45MCFA

Ceiling / Floor Ductless System
Sizes 18K to 58K

Product Data



Fig. 1 – Sizes 18K to 60K

NOTE: Images are for illustration purposes only. Actual models may differ slightly.

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INDUSTRY LEADING FEATURES / BENEFITS

A PERFECT BALANCE BETWEEN BUDGET LIMITS, ENERGY SAVINGS AND COMFORT

The **45MCFA** series ductless system are a matched combination of an outdoor condensing unit and an indoor fan coil unit connected only by refrigerant tubing and wires.

The fan coil can be mounted on the floor or against the wall. This selection of fan coils permits creative solutions to design problems such as:

- **Add-ons to current space (an office or family room addition)**
- **Special space requirements**
- **When changes in the load cannot be handled by the existing system**
- **When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork**
- **Historical renovations or any application where preserving the look of the original structure is essential.**

The ideal compliment to your ducted system when it is impractical or prohibitively expensive to use ductwork.

The compact indoor fan coil units take up very little space in the room and do not obstruct windows. The fan coils are attractively styled to blend with most room decors. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.

LOW SOUND LEVELS

When noise is a concern, the ductless systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork.

SECURE OPERATION

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork. In addition, since outdoor units can be installed close to an outside wall, coils are protected from vandals and severe weather.

SIMPLE SERVICING AND MAINTENANCE

Removing the top panel on the outdoor units provides immediate access to the control compartment, providing a service technician access to check the unit's operation. In addition, the draw-thru design of the outdoor section means that dirt accumulates on the outside surface of the coil. Coils can be cleaned quickly from the inside using a pressure hose and detergent.

On all indoor units, service and maintenance expense is reduced due to easy-to-use cleanable filters. In addition, these console systems have extensive self-diagnostics to assist in troubleshooting.

BUILT-IN RELIABILITY

Ductless system indoor and outdoor units are designed to provide years of trouble-free operation.

The console indoor units include protection against freeze-up and high evaporator temperatures on heat pumps.

The condensing units on heat pumps are protected by a three minute time delay before the compressor starts the over-current protection and the high temperature protection.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on usage pattern. The air sweep feature provided permits optimal room air mixing to eliminate hot and cold spots for occupant comfort. In addition, year-round comfort can be provided with heat pumps.

ECONOMICAL OPERATION

The ductless system design allows individual room heating or cooling when required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

EASY-TO-USE CONTROLS

The console units have microprocessor-based controls to provide the ultimate in comfort and efficiency. The user friendly wireless remote control provides the interface between user and the unit.

EASY 2-STYLE INSTALLATION

Fashionable design and streamline appearance, suitable for different room styles.

3D AIR FLOW

Vertical air flow and horizontal airflow can be adjusted by remote controller to direct air flow to every corner of the room.

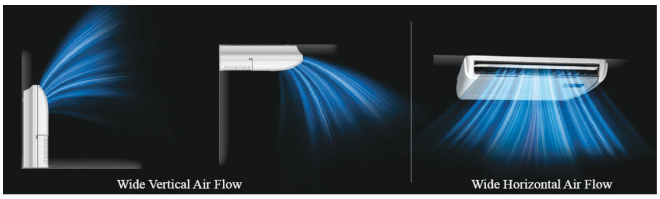


Fig. 2 – Air Flow

EASY MAINTENANCE - UNIVERSAL SPARE PARTS

More than 60% parts and assemblies (such as fan wheel, plastic cases, metal parts etc.) are universal for 3 different bodies, which makes maintenance much easier.

FRESH AIR

Fresh air intake function delivers fresh and comfortable air.

HEALTHY FILTERS (OPTIONAL)

A variety of healthy filters can be selected to repair the machine.

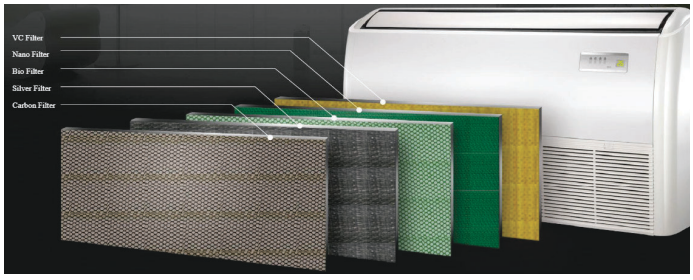


Fig. 3 – Healthy Filters

ACCESSORIES

Customizing these ductless systems to your application is easily accomplished. Adding a condensate pump accessory to the console fan coil provides installation flexibility.

OPTIONAL WIRED CONTROLLER

AGENCY LISTINGS

All systems are listed with AHRI (Air Conditioning, Heating & Refrigeration Institute), and ETL.

R-454B



Refrigerant Safety Group A2L

R-454B

WARNING – Risk of Fire due to Flammable Refrigerant Used. Follow Handling Instructions Carefully in Compliance with National Regulations

SAFETY FEATURES

Compressor three-minute delay at restart

Compressor functions are delayed for up to ten seconds upon the first startup of the unit, and are delayed for up to three minutes upon subsequent unit restarts.

Automatic shutoff based on discharge temperature

If the compressor discharge temperature exceeds a certain level for nine seconds, the compressor ceases operation.

Inverter module protection

The inverter module has an automatic shutoff mechanism based on the unit's current, voltage, and temperature. If automatic shutoff is initiated, the corresponding error code is displayed on the indoor unit and the unit ceases operation.

Indoor fan delayed operation

- **When the unit starts, the louver is automatically activated and the indoor fan will operate after a period of setting time or the louver is in place.**
- **If the unit is in heating mode, the indoor fan is regulated by the anti-cold wind function.**

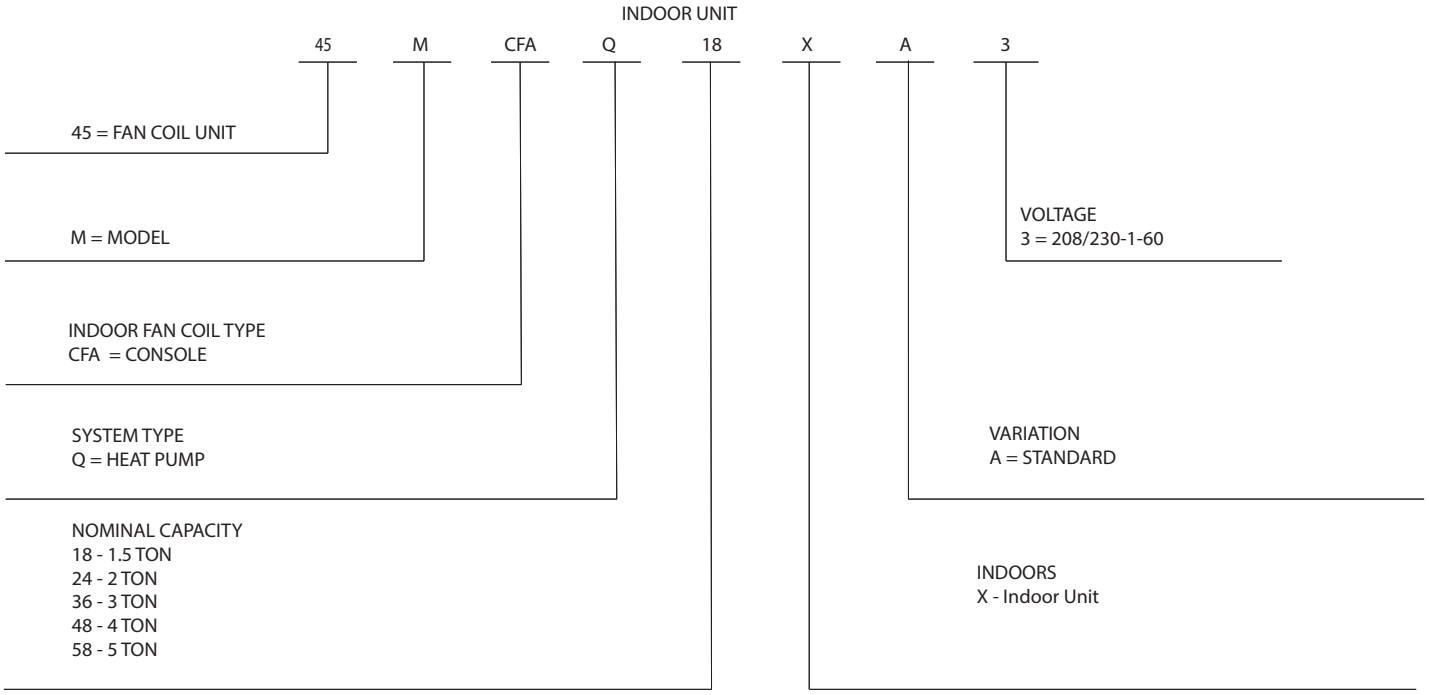
Compressor preheating

Preheating is automatically activated when T4 sensor is lower than setting temperature.

Sensor redundancy and automatic shutoff

- **If one temperature sensor malfunctions, the air conditioner continues operation and displays the corresponding error code, allowing for emergency use.**
- **When more than one temperature sensor is malfunctioning, the air conditioner ceases operation.**

MODEL NUMBER NOMENCLATURE



AHRI CERTIFIED www.ahridirectory.org

Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

INTERTEK ETL LISTED C US

A230164

STANDARD FEATURES AND ACCESSORIES

EASE OF INSTALLATION	
Mounting Brackets	S
Low Voltage Controls	S
Floor Mounting Installation	S
Ceiling Installation	S
COMFORT FEATURES	
Microprocessor Controls	S
Wired Remote Control	A
Wireless Remote Control	S
Wi-Fi Remote Control (Dongle Only with Built-In USB)	A
Automatic Up-Down Air Sweep	S
Air Direction Control	S
Auto Restart Function	S
Cold Blow Protection On Heat Pumps	S
Freeze Protection Mode On Heat Pumps	S
Turbo Mode	S
Humidity Sensor	S
Silence Mode	S
Auto Changeover On Heat Pumps	S
Follow Me	S
ENERGY SAVING FEATURES	
Sleep Mode	S
Stop/Start Timer	S
46° F Heating Mode (Heating Setback)	S
SAFETY AND RELIABILITY	
Leak Mitigation Sensor	S
Indoor Coil Freeze Protection	S
Aluminum Golden Hydrophilic pre-coated fins	S
Indoor Coil High Temp Protection in Heating Mode	S
EASE OF SERVICE AND MAINTENANCE	
Cleanable Filters	S
Diagnostics	S
Liquid Line Pressure Taps	S
APPLICATION FLEXIBILITY	
Condensate Pumps	A

Legend

S - Standard

A - Accessory

Table 1 – Accessories

MODEL NO.	DESCRIPTION	FOR MODELS
KSACN1201AAA	Wired Non-Programmable Controller	All Sizes
KSACN1401AAA	Wired Programmable Controller	All Sizes

NOTE: There is no WIFI kit for this unit.

FAN MODE

When fan mode is activated:

- **The outdoor fan and compressor are stopped.**
- **Temperature control is disabled and no temperature setting is displayed.**
- **The indoor fan speed can be set to 1%~100% and auto.**
- **The louver operations are identical to those in COOLING mode.**
- **Auto fan: In fan-only mode, AC operates the same as auto fan in cooling mode with the temperature set at 75°F(24°C).**

COOLING MODE

Indoor Fan Control

1. In the **COOLING** mode, the indoor fan operates continuously. The fan speed can be set 1% to 100%, or low, medium, high and auto.
2. Auto fan action in cooling mode:

- **Descent Curve**
  - When T1-Tsc is lower than to 6.3°F/3.5°C, fan speed reduces to 80%.
  - When T1-Tsc is lower than to 1.8°F/1°C, fan speed reduces to 60%.
  - When T1-Tsc is lower than to 0.9°F/0.5°C, fan speed reduces to 40%.
  - When T1-Tsc is lower than to 0°F/0°C, fan speed reduces to 20%.
  - When T1-Tsc is lower than to -0.9°F/-0.5°C, fan speed reduces to 1%.
- **Rise Curve**
  - When T1-Tsc is higher than or equal 0°F/0°C, fan speed increases to 20%.
  - When T1-Tsc is higher than or equal 0.9°F/0.5°C, fan speed increases to 40%.
  - When T1-Tsc is higher than or equal 1.8°F/1°C, fan speed increases to 60%.
  - When T1-Tsc is higher than or equal 2.7°F/1.5°C, fan speed increases to 80%.
  - When T1-Tsc is higher than or equal 7.2°F/4°C, fan speed increases to 100%.

