

ECOFLEX MINI VRF TWO-WAY CASSETTE TECHNICAL SELECTION DATA



Model Numbers

MTC-022CS	MTC-045CS
MTC-028CS	MTC-056CS
MTC-036CS	MTC-071CS

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01. Specification

Model			MTC-022CS	MTC-028CS	MTC-036CS	MTC-045CS	MTC-056CS	MTC-071CS	
Power supply			1-phase, 230V, 50Hz						
Cooling ¹	Capacity	kW	2.2	2.8	3.6	4.5	5.6	7.1	
		kBtu/h	7.5	9.6	12.3	15.4	19.1	24.2	
	Power Input	W	35	40	40	50	69	98	
Heating ²	Capacity	kW	2.6	3.2	4	5	6.3	8	
		kBtu/h	8.9	10.9	13.6	17.1	21.5	27.3	
	Power Input	W	35	40	40	50	69	98	
Fan motor type	Type	DC							
	Number	1							
Indoor Coil	Number of rows	1			2				
	Tube pitch × row pitch	mm	21×13.37						
	Fin spacing and type	mm	1.5						
	Tube OD and type	mm	Copper Ø7 Inner-groove						
	Dimensions (L×H×W)	mm	882×210×13.37			882×210×26.74			
	Number of circuits	4			6				
Air flow rate ³ (Max / Min) ⁷	l/s	182 / 114		201 / 127	236 / 153	272 / 186	333 / 214		
Sound pressure level ⁴ (Max / Min) ⁷	dB(A)	33 / 24		35 / 25	37 / 30	39 / 30	44 / 34		
Main body	Net dimensions ⁶ (W×H×D)	mm	1259×299×591						
	Packed dimensions (W×H×D)	mm	1355×400×675						
	Net/Gross weight	kg	29.7/36.3			31.6/38.2			
Main body	Net dimensions ⁶ (W×H×D)	mm	1430×53×680						
	Packed dimensions (W×H×D)	mm	1525×130×765						
	Net/Gross weight	kg	11/15						
Refrigerant type			R-32						
Design pressure (H/L)		MPa	4.4/2.6						
Pipe connections	Liquid/Gas pipe	mm	Ø6.35/Ø12.7						
	Drain pipe	mm	OD Ø32						

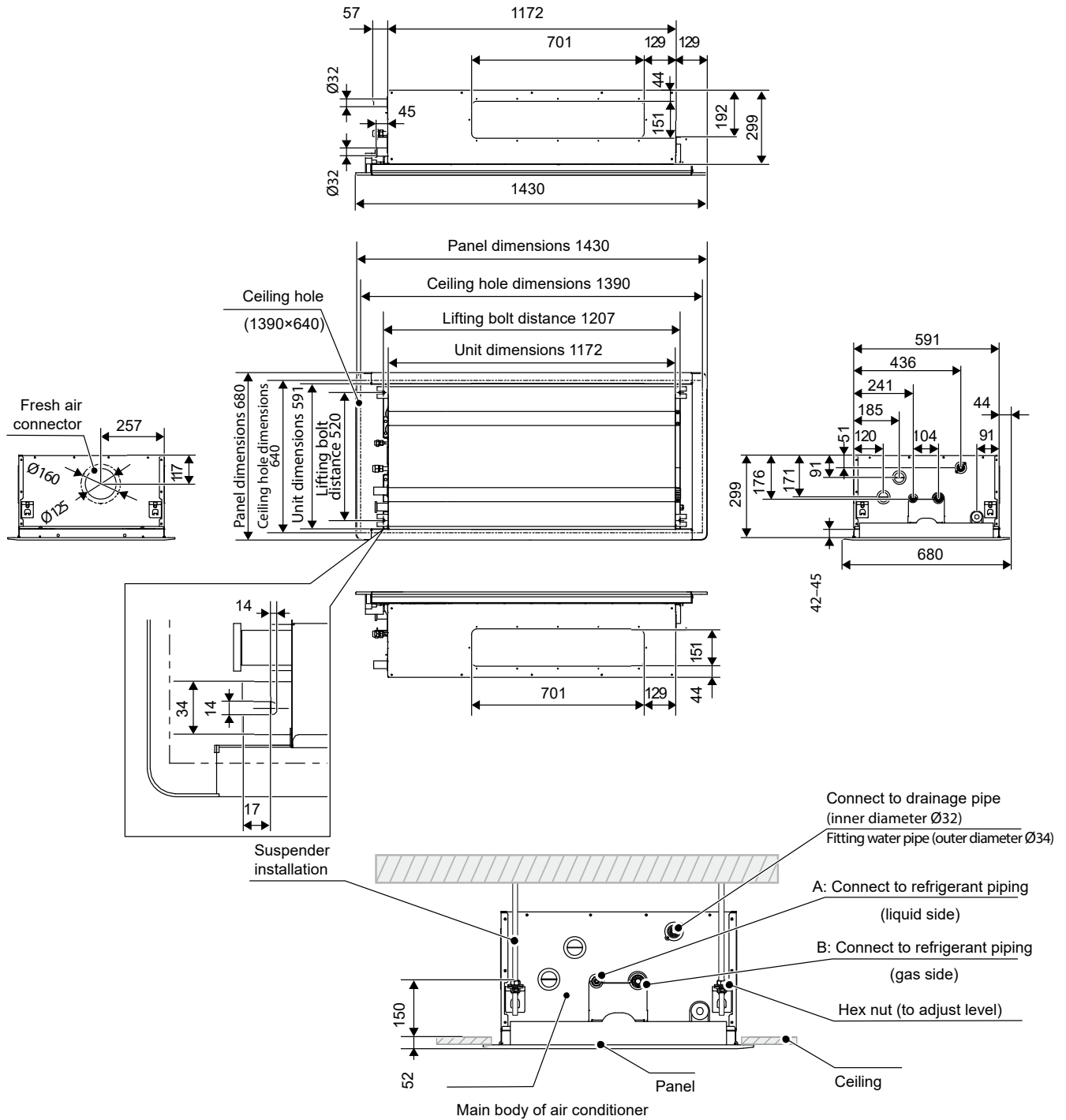
Notes:

- Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 5m with zero level difference.
- Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 5m with zero level difference.
- Air flow rates are from the highest speed to the lowest speed, total 7 rates for each model.
- Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured 1.4m below the unit in a Sem-anechoic chamber.
- Sound power level is from highest level to lowest level, total 7 levels for each model.
- Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.
- Refer to the section Sound Levels for more details.

