 5,5 °K rise **0,49** L/s

Load occurs at **Jan 1500**
OA DB / WB **35,2 / 22,8** °C
Entering DB / WB **35,2 / 22,8** °C
Leaving DB / WB **12,1 / 11,2** °C
Coil ADP **9,5** °C
Bypass Factor **0,100**
Resulting RH **46** %
Design supply temp. **12,8** °C
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0,0** °K

Central Heating Coil Sizing Data

No central heating coil loads occurred during this calculation.

Supply Fan Sizing Data

Actual max L/s **275** L/s
Standard L/s **267** L/s
Actual max L/(s-m²) **8,57** L/(s-m²)

Fan motor BHP **n/a**
Fan motor kW **0,48** kW

Outdoor Ventilation Air Data

Design airflow L/s **275** L/s
L/(s-m²) **8,57** L/(s-m²)

L/s/person **275,19** L/s/person

Zone Sizing Summary for LS-Ins. Alto Valor

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Air System Information

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Equipment Class **CW AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **32,1** m²
Location **Foz do Iguaçu, Brazil**

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**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (L/s)	Minimum Supply Airflow (L/s)	Zone L/(s-m ²)	Reheat Coil Load (kW)	Reheat Coil Water L/s @ 11,1 °K	Zone Htg Unit Coil Load (kW)	Zone Htg Unit Water L/s @ 11,1 °K	Mixing Box Fan Airflow (L/s)
LL-Ins. Alto Valor	275	275	8,57	0,0	0,00	0,0	0,00	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m ²)
LL-Ins. Alto Valor	3,0	Jan 1400	0,5	32,1

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m ²)	Space L/(s-m ²)
<i>LL-Ins. Alto Valor</i>							
LS-Insumos de alto valor	1	3,0	Jan 1400	275	0,5	32,1	8,57

Air System Design Load Summary for LS-Ins. Alto Valor

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 35,2 °C / 22,8 °C			HEATING OA DB / WB 3,2 °C / 1,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	17 m²	442	-	17 m²	481	-
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	0 m²	0	-	0 m²	0	-
Partitions	12 m²	194	-	12 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	514 W	514	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1605 W	1605	-	0	0	-
People	1	72	60	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 5%	141	3	5%	24	0
>> Total Zone Loads	-	2968	63	-	505	0
Zone Conditioning	-	2945	63	-	-432	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	275 L/s	0	-	275 L/s	0	-
Ventilation Load	275 L/s	4038	3649	275 L/s	910	0
Supply Fan Load	275 L/s	478	-	275 L/s	-478	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	7461	3712	-	0	0
Central Cooling Coil	-	7461	3712	-	0	0
Central Heating Coil	-	0	-	-	0	-
>> Total Conditioning	-	7461	3712	-	0	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for Sala de Reunião

Project Name: HMCC - Foz do Iguaçu - CME-R00
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Air System Information

Air System Name **Sala de Reunião**
Equipment Class **CW AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **41,8** m²
Location **Foz do Iguaçu, Brazil**

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**

Central Cooling Coil Sizing Data

Total coil load **8,4** kW
Sensible coil load **6,0** kW
Coil L/s at Jan 1400 **341** L/s
Max block L/s **341** L/s
Sum of peak zone L/s **341** L/s
Sensible heat ratio **0,716**
m²/kW **5,0**
W/m² **201,1**
Water flow @ 5,5 °K rise **0,37** L/s

Load occurs at **Jan 1400**
OA DB / WB **34,9 / 22,7** °C
Entering DB / WB **27,0 / 18,9** °C
Leaving DB / WB **12,0 / 11,3** °C
Coil ADP **10,3** °C
Bypass Factor **0,100**
Resulting RH **54** %
Design supply temp. **12,8** °C
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0,0** °K

Supply Fan Sizing Data

Actual max L/s **341** L/s
Standard L/s **332** L/s
Actual max L/(s-m²) **8,17** L/(s-m²)

Fan motor BHP **n/a**
Fan motor kW **0,59** kW

Outdoor Ventilation Air Data

Design airflow L/s **122** L/s
L/(s-m²) **2,92** L/(s-m²)

L/s/person **6,10** L/s/person

Zone Sizing Summary for Sala de Reunião

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Sizing Data **Calculated**

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

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (L/s)	Minimum Supply Airflow (L/s)	Zone L/(s-m ²)	Reheat Coil Load (kW)	Reheat Coil Water L/s @ 11,1 °K	Zone Htg Unit Coil Load (kW)	Zone Htg Unit Water L/s @ 11,1 °K	Mixing Box Fan Airflow (L/s)
Zone 1	341	341	8,17	0,0	0,00	0,0	0,00	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m ²)
Zone 1	3,7	Jan 1600	0,0	41,8

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m ²)	Space L/(s-m ²)
Zone 1							
Sala de Reunião	1	3,7	Jan 1600	341	0,0	41,8	8,17

Air System Design Load Summary for Sala de Reunião

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1400			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 34,9 °C / 22,7 °C			HEATING OA DB / WB 3,2 °C / 1,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (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	0 m²	0	-	0 m²	0	-
Partitions	19 m²	355	-	19 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	669 W	669	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1045 W	1045	-	0	0	-
People	20	1436	1202	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 5%	175	60	5%	0	0
>> Total Zone Loads	-	3680	1262	-	0	0
Zone Conditioning	-	3683	1262	-	-583	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	341 L/s	0	-	341 L/s	0	-
Ventilation Load	122 L/s	1741	1127	122 L/s	1187	0
Supply Fan Load	341 L/s	593	-	341 L/s	-593	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	6017	2389	-	11	0
Central Cooling Coil	-	6017	2390	-	0	0
>> Total Conditioning	-	6017	2390	-	0	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		