CONDENSER TEMPERATURE PROTECTION

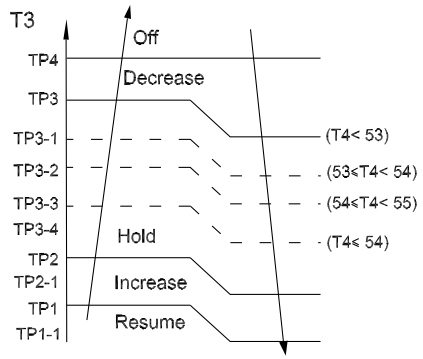


Fig. 4 – Condenser Temperature Protection

When the condenser temperature exceeds a configured value, the compressor ceases operation.

EVAPORATOR TEMPERATURE PROTECTION

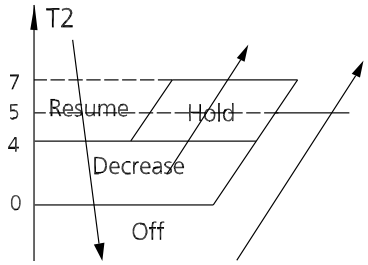


Fig. 5 – Evaporator Temperature Protection

- **Off:**
- **Decrease:** Decrease the running frequency to the lower level per 1 minute**.**
- **Hold:** Keep the current frequency.
- **Resume:** No limitation for frequency.

HEATING MODE (Heat Pump Units)

Indoor Fan Control:

1. In the **HEATING** mode, the indoor fan operates continuously. The fan speed can be set to 1%-100% and auto.

• Anti-cold air function

• If the temperature difference of T2 changes during auto fan and causes the fan speed to change, run the current fan speed for 30 seconds first, the default interval is the interval before the fan speed changes, and then judge T2 according to the current interval after 30 seconds to get the final anti-cold air interval.

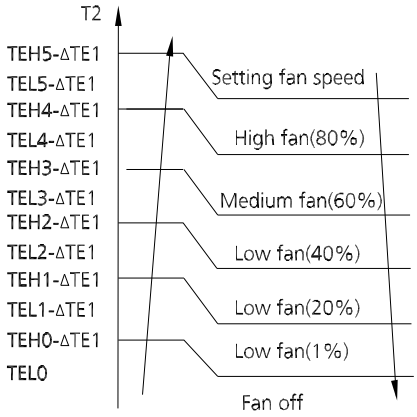


Fig. 6 – Indoor Fan Control

ΔTE1=0

2. Auto fan action in heating mode:

- **Rise curve**

• When T1-Tsc is higher than -2.7°F/-1.5°C,, fan speed reduces to 80%;

• When T1-Tsc is higher than 0°F/0°C, fan speed reduces to 60%;

• When T1-Tsc is higher than /0.9°F/0.5°C, fan speed reduces to 40%;

• When T1-Tsc is higher than 1.8°F/1°C, fan speed reduces to 20%.

- **Descent curve**

• When T1-Tsc is lower than or equal to 0.9°F/0.5°C, fan speed increases to 40%;

• When T1-Tsc is lower than or equal to 0°F/0°C, fan speed increases to 60%;

• When T1-Tsc is lower than or equal to -2.7°F/-1.5°C,, fan speed increases to 80%;

• When T1-Tsc is lower than or equal to -5.4°F/-3°C, fan speed increases to 100%.

EVAPORATOR COIL TEMPERATURE PROTECTION

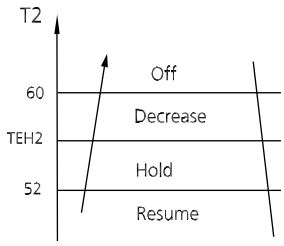


Fig. 7 – Evaporator Coil Temperature Protection

- **Off:** Compressor stops.
- **Decrease:** Decrease the running frequency to the lower level per 20 seconds.
- **Hold:** Keep the current frequency.
- **Resume:** No limitation for frequency.

AUTO-MODE

- **This mode can be selected with the remote controller and the temperature setting can be adjusted between 60.8°F(16°C)~86°F(30°C).**

In **AUTO-Mode**, the machine selects **COOLING**, **HEATING** or **FAN-ONLY** mode on the basis of T1,Ts and outdoor ambient temperature(T4).

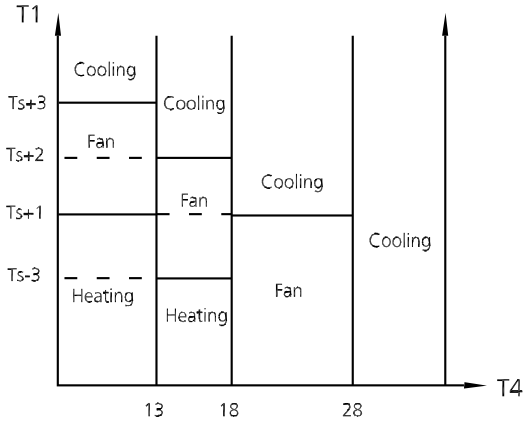


Fig. 8 – Auto Mode

DRYING MODE

- In the **DRYING** mode, the unit operates the same as auto fan in the **COOLING** mode.
- All protections are activated and operate the same as they do that in the **COOLING** mode.
- Low Room Temperature Protection: If the room temperature is lower than 50°F/10°C, the compressor ceases operations and does not resume until room temperature exceeds 53.6°F/12°C.

FORCED OPERATION FUNCTION

Press **AUTO/COOL,** the unit will run in the following sequence:

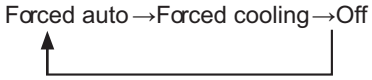


Fig. 9 — Forced Operation Sequence

- **Forced cooling mode:**

The compressor and outdoor fan continue to run and the indoor fan runs

at breeze speed. After running for 30 minutes, the unit switches to **AUTO-Mode** mode with a preset temperature of 76°F(24°C).

- **Forced AUTO-Mode:**

Forced **AUTO-Mode** operates the same as normal **AUTO - Mode** with a preset temperature of 76°F(24°C).

The unit exits forced operation when it receives the following signals:

- **Switch off**
- **Changes in:**
  - mode
  - fan speed
  - sleep mode
  - Follow Me

TIMER FUNCTION

The timing range is 24 hours.

- **Timer On.** The machine turns on automatically at the preset time.
- **Timer Off.** The machine turns off automatically at the preset time.
- **Timer On/Off.** The machine turns on automatically at the preset On Time, and then turns off automatically at the preset Off Time.
- **Timer Off/On.** The machine turns off automatically at the preset Off Time and then turns on automatically at the preset On Time.
- The timer does not change the unit operation mode. If the unit is off now, it does not start up immediately after the "timer off" function is set. When the setting time is reached, the timer LED switches off and the unit running mode remains unchanged.
- The timer uses relative time, not clock time.

SLEEP

The **SLEEP** function is available in **COOLING**, **HEATING**, or **AUTO-Mode**.The operational process for sleep mode is as follows:

- When COOLING, the temperature rises 1.8°F/1°C (to not higher than 86°F/30°C) every hour. After 2 hours, the temperature stops rising and the indoor fan is fixed at low speed.
- When HEATING, the temperature decreases 1.8°F/1°C (to not lower than 60.8°F/16°C) every hour. After 2 hours, the temperature stops decreasing and the indoor fan is fixed at low speed. Anti-cold wind function takes priority.
- The operating time for sleep mode is 8 hours, after which, the unit exits this mode.
- The timer setting is available in this mode.

AUTO-RESTART

The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings and in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.

46.4°F (8°C) HEATING (Heat pump units)

In the **HEATING** mode, the temperature can be set to as low as 46.4°F (8°C), preventing the indoor area from freezing if unoccupied during severe cold weather.

FOLLOW ME

Once **FOLLOW ME** is active, the remote control will send a signal every 3 minutes, with no beeps. The unit automatically sets the temperature according to the measurements from the remote control.

The unit will only change modes if the information from the remote control makes it necessary, not from the unit's temperature setting.

If the unit does not receive a signal for 7 minutes or you press **"Follow Me,"** the function turns off. The unit regulates temperature based on its own sensor and settings.

OPTIONAL FUNCTIONS

SILENCE

NOTE: Multi-Zone systems do not have this function.
To activate press "Silence" or keep pressing **FAN** for more than 2 seconds on the remote control to enable the **SILENCE** function. While this **SILENCE** is active, the compressor frequency is maintained at a lower level than F3. The indoor unit run at faint breeze (1%), which reduces noise to the lowest possible level. When matched with multi outdoor unit, this function is disabled.

ECO

NOTE: Multi-Zone systems do not have this function.
Used to enter the energy efficient mode.

Under the **COOLING** mode, press **ECO**, the remote controller will adjust the temperature automatically to 75°F/24°C, fan speed of **AUTO** to save energy (however only if the set temperature is less than 75°F/24°C). If the set temperature is more than 75°F/24°C and 86°F/30°C, press **ECO**, the fan speed will change to **AUTO**, the set temperature will remain unchanged. When pressing **ECO**, or modifying the mode or adjusting the set temperature to less than 75°F/24°C, the unit will quit the **ECO** operation. Operation time in the **ECO** mode is 8 hours. After 8 hours the unit exits this mode.