02. Dimensions

02.01. Unit Dimensions

Figure 2.1: Two-way Cassette dimensions (unit: mm)



Model(kW)	A	B
kW≤3.6	Ø6.35	Ø12.7
3.6<kW≤5.6	Ø6.35	Ø12.7
5.6<kW≤7.1	Ø9.52	Ø15.9

03. Unit Placement

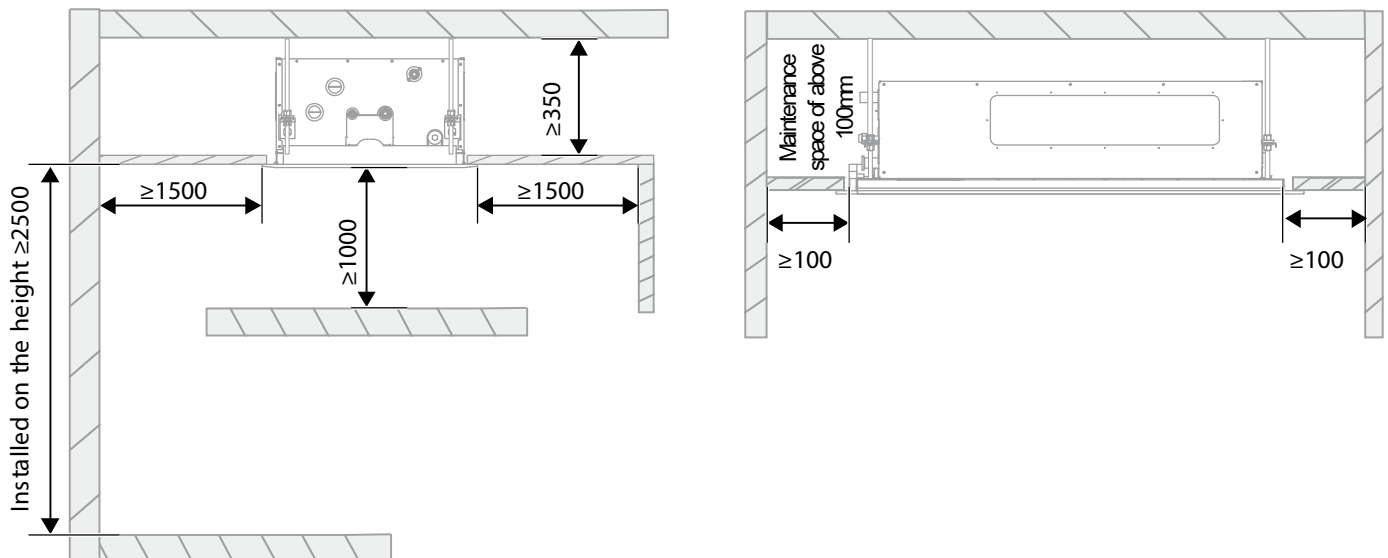
03.01. Placement Considerations

Unit placement should take account of the following considerations:

- Units should not be installed in the following locations:
 - A place filled with mineral oil, fumes or mist, like a kitchen.
 - A place where there are corrosive gases, such as acid or alkaline gases..
 - A place exposed to combustible gases and using volatile combustible gases such as diluent or gasoline.
 - A place where there is equipment emitting electromagnetic radiation.
 - A place where there is a high salt content in the air e.g. coastal environment.
 - Do not use the air conditioner in an environment where an explosion may occur.
 - Places like in vehicles or cabin rooms.
 - Factories with major voltage fluctuations in the power supplies.
 - Other special environmental conditions.
- Units should be installed in positions where:
 - Ensure that the airflow in and out of the IDU is reasonably organized to form an air circulation in the room.
 - Ensure IDU maintenance space.
 - The nearer the drainage pipe and copper pipe are to the ODU, the lower the pipe cost is.
 - Prevent the air conditioner from blowing directly to the human body.
 - The closer the wiring to the power cabinet, the lower the wiring cost is.
 - Keep the air-conditioning return air away from the setting sun of the room.
 - Be careful not to interfere with the light tank, fire pipe, gas pipe and other facilities.
 - The IDU should not be lifted in the places like load-bearing beam and columns that affect the structural safety of the house.
 - The wired controller and the IDU should be in the same installation space; otherwise, the sampling point setting of the wired controller need to be changed.

03.02. Space Requirements

Figure 3.1: Two-way Cassette space requirements (unit: mm)

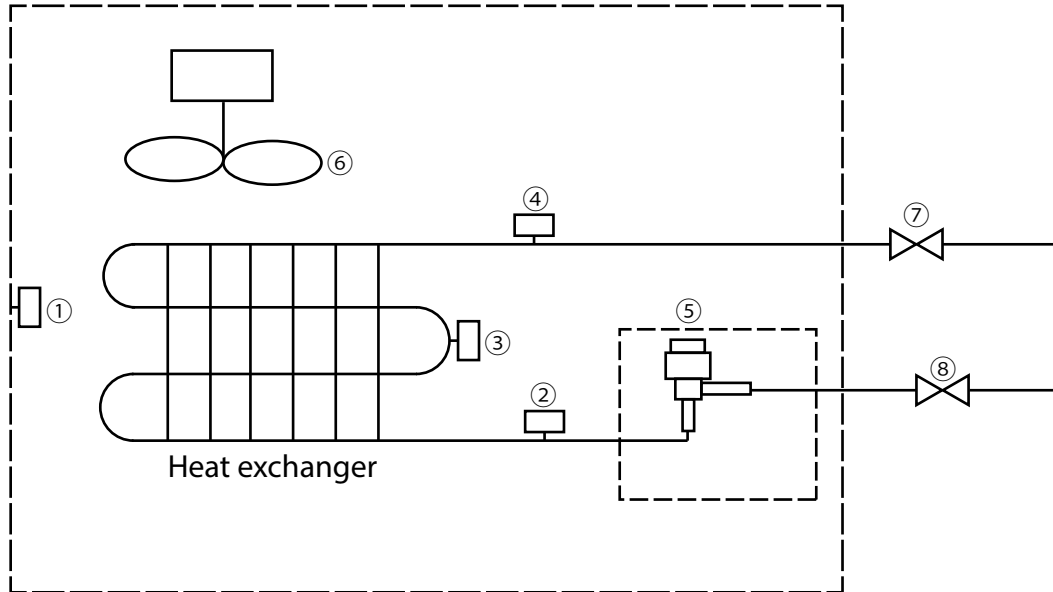


Notes:

1. The centerline of the maintenance hole should be in the same position as the centerline of the indoor unit.

04. Piping Diagram

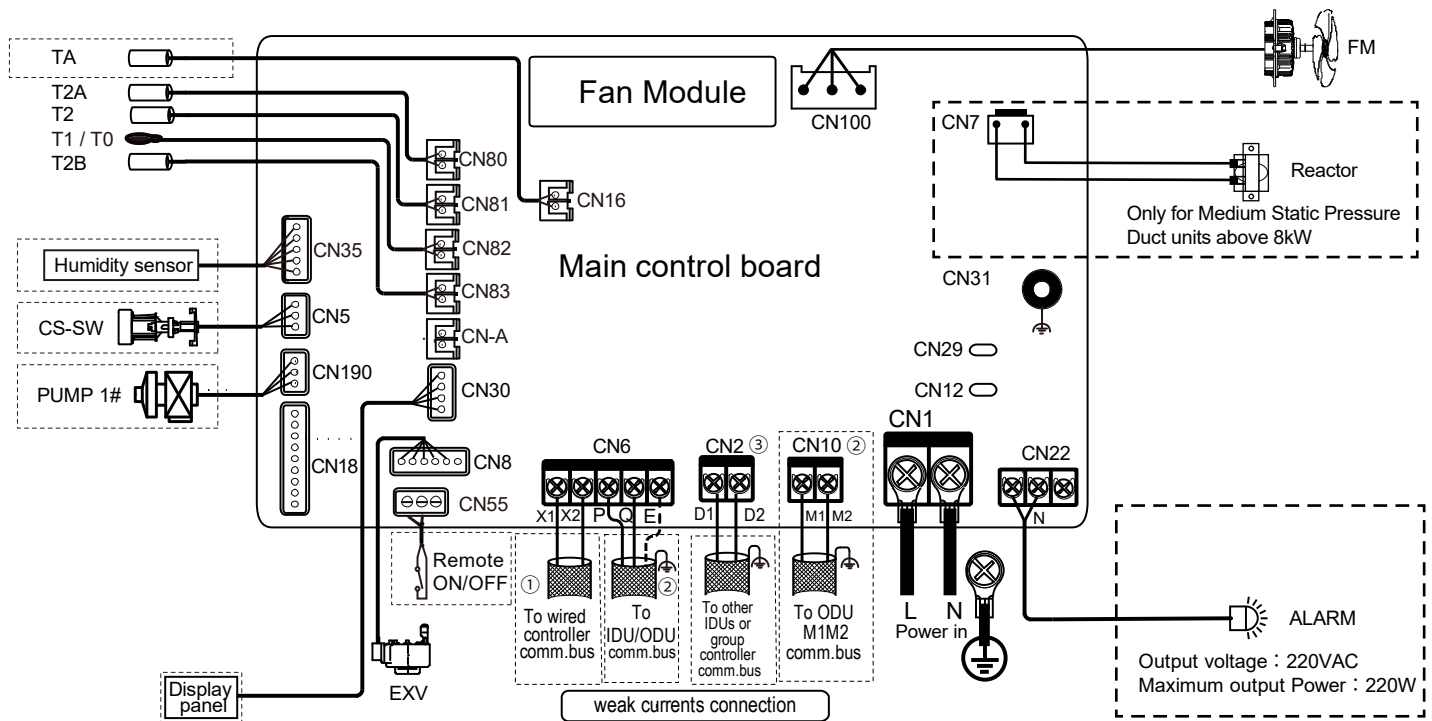
Figure 4.1: Two-way Cassette piping diagram



Legend		
①	T1	Inlet Air Temp. Sensor
②	T2A	Liquid Pipe Temp. Sensor
③	T2	Middle Pipe Temp. Sensor
④	T2B	Gas Pipe Temp. Sensor
⑤	EXV	Electronic expansion valve
⑥	FM	Fan motor
⑦	-	Gas side
⑧	-	Liquid side

05. Wiring Diagram

Figure 5.1: Two-way Cassette wiring diagram



Installation Notes

CAUTION

- All installation, servicing and maintenance must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.
- Units should be grounded in accordance with all applicable legislation. Metal and other conductive components should be insulated in accordance with all applicable legislation.
- Power supply wiring should be securely fastened at the power supply terminals – loose power supply wiring would represent a fire risk.
- After installation, servicing or maintenance, the electric control box cover should be closed. Failing to close the electric control box cover risks fire or electric shock.
- The dotted lines indicate the field wiring or optional function.
- PQ and M1M2 communication ports both are used for indoor and outdoor communication, and only one of them can be used at a time. Meanwhile, be sure to connect the same communication ports (PQ to PQ; M1M2 to M1M2) in case of damage of the main control board.
- D1D2 communication ports are used for group control communication. When connecting the group controller, the D1D2 port of the indoor units that are to be group controlled must be connected in a daisy chain, and the group controller must be connected to the X1X2 port of one of the indoor units in the group controller, and set to group control mode. In addition, D1D2 communication ports can also be connected to the central controller.

06. Capacity Tables

06.01. Cooling Capacity Table

Table 6.1: Two-way Cassette cooling capacity

Model	Indoor air temperature (°C WB/DB)													
	14/20		16/23		18/26		19/27		20/28		22/30		24/32	
	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
MTC-022CS	2.0	1.9	2.1	2.0	2.2	2.0	2.2	1.9	2.3	1.9	2.3	1.7	2.4	1.7
MTC-028CS	2.5	2.4	2.7	2.6	2.8	2.5	2.8	2.4	2.9	2.4	2.9	2.2	3.0	2.1
MTC-036CS	3.2	3.1	3.4	3.2	3.6	3.3	3.6	3.1	3.7	3.0	3.8	2.9	3.9	2.7
MTC-045CS	4.0	3.8	4.3	3.9	4.5	3.9	4.5	3.8	4.6	3.7	4.7	3.5	4.8	3.3
MTC-056CS	5.0	4.8	5.3	4.8	5.6	4.9	5.6	4.7	5.7	4.6	5.8	4.3	6.0	4.1
MTC-071CS	6.3	6.0	6.7	6.1	7.0	6.2	7.1	6.0	7.2	5.8	7.4	5.5	7.6	5.2

Abbreviations:

TC: Total capacity (kW)

SC: Sensible capacity(kW)

Notes:

1. Shaded cells indicate rated conditions.

06.02. Heating Capacity Table

Table 6.2: Two-way Cassette heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	TC	TC	TC	TC	TC	TC
MTC-022CS	2.8	2.8	2.6	2.5	2.4	2.3
MTC-028CS	3.4	3.4	3.2	3.1	3.0	2.8
MTC-036CS	4.2	4.2	4.0	3.8	3.8	3.5
MTC-045CS	5.3	5.3	5.0	4.8	4.7	4.4
MTC-056CS	6.7	6.6	6.3	6.1	5.9	5.5
MTC-071CS	8.5	8.4	8.0	7.8	7.5	7.0

Abbreviations:

TC: Total capacity (kW)

Notes:

1. Shaded cells indicate rated conditions.

07. Electrical Characteristics

Table 7.1: Two-way Cassette electrical characteristics

Model	Power Supply						Indoor Fan Motors	
	Hz	Rated Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (kW)	FLA
MTC-022CS	50	230	217	243	0.47	15	50	0.38
MTC-028CS	50	230	217	243	0.47	15	50	0.38
MTC-036CS	50	230	217	243	0.52	15	50	0.42
MTC-045CS	50	230	217	243	0.59	15	50	0.47
MTC-056CS	50	230	217	243	0.9	15	50	0.72
MTC-071CS	50	230	217	243	1.3	15	50	1.04

Abbreviations:

MCA: Minimum Circuit Amps

MFA: Maximum Fuse Amps

FLA: Full Load Amps

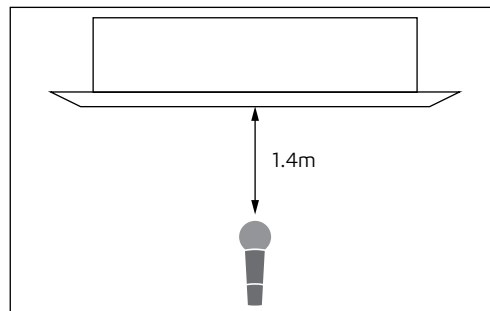
08. Sound Levels

08.01. Overall

Table 8.1.1: Two-way Cassette sound pressure levels¹

Model	Sound pressure levels dB						
	SSH	SH	H	M	L	SL	SSL
MTC-022CS	33	31	30	29	27	25	24
MTC-028CS	33	31	30	29	27	25	24
MTC-036CS	35	33	32	30	29	27	25
MTC-045CS	37	36	35	34	32	31	30
MTC-056CS	39	37	36	35	33	31	30
MTC-071CS	44	42	41	40	38	36	34

Figure 8.1.1: Two-way Cassette sound pressure level measurement



Notes:

1. Sound pressure levels are measured 1.4m below the unit in a semi-anechoic chamber at 0 Pa static pressure. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.

Table 8.1.2: Two-way Cassette Air flow rate

Model	Sound pressure levels dB						
	SSH	SH	H	M	L	SL	SSL
MTC-022CS	182	170	159	147	136	125	114
MTC-028CS	182	170	159	147	136	125	114
MTC-036CS	201	189	178	164	154	141	127
MTC-045CS	236	220	203	186	175	164	153
MTC-056CS	272	257	238	222	210	195	186
MTC-071CS	333	310	297	278	256	224	214