PART NAMES

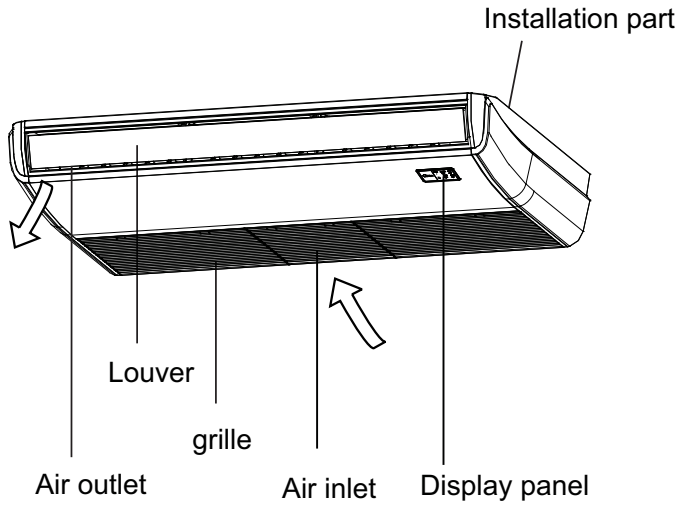
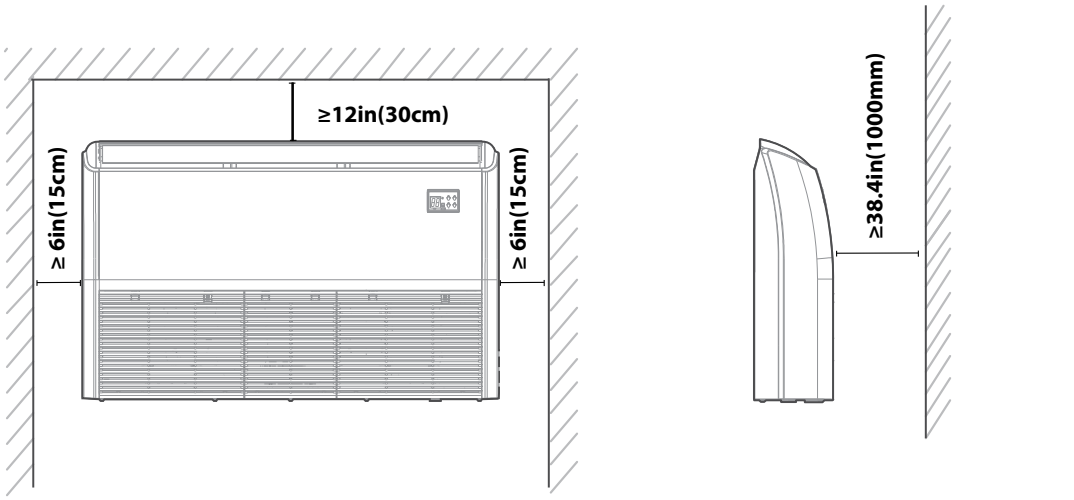
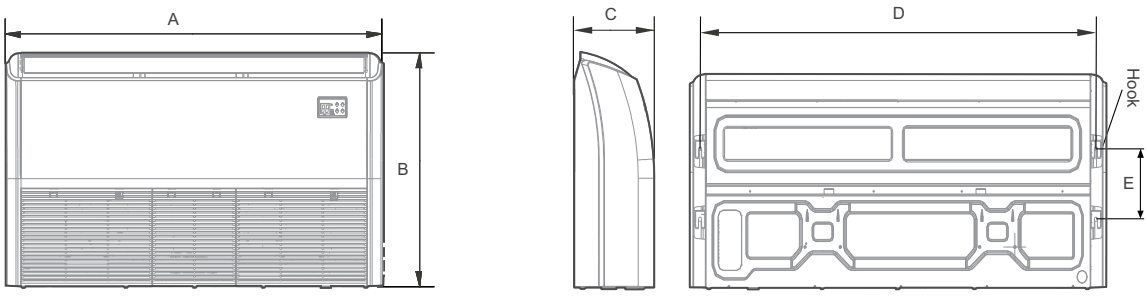


Fig. 10 – Part Names

DIMENSIONS AND CLEARANCES



Indoor parts installation size



A230161

Fig. 11 – Dimensions and Clearances

Table 2 – Dimensions

MODEL	UNIT	A	B	C	D
18K-24K	inch	42.05	26.57	9.25	38.7
	mm	1068	675	235	983
36K-60K	inch	64.96	26.57	9.25	61.61
	mm	1650	675	235	1565

SPECIFICATIONS

Table 3 – Specifications

SIZE			18K	24K	36K	48K	58K
INDOOR MODEL NUMBER			45MCFAQ18XA3	45MCFAQ24XA3	45MCFAQ36XA3	45MCFAQ48XA3	45MCFAQ58XA3
Power Supply		V;Ph;Hz	208/230V;1Ph;60HZ				
INDOOR FAN SPECIFICATIONS	Material	-	ABS	ABS	ABS	ABS	ABS
	Type	-	LX-154*162*12-41J				
	Diameter	inch	6.1	6.1	6.1	6.1	6.1
		mm	154	154	154	154	154
	Height	inch	6.4	6.4	6.4	6.4	6.4
		mm	162	162	162	162	162
INDOOR MOTOR SPECIFICATIONS	Model	-	ZKFN-90-8-1	ZKFN-90-8-1	ZKFN-90-8-1	ZKFN-90-8-1	ZKFN-160-8-1-2
	Type	-	DC	DC	DC	DC	DC
	Input	W	53.0	68.0	53.0	68.0	200.0
	Max. input	W	98.0	98.0	98.0	98.0	200.0
	Output	W	39.8	51	39.8	51	150
	FLA	A	1	1	1	1	2
	Rated HP	HP	0.05	0.107	0.05	0.07	0.20
	Range of current	Amps	0.55~0.94	0.55~0.94	0.55~0.94	0.55~0.94	1.15~1.65
	Rated current	Amps	0.55	0.69	0.55	0.69	1.65
	Speed	rev/min	950 / 850 / 750	1200 / 1075 / 825	1110 / 1020 / 930	1210 / 1120 / 940	1290 / 1180 / 960
	Rated RPM	rev/min	950	1200	1120	1210	1290
	Insulation class	-	E	E	E	E	B
	Safe class	-	IPX0	IPX0	IPX0	IPX0	IP40
INDOOR REFRIGERANT COIL SPECIFICATIONS	Number of rows	Rows	2	3	3	3	4
	Tube outside diameter	inch	0.276	0.276	0.276	0.276	0.276
		mm	Φ7	Φ7	Φ7	Φ7	Φ7
	Nominal Tube Wall	Inch (mm)	0.0094 (0.24)	0.0094 (0.24)	0.0094 (0.24)	0.0094 (0.24)	0.0094 (0.24)
	Tube Enhancement	Yes or No	Yes				
	Tube Material		Copper				
	Tube pitch (a) x row pitch (b)	inch	0.83 x 0.53	0.83 x 0.53	0.83 x 0.53	0.83 x 0.53	0.83 x 0.53
		mm	21 x 13.37	21 x 13.37	21 x 13.37	21 x 13.37	21 x 13.37
	Fin Spacing	FPI	20	20	20	20	20
		mm	1.3	1.3	1.3	1.3	1.3
	Fin type		Louvered				
	Fin Material		Gold hydrophilic aluminum				
	Coil length x height x width	inch	31.3 x 11.57 x 1.05	31.3 x 11.57 x 1.58	51.18 x 11.57 x 1.58	51.18 x 11.57 x 1.58	54.13 x 21.5 x 2.11
		mm	79 5 x 294 x 26.74	795 x 294 x 40.11	1300 x 294 x 40.11	1300 x 294 x 40.11	1375 x 546 x 53.48
	Face area	ft2	2.52	2.52	4.11	4.11	8.08
	Number of circuits	#	6	7	8	8	12
Sound Data	Indoor Sound Pressure Level dB(A)	Turbo Hi Med Lo Silent	45.0 42.5 39.5 30.5 29.0	51.5 49.0 45.0 34.0 29.0	N\A 51.0 45.5 39.0 35.0	54.0 53.0 48.5 39.0 35.0	N\A 54.5 49.0 42.0 39.0
CFM Data	Indoor Airflow Data CFM	Turbo Hi Med Lo Silent	576.83 547.40 485.60 420.85 N\A	735.75 706.32 606.26 453.22 376.70	1224.29 1088.91 988.85 765.18 653.35	1353.78 1236.06 1083.02 800.50 665.12	1365.55 1236.06 1118.34 882.90 776.95

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Table 3 – Specifications (Continued)

SIZE				18K	24K	36K	48K	58K
INDOOR MODEL NUMBER				45MCFAQ18XA3	45MCFAQ24XA3	45MCFAQ36XA3	45MCFAQ48XA3	45MCFAQ58XA3
Moisture Removal		Dehumidifying Volume L/h		1.73	2.73	3.1	6.32	7.16
ENVIRONMENTAL SPECIFICATIONS	Cooling Operating Range	Indoor Min - Max DB	°F	60~90	60~90	60~90	60~90	60~90
			(°C)	(16~32)	(16~32)	(16~32)	(16~32)	(16~32)
		Indoor Min - Max WB	°F	59-84	59-84	59-84	59-84	59-84
			(°C)	(15-29)	(15-29)	(15-29)	(15-29)	(15-29)
		Outdoor Min - Max DB	°F	-22~122	-22~122	-22~122	-22~122	-22~122
			(°C)	(-30~50)	(-30~50)	(-30~50)	(-30~50)	(-30~50)
	Heating Operating Range	Indoor Min - Max DB	°F	32~101	32~104	32~103	32~103	32~103
			(°C)	(0~30)	(0~30)	(0~30)	(0~30)	(0~30)
		Outdoor Min - Max DB	°F	-22~75	-22~75	-22~75	-22~75	-22~75
			(°C)	(-30~24)	(-30~24)	(-30~24)	(-30~24)	(-30~24)
	Non-operating environment Storage	Temperature range (DB)	°F	-49-140	-49-140	-49-140	-49-140	-49-140
			(°C)	(-45-60)	(-45-60)	(-45-60)	(-45-60)	(-45-60)
	Operation Humidity	%		0-80	0-80	0-80	0-80	0-80
	Ambient Humidity	%		0-80	0-80	0-80	0-80	0-80

*Performance may vary based on the compatible outdoor units. See the respective pages for performance data.

NOTE: See the current compatibility chart for list of indoor unit and outdoor unit match ups.

COMPATIBILITY TABLE

INDOOR UNIT	45MCFA
Single Zone Compatible:	37MARA
Mutli-zone Compatible	37MAHA
	37MGHA
	37MGRA
	37MTRA

APPLICATION DATA

Unit Selection

Select equipment to either match or is slightly less than the anticipated peak load. This provides better humidity control, fewer unit cycles, and less part-load operation.

For units used in spaces with high sensible loads, base equipment selection on unit sensible load, not on total anticipated load. Adjust for anticipated room wet bulb temperature to avoid undersizing equipment.

Unit Mounting (Indoor)

Refer to the unit's installation instructions for further details.

Unit leveling - For reliable operation, units should be level in all planes.

Clearance - Provide adequate clearance for airflow (Fig. 11).

Unit location - Select a location which provides the best air circulation for the room.

These units should be positioned on the floor, against the wall for the best air circulation. The unit return and discharge should not be obstructed by furniture, curtains, or anything which may cause unit short cycling or air recirculation. Place the unit in the middle of the selected wall (if possible). Use an outside wall, if available, to make piping easier, and place the unit so it faces the normal location of room occupants.

Mounting Template

Refer to the unit's installation instructions for further details.

The fan coil units are furnished with mounting to mark the location of the wiring, and refrigeration line hole locations.

Support

Adequate support must be provided to support the weight of the fan coil. Refer to "DIMENSIONS AND CLEARANCES" on page 7 and "SPECIFICATIONS" on page 8 for the fan coil weight and the base unit dimensional drawings for the mounting brackets location.

Table 4 – System Operating Conditions

OPERATING RANGE MIN/MAX °F (°C)		
	COOLING	HEATING
INDOOR DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)

NOTE: Reference the product installation instructions for more information.

Drain Connections

Install drains to meet the local sanitation codes. If adequate gravity drainage cannot be provided, the unit should be equipped with an accessory condensate pump. For the drain size, review "SPECIFICATIONS" on page 8.

Refrigerant Lines

General Refrigerant Line Sizing:

1. The outdoor units are shipped with a full charge of R-454B refrigerant.
2. Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, not more than 36-in (914 mm) should be buried. Provide a minimum 6-in (152 mm) vertical rise to the service valves to prevent refrigerant migration.
3. Both lines must be insulated. Use a minimum of 1/2-in. (12.7 mm) thick insulation. Closed-cell insulation is recommended in all long-line applications.
4. Special consideration should be given to isolating the interconnecting tubing from the building structure. Isolate the tubing so that vibration or noise is not transmitted into the structure.

WIRING

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use Electrical Data table MCA (minimum circuit amps) and MOCP (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively.

Recommended Connection Method for Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied 14/3 stranded wire with ground with a 600 volt insulation rating, power/communication wiring from the outdoor unit to indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are line voltage AC power, one is communication wiring (S) and the other is a ground wire. Wiring between indoor and outdoor unit is polarity sensitive. The use of BX wire is **NOT** recommended.

If installed in a high Electromagnetic field (EMF) area and communication issues exists, a 14/2 stranded shielded wire can be used to replace L2 and (S) between outdoor unit and indoor unit landing the shield onto ground in the outdoor unit only.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Be sure to comply with local codes while running wire from the indoor unit to the outdoor unit.

Every wire must be connected firmly. Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Ensure all wiring is tightly connected.

No wire should touch the refrigerant tubing, compressor or any moving parts.

Disconnecting means must be provided and shall be located within sight and readily accessible from the air conditioner.

Connecting cable with conduit shall be routed through the hole in the conduit panel.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Wires should be sized based on NEC and local codes.

CONTROL SYSTEM

The unit is equipped with a microprocessor control to perform two functions:

1. Provide safety for the system.
2. Control the system and provide optimum levels of comfort and efficiency.

The main microprocessor is located on the control board of the fan coil unit (outdoor units have a microprocessor too) with thermistors located in the fan coil air inlet and on the indoor coil.

Heat pump units have a thermistor on the outdoor coil. These thermistors monitor the system operation to maintain the unit within acceptable parameters and control the operating mode.

Wireless Remote Control

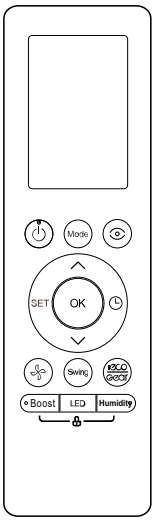


Fig. 12 – Wireless Remote Controller (RG10L4(2S)/BGEFU1)

1. A wireless remote control is supplied for system operation of the console units.
2. Each battery operated wireless (infrared) remote control may be used to control more than one unit.

Wired Remote Control (OPTIONAL)



Fig. 13 – Wired Controller

1. Optional wired remote controller used for system operation of all console units.
2. Kit includes a wired remote controller and a connecting cable.
3. Connect the wire terminal between the remote controller and the indoor unit.
4. Display in °F or °C and increments every 1°F or every 1°C.

NOTE: Extension wire available through RCD (Part Number: 17401204000769)

24V INTERFACE

Thermostat

Allows the Ductless System to be controlled using a Third Party

AIRFLOW DATA

Table 5 – Airflow Data

Size		18K	24K	36K	48K	60K
Indoor Air Flow Data, CFM	Turbo	576.83	735.75	1224.29	1353.78	1365.55
	Hi	547.40	706.32	1088.91	1236.06	1236.06
	Med	485.60	606.26	988.85	1083.02	1118.34
	Lo	420.85	453.22	765.18	800.50	882.90
	Silent	N/A	376.70	653.35	665.12	776.95

SOUND PRESSURE

Table 6 – Indoor Sound Pressure

Size		18K	24K	36K	48K	60K
Indoor Sound Pressure Level, dB(A)	Turbo	45	51.5	N\A	54	N\A
	Hi	42.5	49.0	51.0	53.0	54.5
	Med	39.5	45.0	45.5	48.5	49.0
	Lo	30.5	34.0	39.0	39	42.0
	Silent	29.0	29.0	35.0	35	39.0

SOUND PRESSURE TESTING METHOD

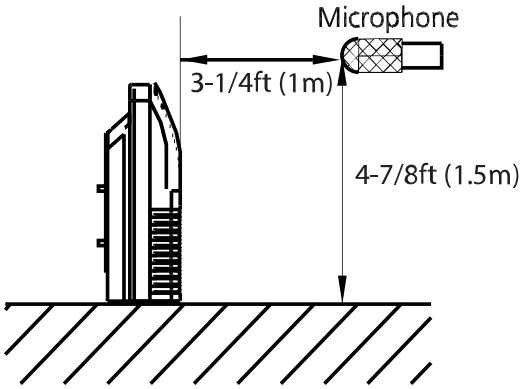


Fig. 14 – Sound Pressure Testing Method – Floor

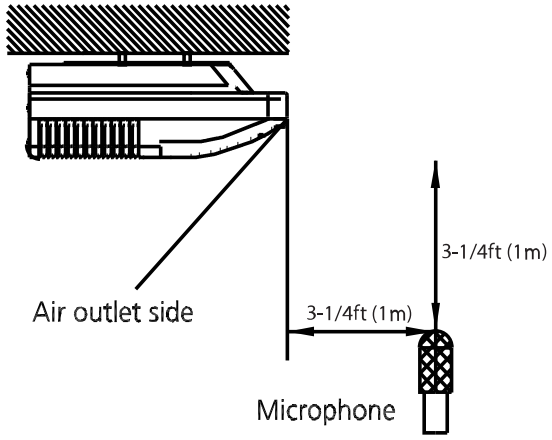


Fig. 15 – Sound Pressure Testing Method – Ceiling

NOTES:

- **Sound measured at 3-1/4ft (1m) away from the center of the unit.**
- **Data is valid at free field condition**
- **Data is valid at nominal operation condition**
- **Reference acoustic pressure OdB = 20µPa**
- **Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room in which the equipment is installed.**

The operating conditions are assumed to be standard.