TECHNICAL SELECTION DATA

ECOFLEX - Mini VRF

08.02. Octave Band Levels

Figure 8.2.1: MTC-022CS octave band levels

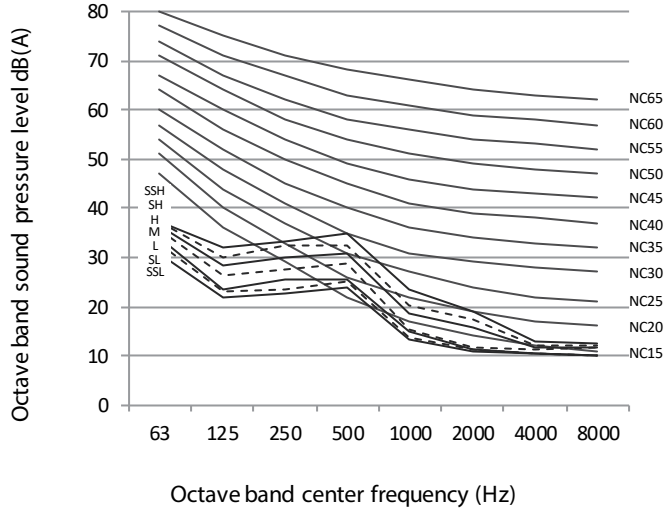


Figure 8.2.2: MTC-028CS octave band levels

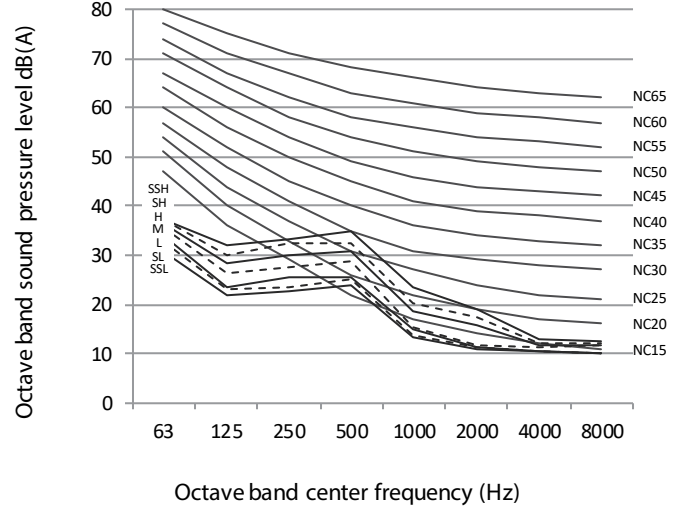


Figure 8.2.3: MTC-036CS octave band levels

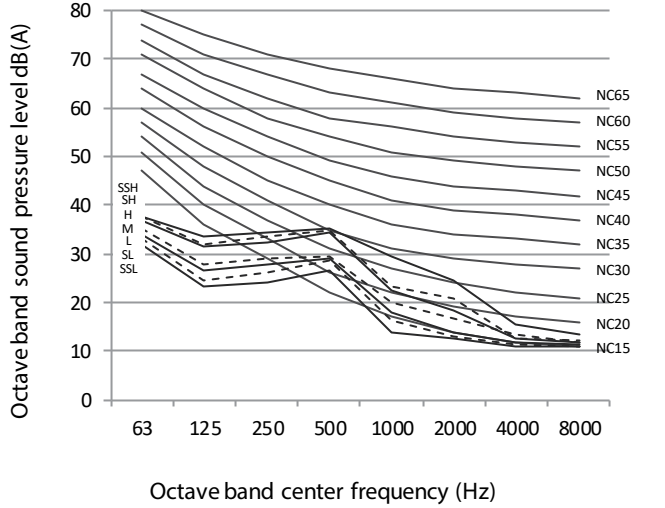


Figure 8.2.4: MTC-045CS octave band levels

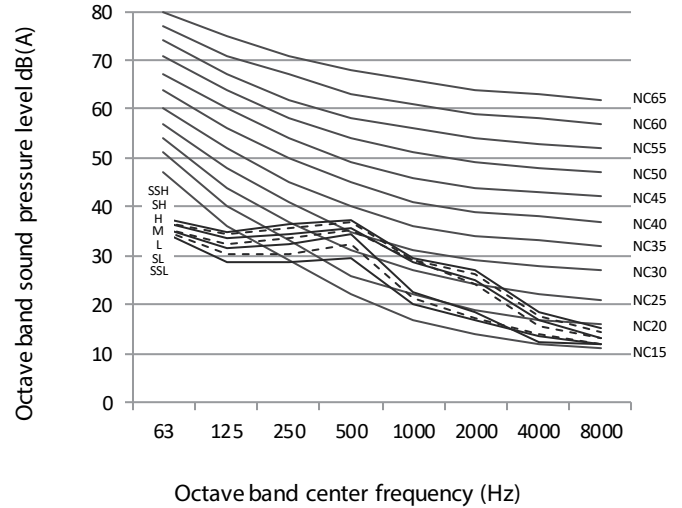


Figure 8.2.5: MTC-056CS octave band levels

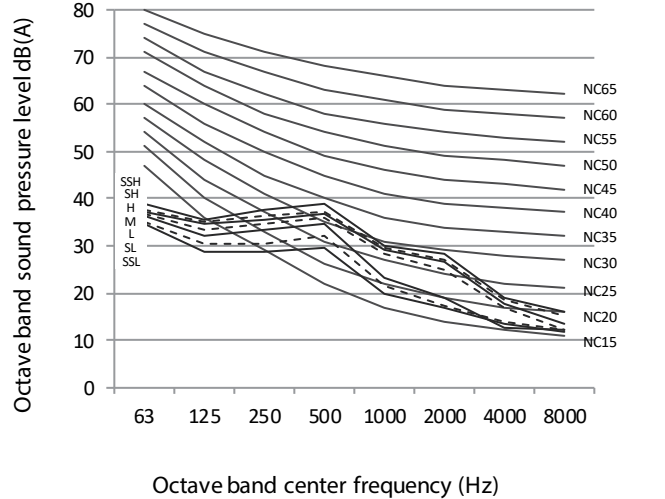
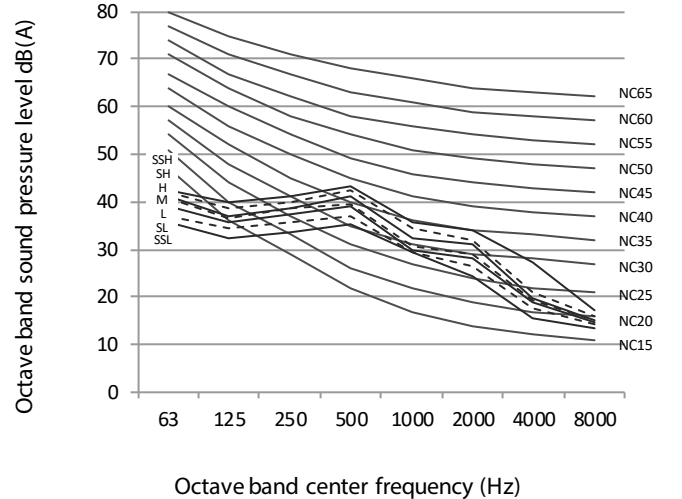


Figure 8.2.6: MTC-071CS octave band levels



09. Temperature and Airflow Distributions

09.01. Simulate condition

Table 9.1: Two-way Cassette simulate condition

Models	Room size (m)	Ceiling height (m)	Flow angle (Cooling/Heating)	Placing
MTC-022CS	6*6	2.7	35°/55°	Cassette
MTC-028CS	6*6	2.7	35°/55°	Cassette
MTC-036CS	6*6	2.7	35°/55°	Cassette
MTC-045CS	8*8	2.7	35°/55°	Cassette
MTC-056CS	8*8	2.7	35°/55°	Cassette
MTC-071CS	8*8	2.7	35°/55°	Cassette

Note:

- These figures and videos are based on software simulation. They show typical temperature and airflow distributions in the conditions above. In the actual installation, they may differ from these figures and videos under the influence of air temperature conditions, ceiling height, cooling/heating load, obstacles, etc.

09.02. Airflow distributions

In the below charts, Y-Axis represents the height in meters (charts shows the installation height at 2.5m) and the X-Axis represents the floor distance in meters. These chart shows the air speed distribution 300s after the machine is turned on. The data in the curves shows air speed in meter per seconds (eg: 0.5 means the air speed in that area is 0.5m/s).