NOISE CRITERION CURVES

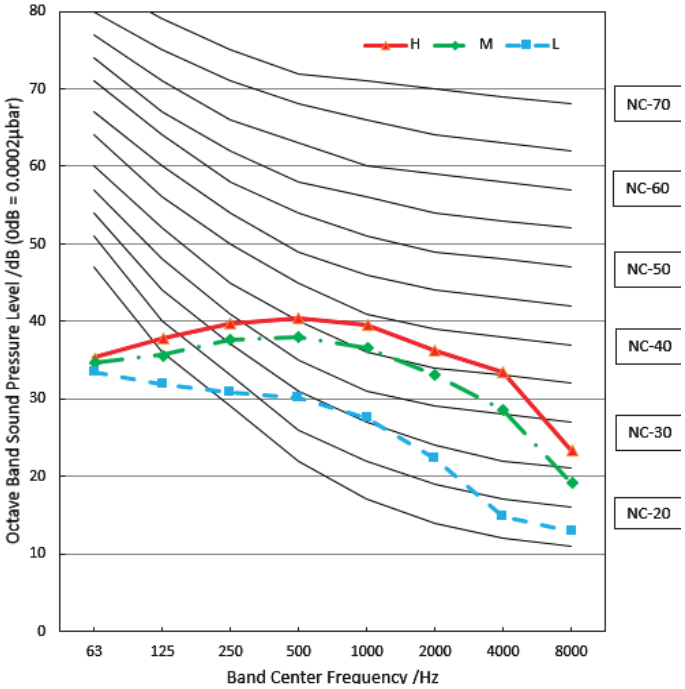


Fig. 16 – Size 18

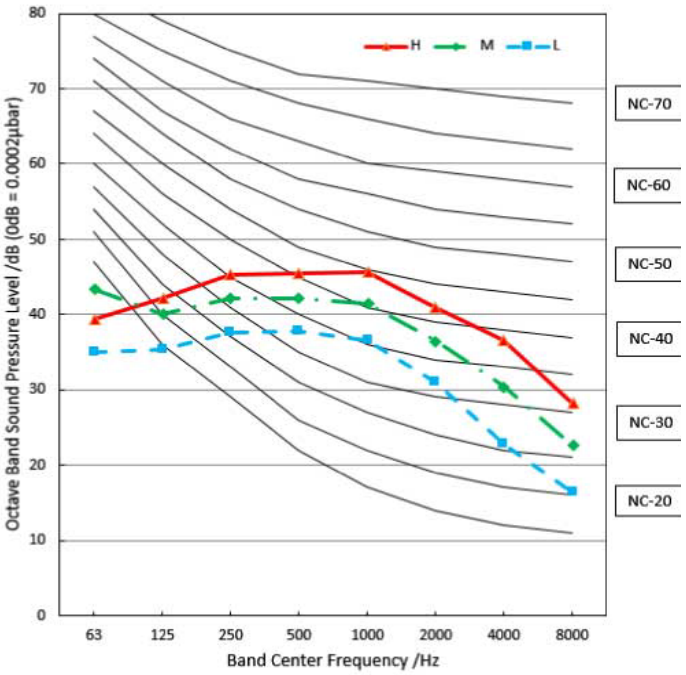


Fig. 18 – Size 36

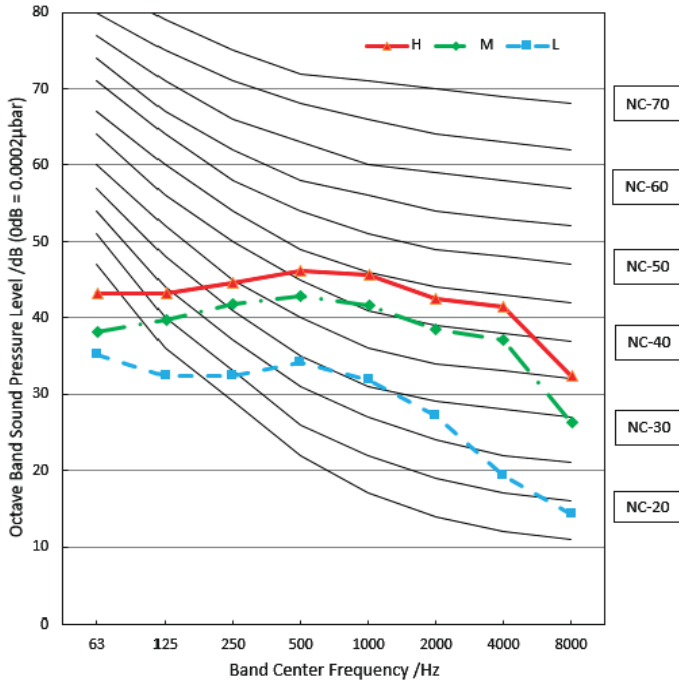


Fig. 17 – Size 24

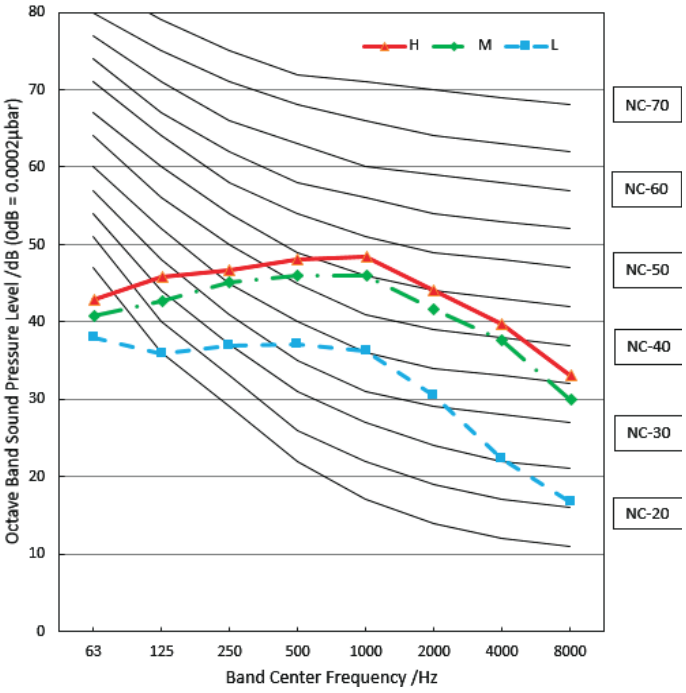


Fig. 19 – Size 48

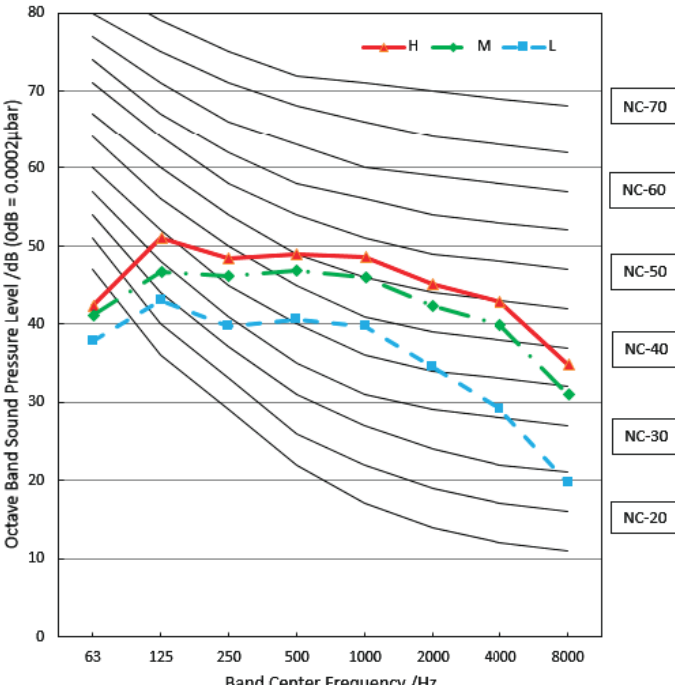


Fig. 20 – Size 58

WIRING DIAGRAMS

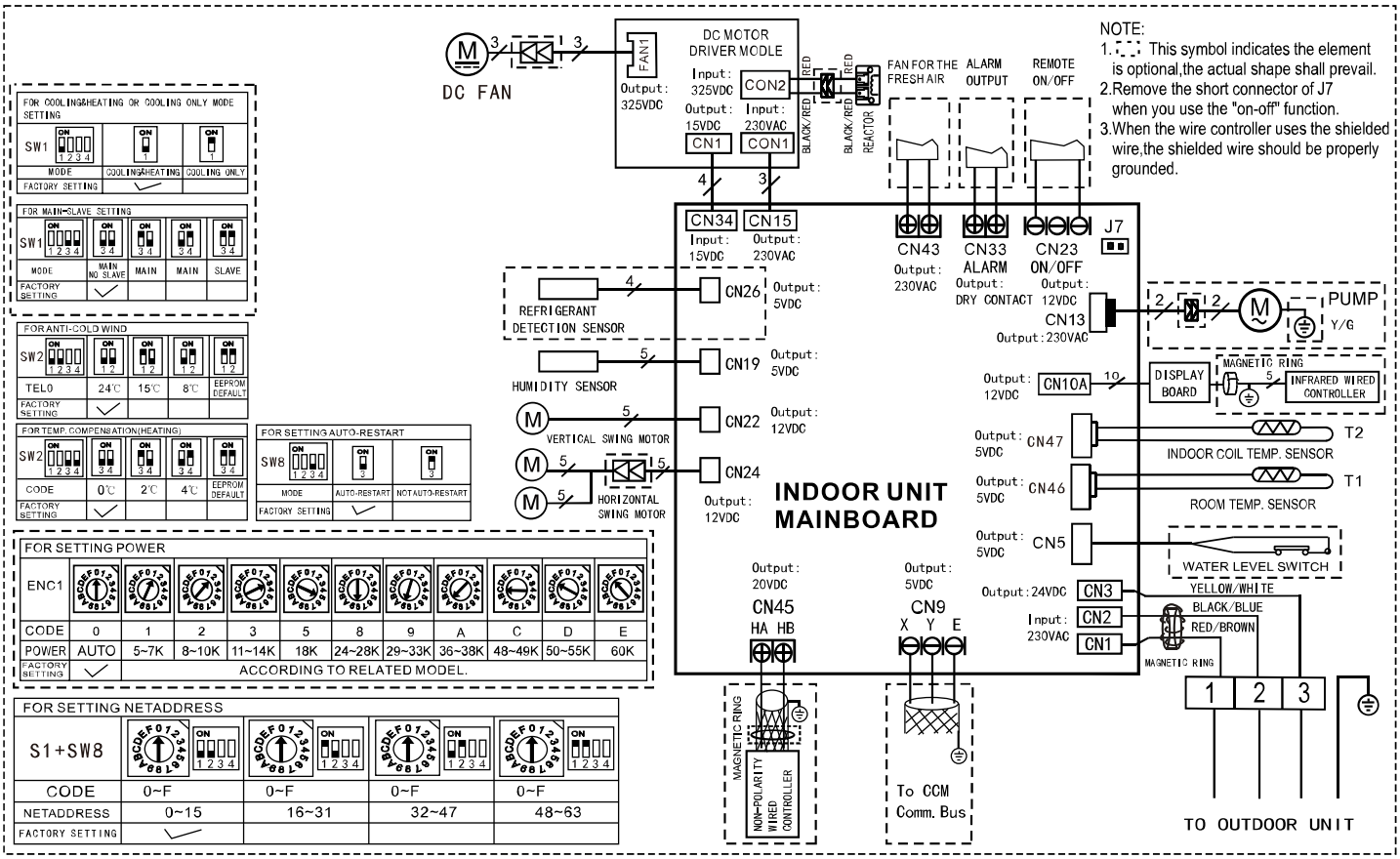


Fig. 21 – Wiring Diagram Sizes 18K, 24K

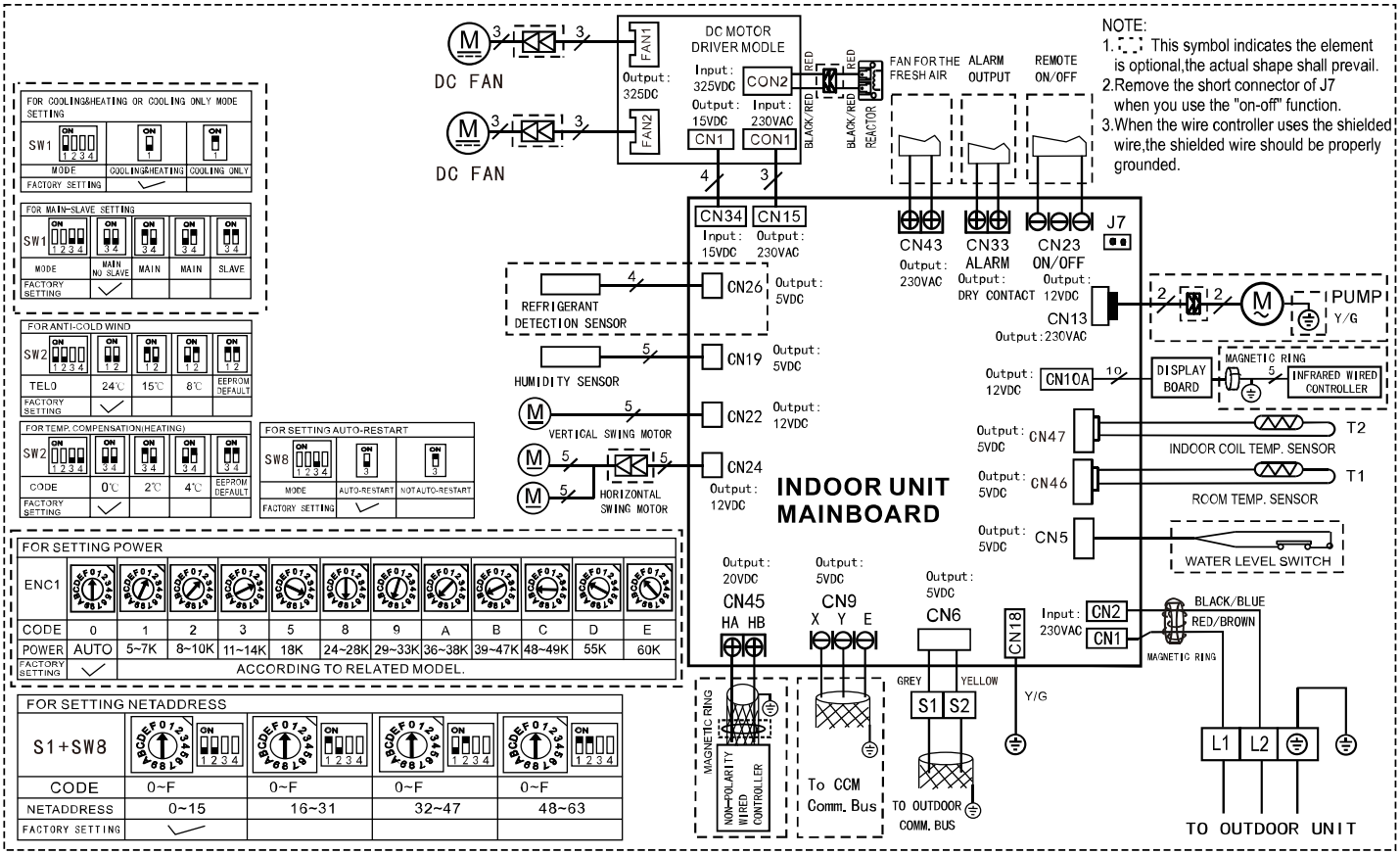


Fig. 22 – Wiring Diagram Sizes 36K, 48K, 60K

CONNECTION DIAGRAMS

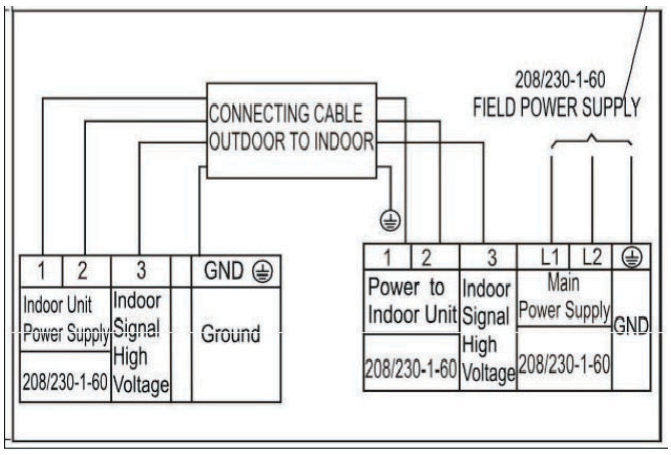


Fig. 23 – 18K, 24K

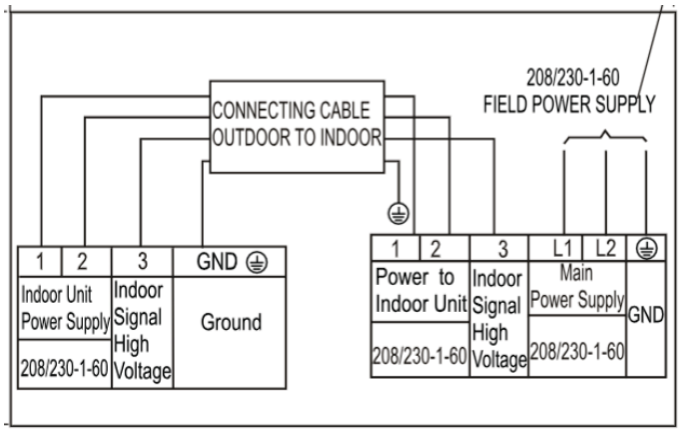


Fig. 24 – 36K, 48K, 60K

AIR VELOCITY AND TEMPERATURE DISTRIBUTIONS

18K – Ceiling Installation:

Discharge Angle 30°

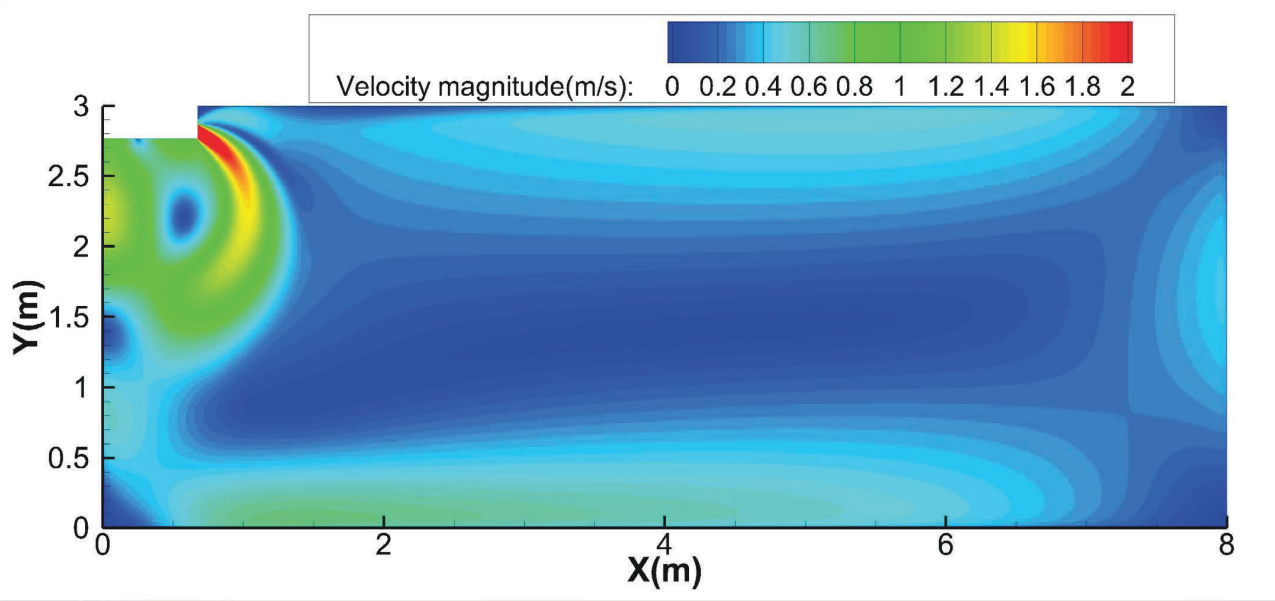


Fig. 25 – Cooling Airflow Velocity Distributions

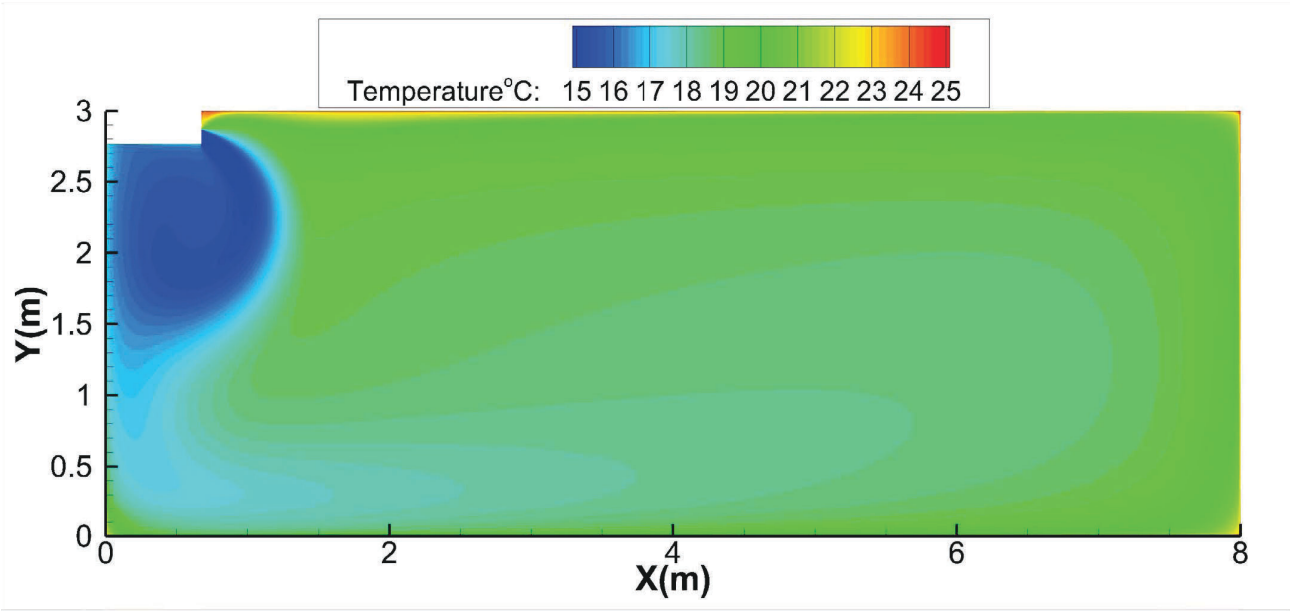


Fig. 26 – Cooling Temperature Distributions

Discharge Angle 60°

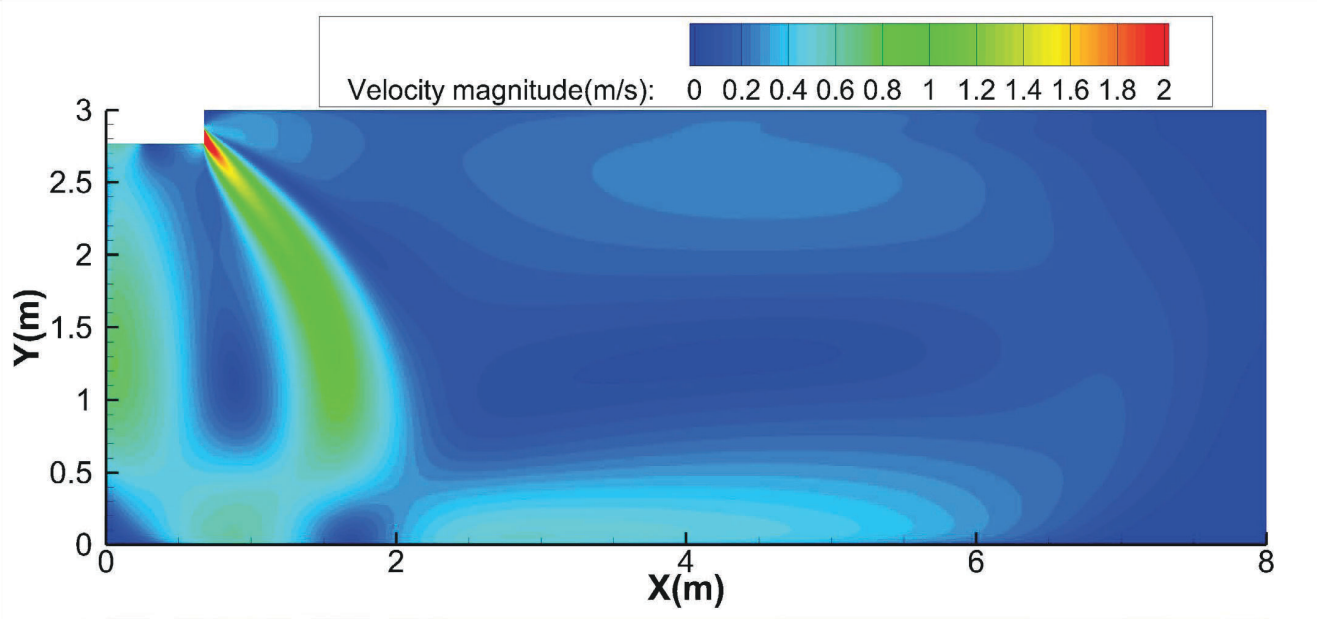


Fig. 27 – Cooling airflow velocity distributions

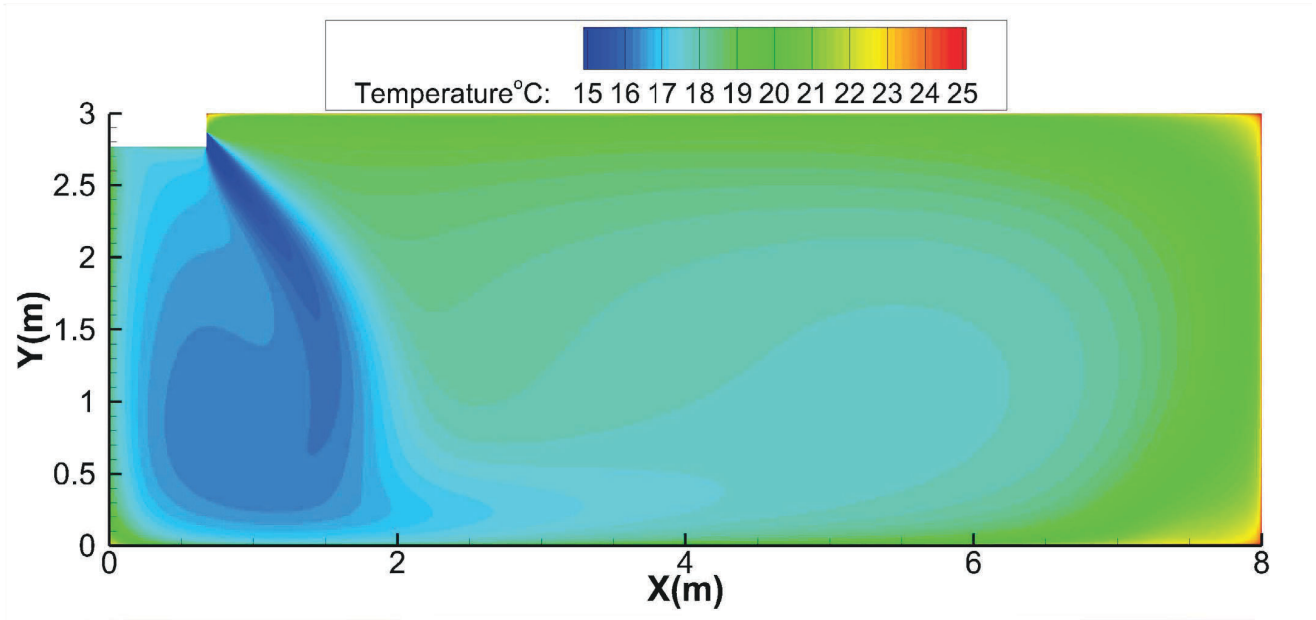


Fig. 28 – Cooling Temperature Distributions

Discharge Angle 30°

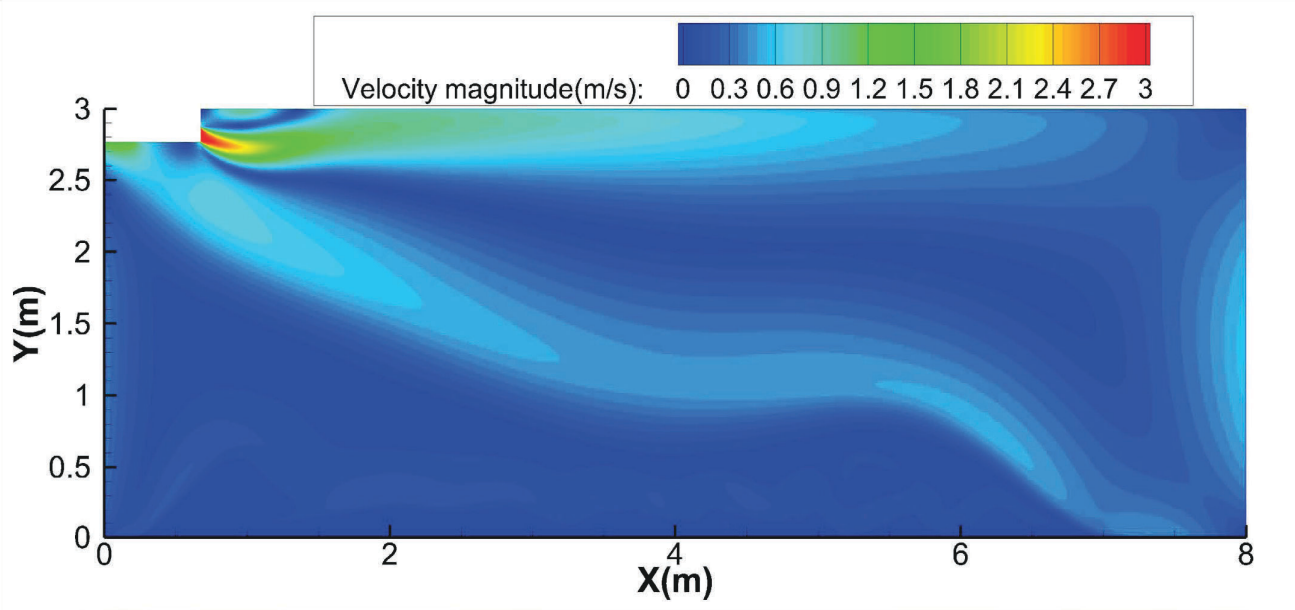