Figure 9.2.1: MTC-022CS cooling at 300S

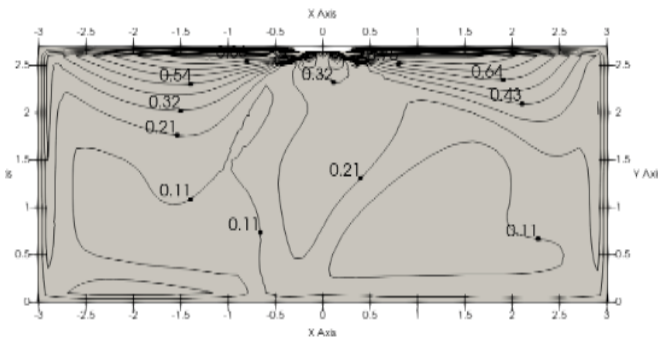


Figure 9.2.2: MTC-022CS heating at 300S

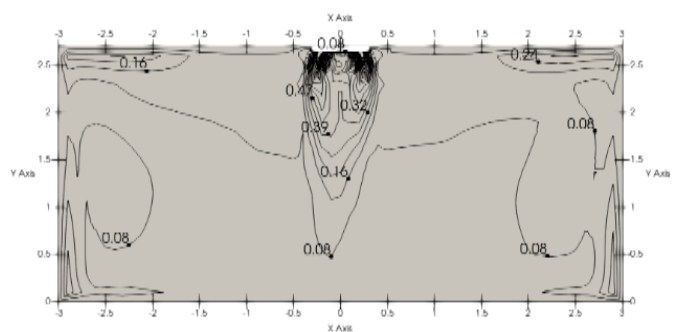


Figure 9.2.3: MTC-028CS cooling at 300S

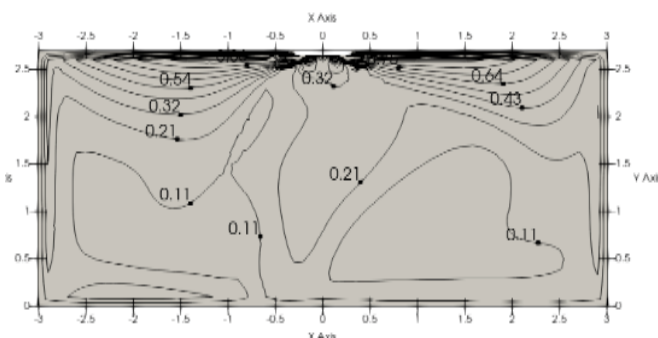


Figure 9.2.4: MTC-028CS heating at 300S

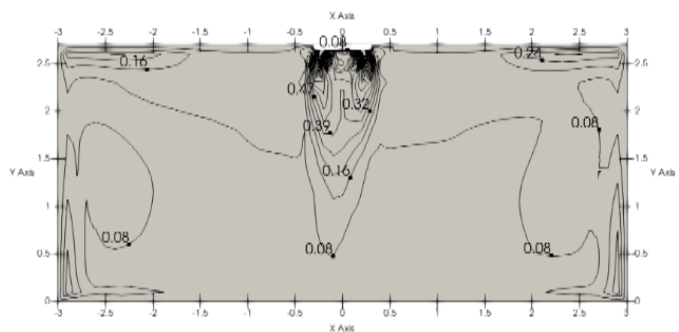


Figure 9.2.5: MTC-036CS cooling at 300S

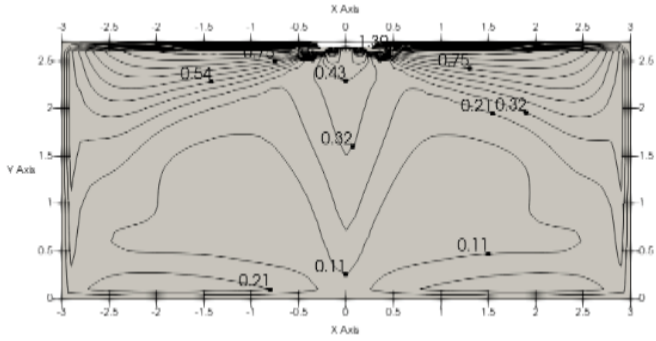


Figure 9.2.6: MTC-036CS heating at 300S

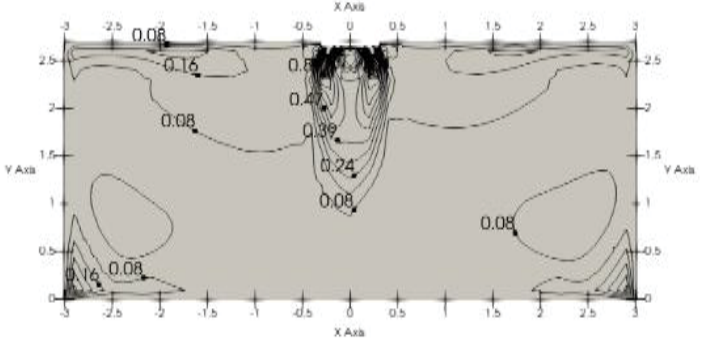


Figure 9.2.7: MTC-045CS cooling at 300S

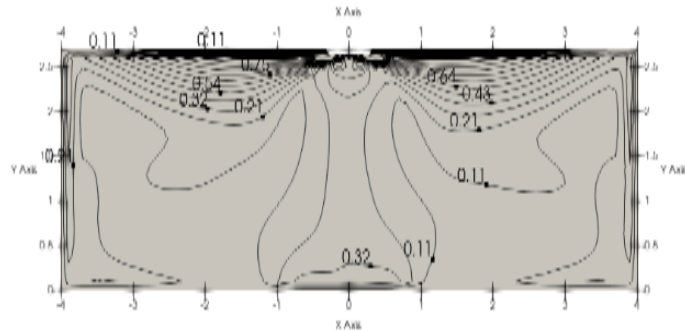


Figure 9.2.8: MTC-045CS heating at 300S

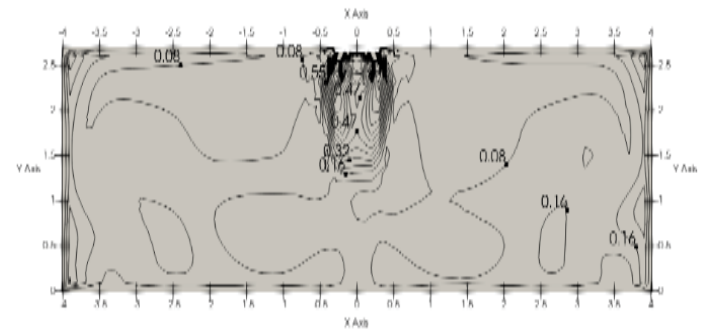


Figure 9.2.9: MTC-056CS cooling at 300S

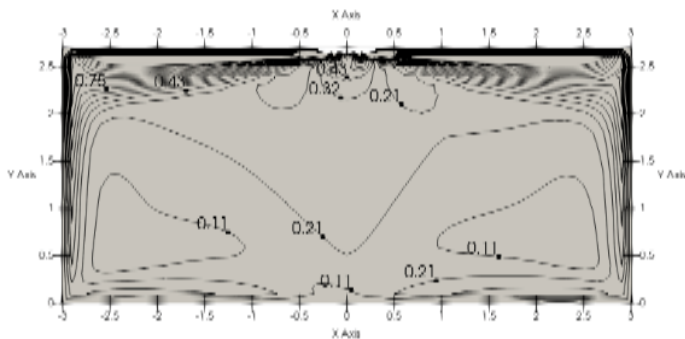


Figure 9.2.10: MTC-056CS heating at 300S

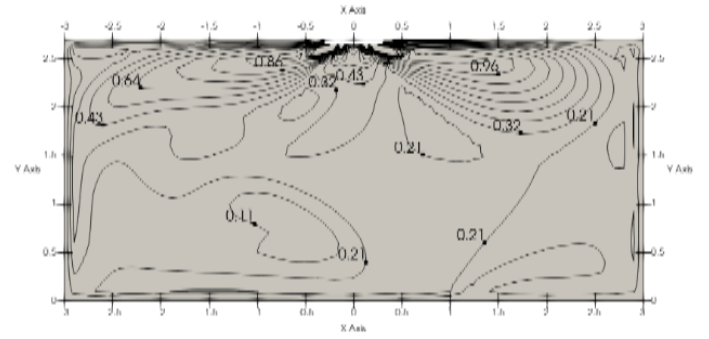


Figure 9.2.11: MTC-071CS cooling at 300S

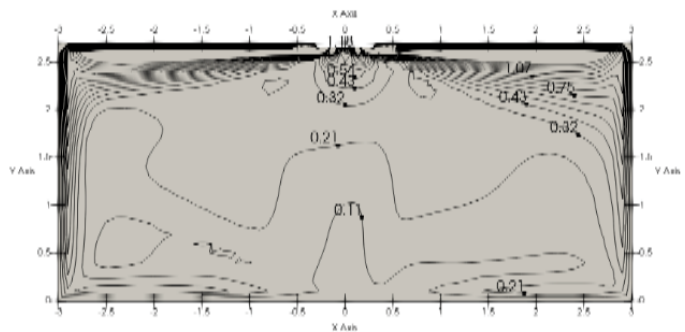
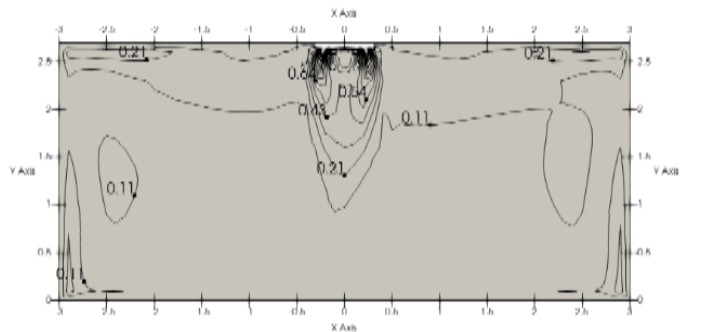


Figure 9.2.12: MTC-071CS heating at 300S



09.03. Temperature distributions

In the below charts, Y-Axis represents the height in meters (charts shows the installation height at 2.5m) and the X-Axis represents the floor distance in meters. These chart shows the air speed distribution 300s after the machine is turned on. The data in the curves shows temperature distribution.