Fig. 29 – Heating airflow velocity distributions

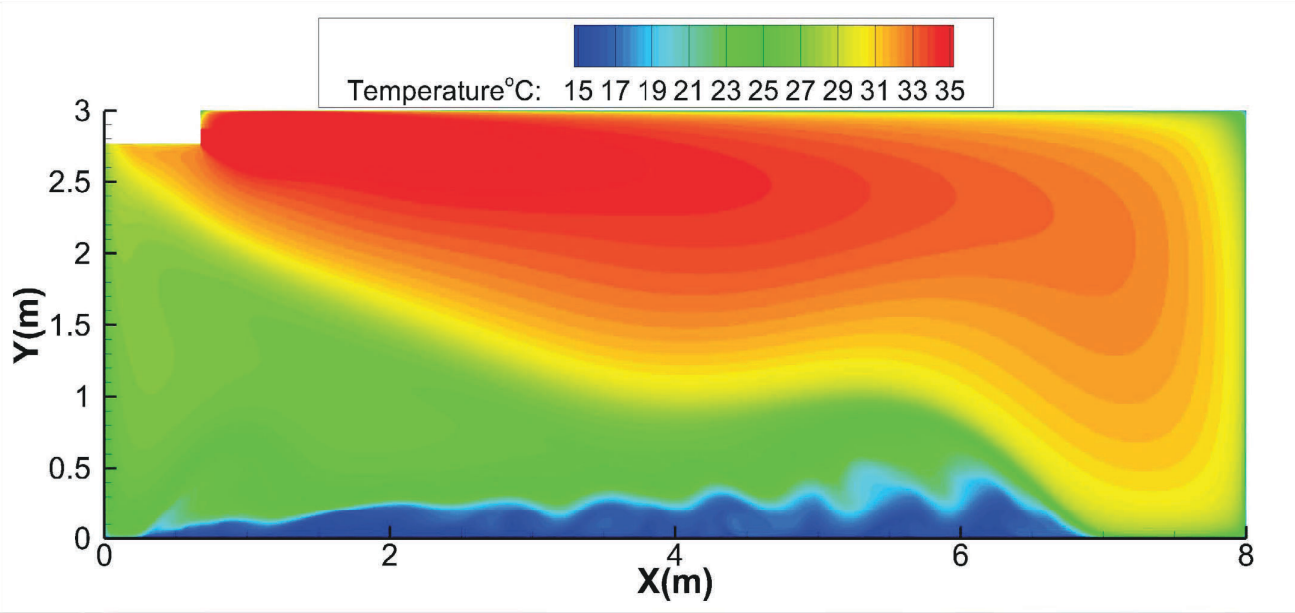


Fig. 30 – Heating Temperature Distributions

Discharge Angle 60°

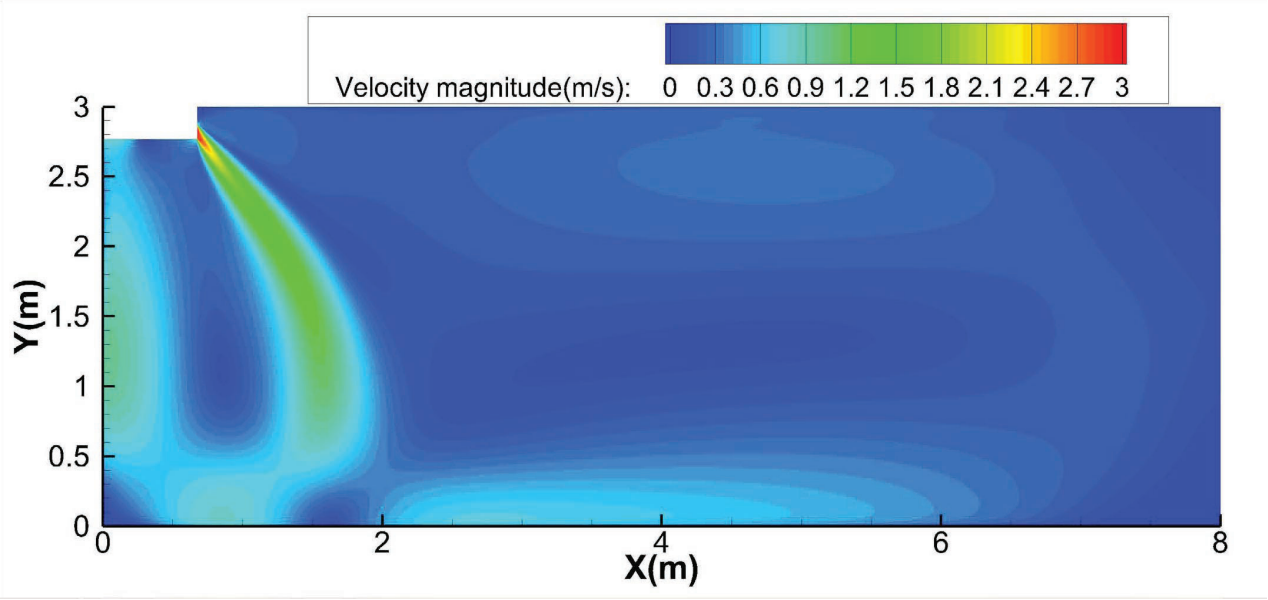


Fig. 31 – Heating Airflow Velocity Distributions

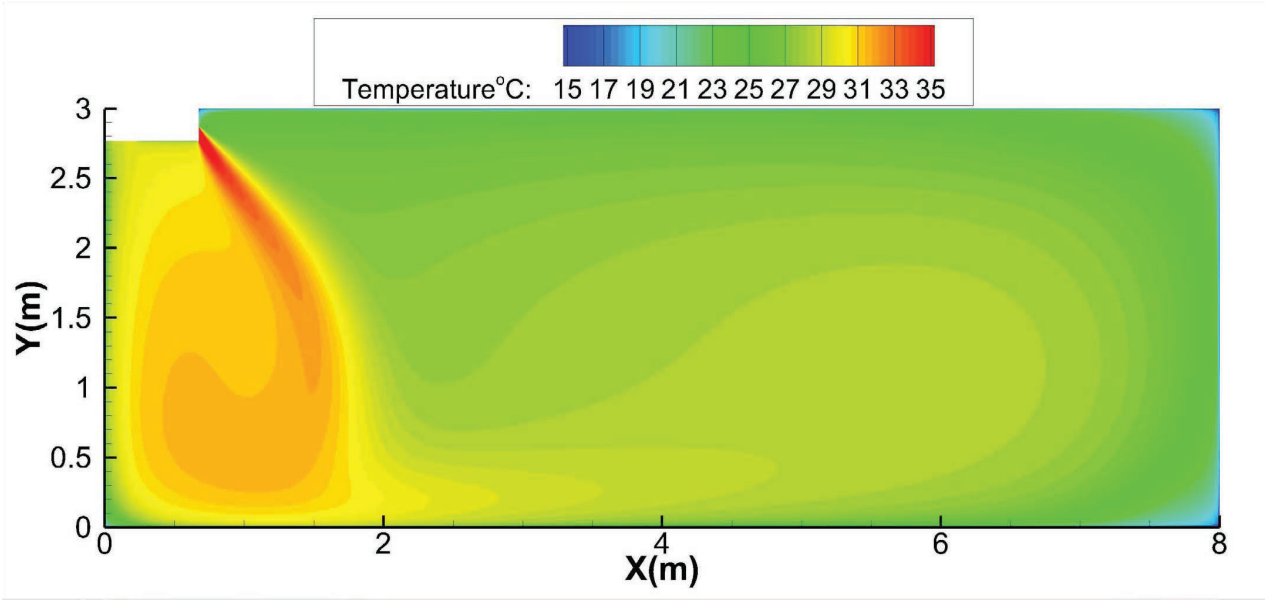


Fig. 32 – Heating Temperature Distributions

18K – Floor Installation

Discharge Angle 30°

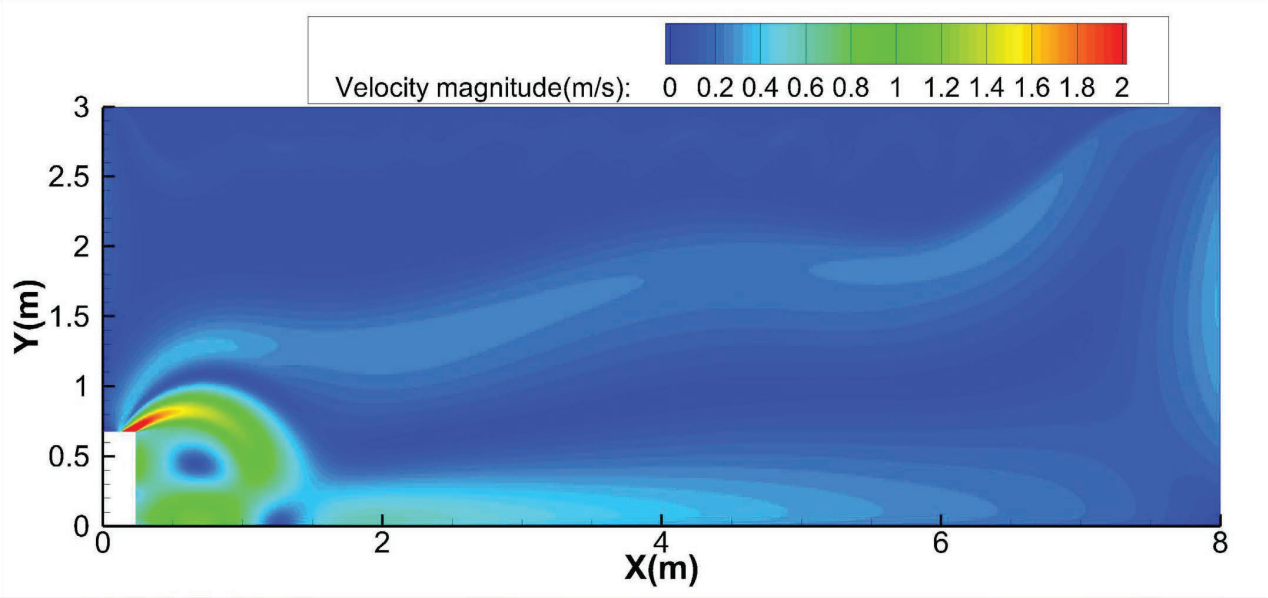


Fig. 33 – Cooling Airflow Velocity Distributions

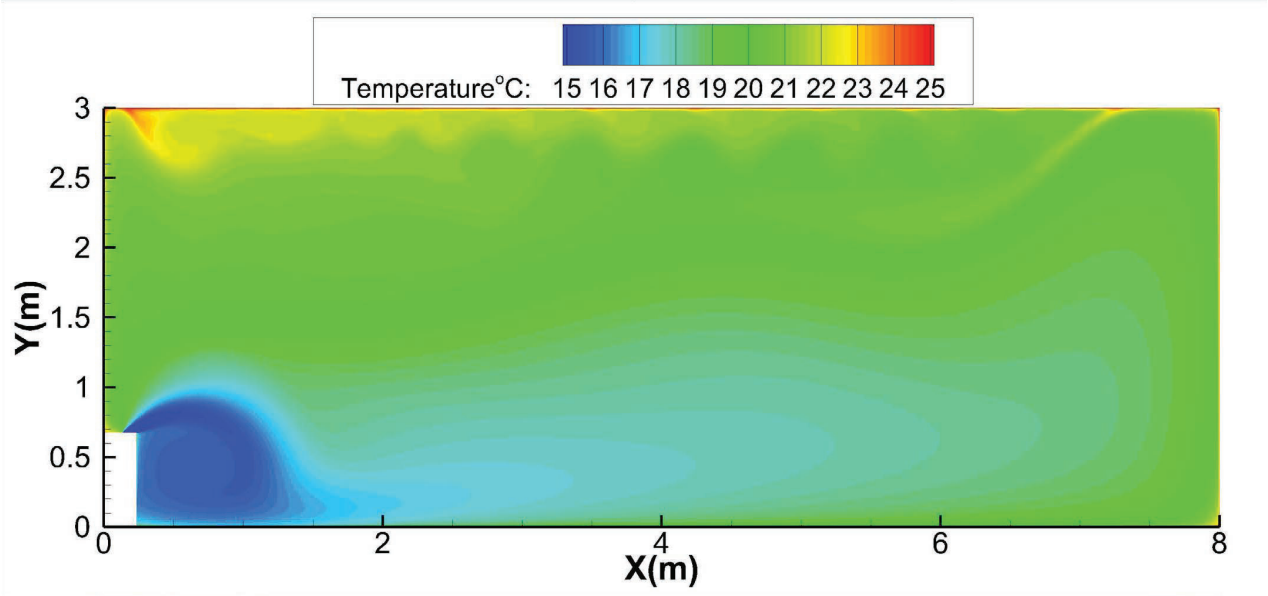