Figure 9.3.1: MTC-022CS cooling at 300S

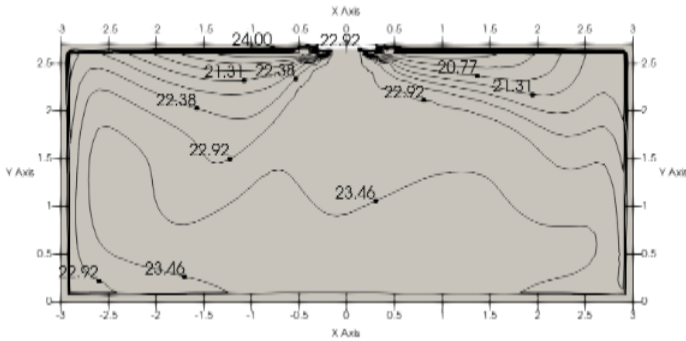


Figure 9.3.2: MTC-022CS heating at 300S

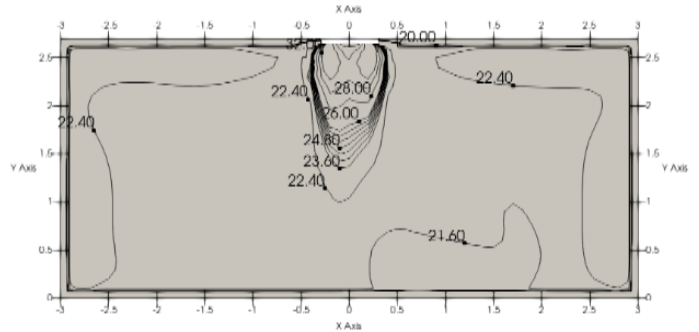


Figure 9.3.3: MTC-028CS cooling at 300S

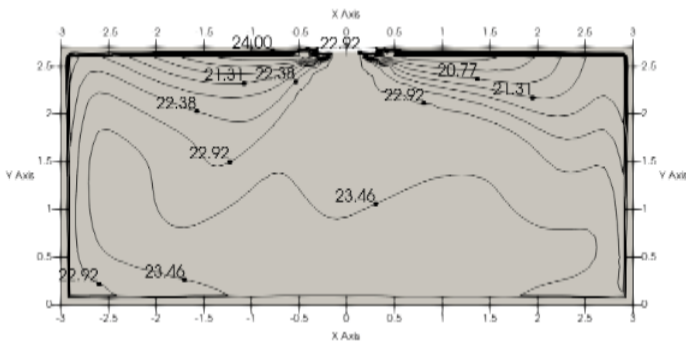


Figure 9.3.4: MTC-028CS heating at 300S

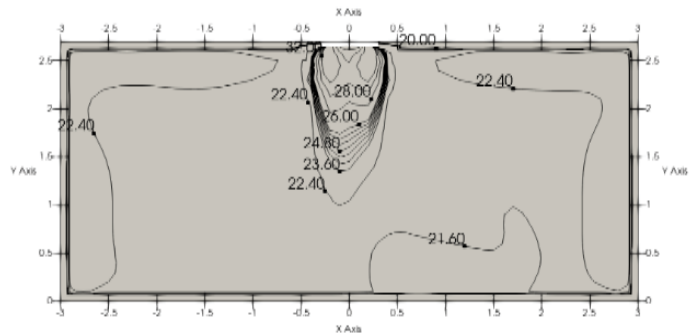


Figure 9.3.5: MTC-036CS cooling at 300S

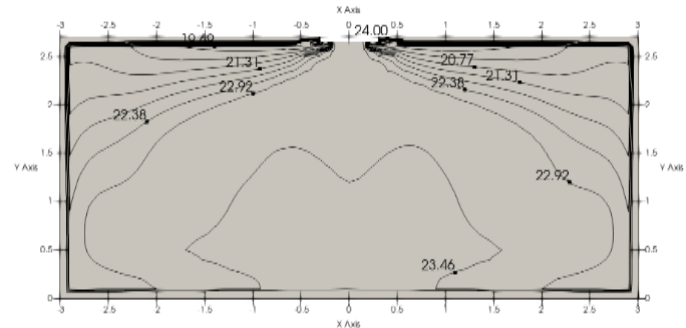


Figure 9.3.6: MTC-036CS heating at 300S

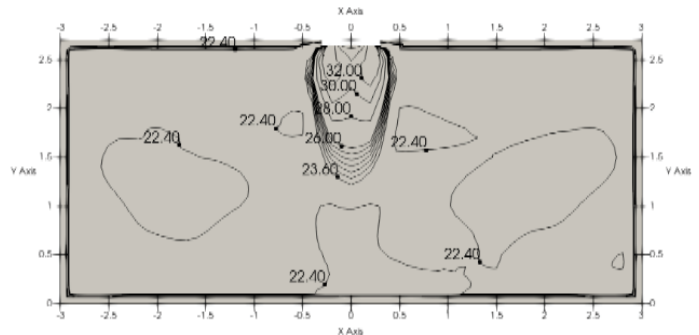


Figure 9.3.7: MTC-045CS cooling at 300S

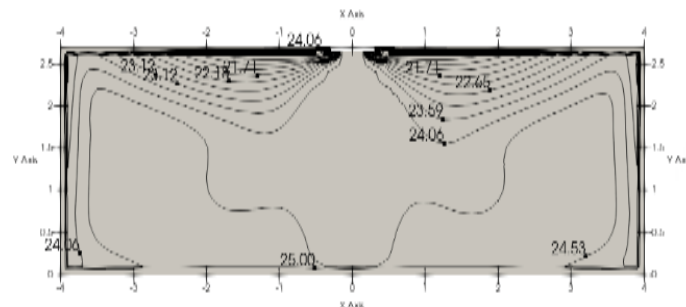


Figure 9.3.8: MTC-045CS heating at 300S

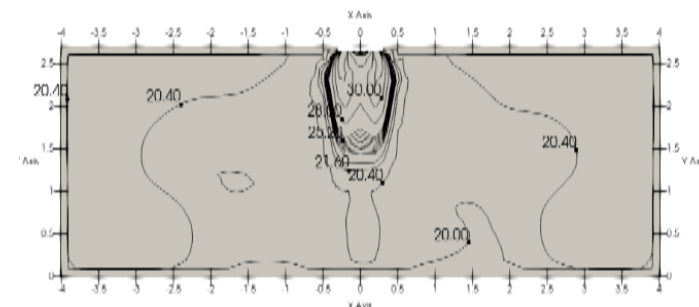


Figure 9.3.9: MTC-056CS cooling at 300S

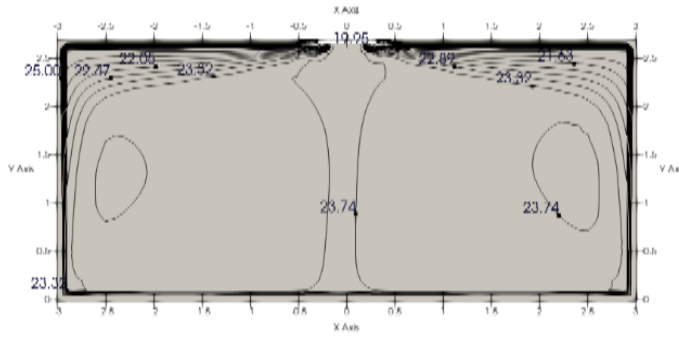


Figure 9.3.10: MTC-056CS heating at 300S

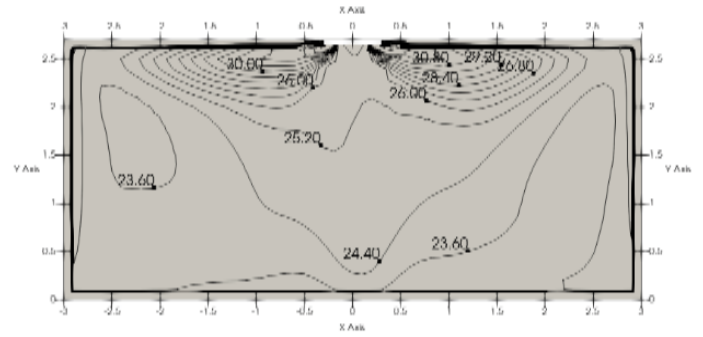


Figure 9.3.11: MTC-071CS cooling at 300S

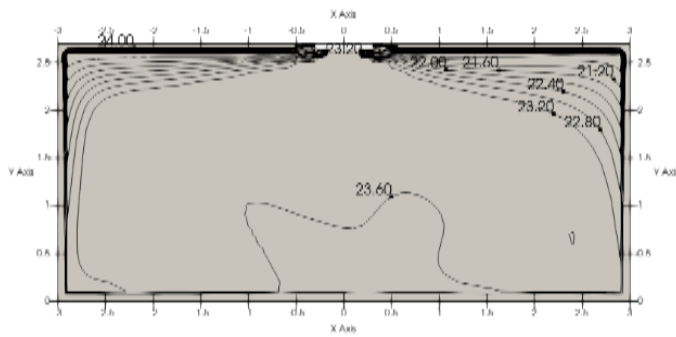
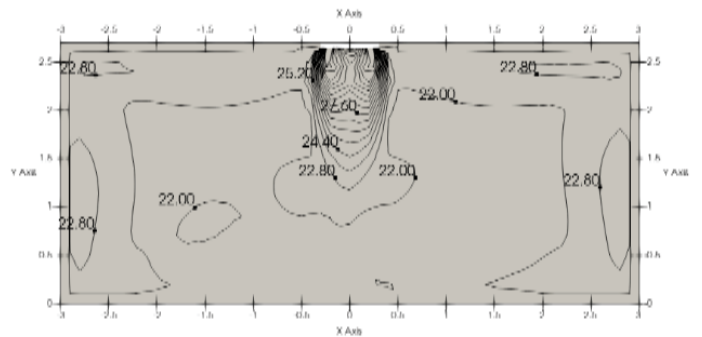


Figure 9.3.12: MTC-071CS heating at 300S





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