Fig. 34 – Cooling Temperature Distributions

Discharge Angle 60°

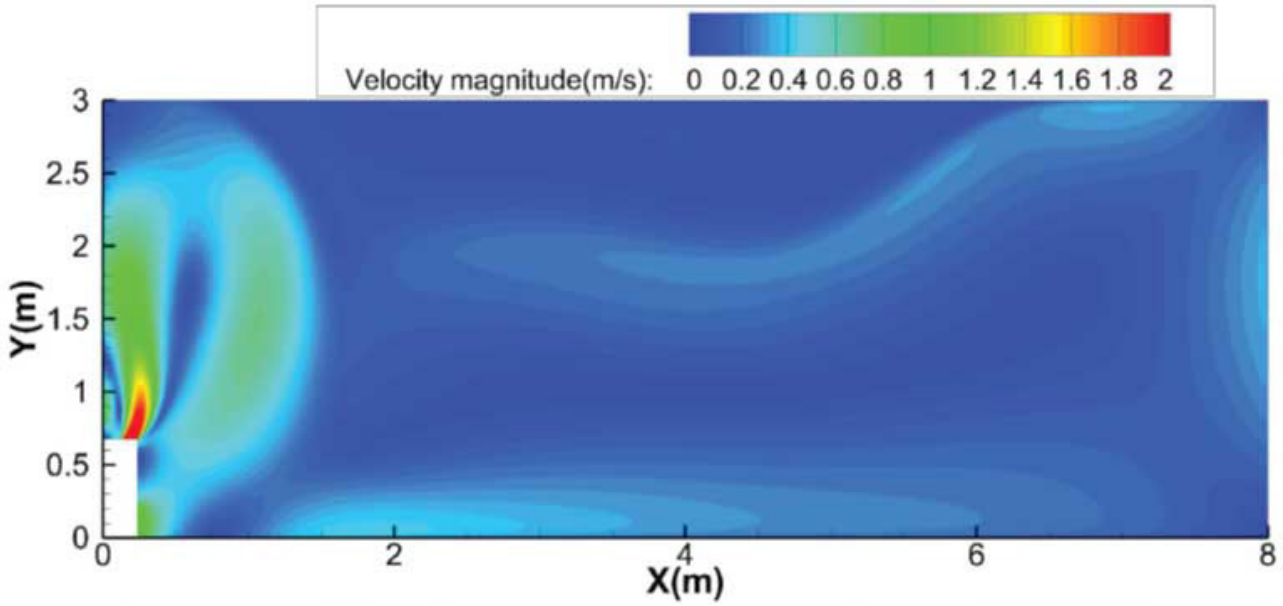


Fig. 35 – Cooling Airflow Velocity Distributions

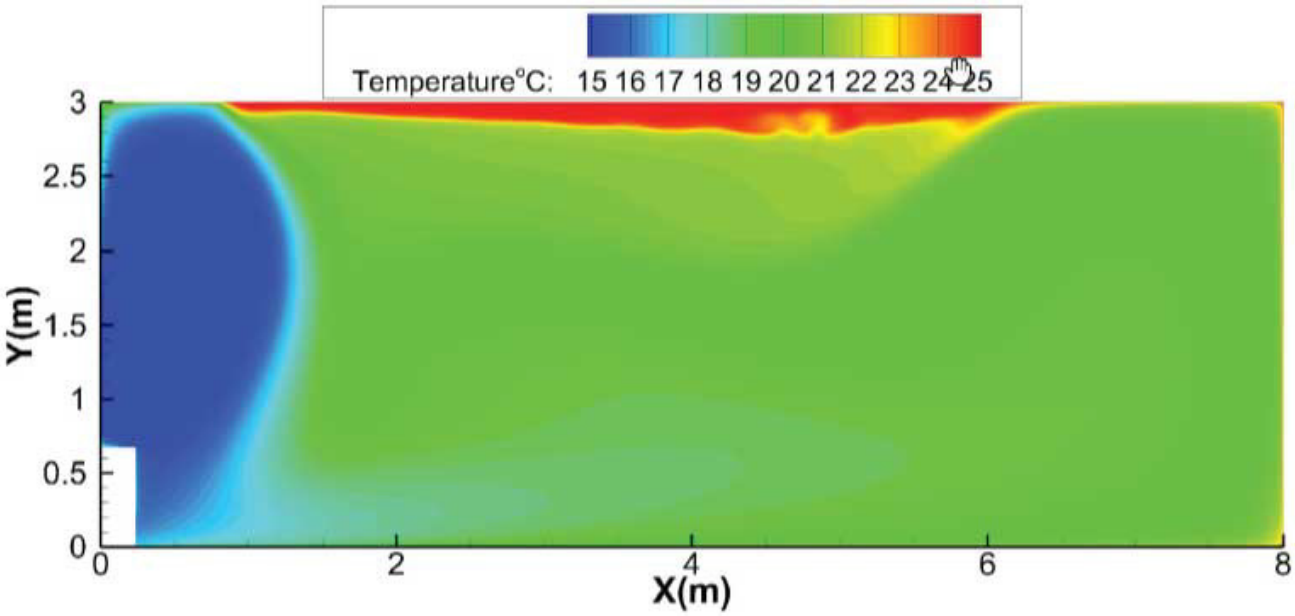


Fig. 36 – Cooling Temperature Distributions

Discharge Angle 30°

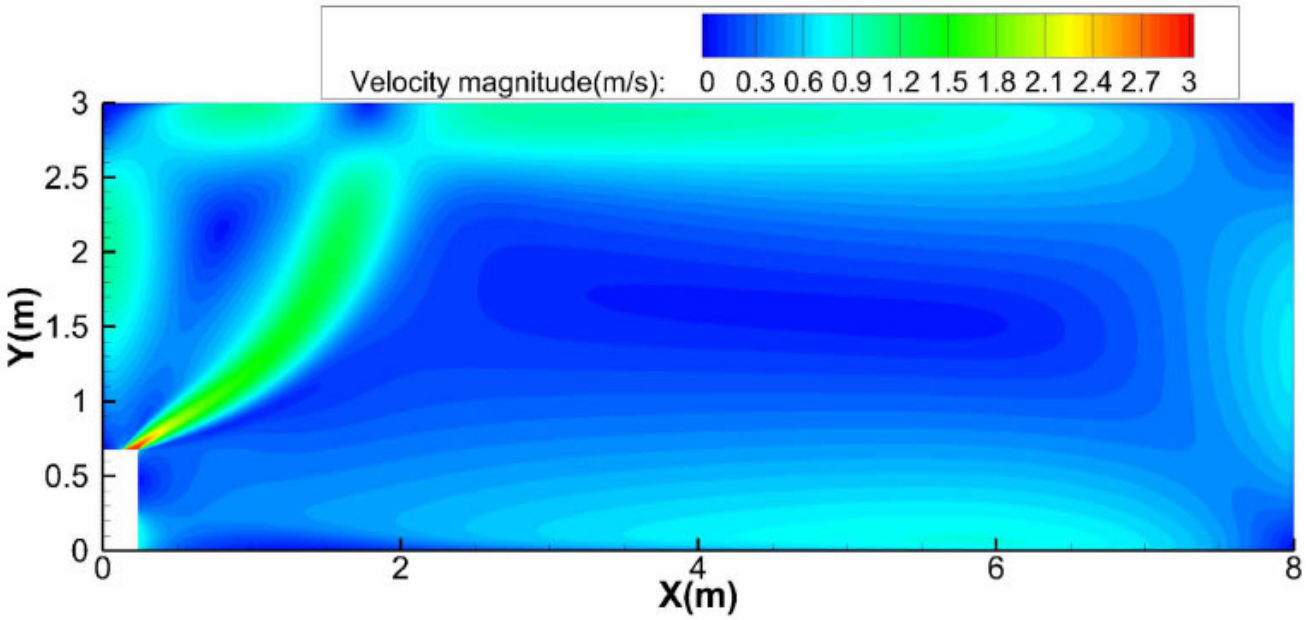


Fig. 37 – Heating Airflow Velocity Distributions

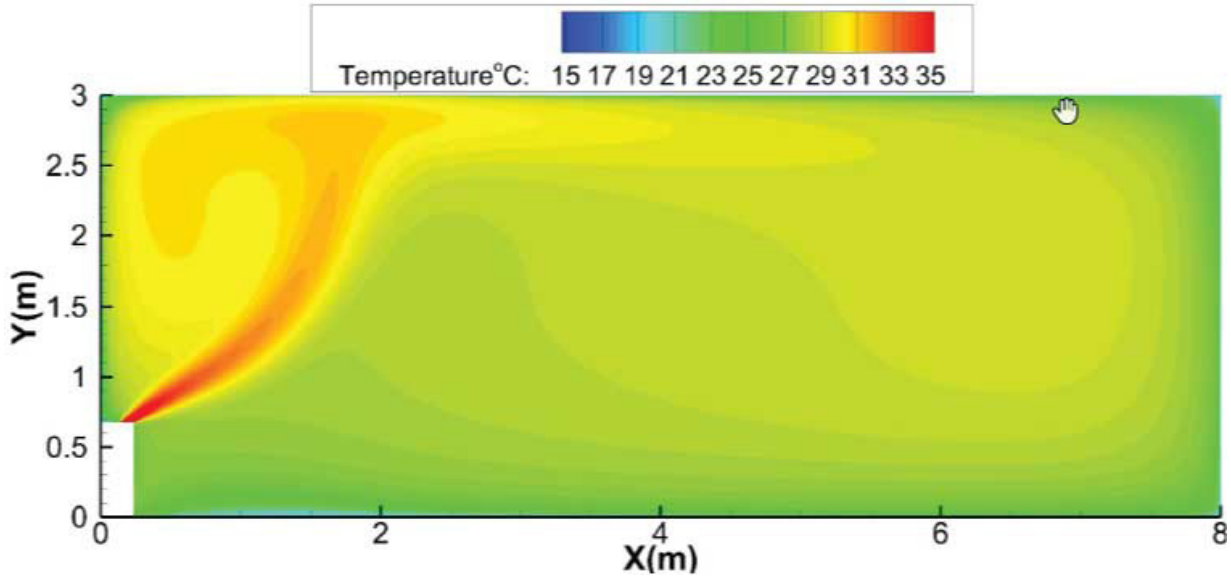


Fig. 38 – Heating Temperature Distributions

Discharge Angle 60°

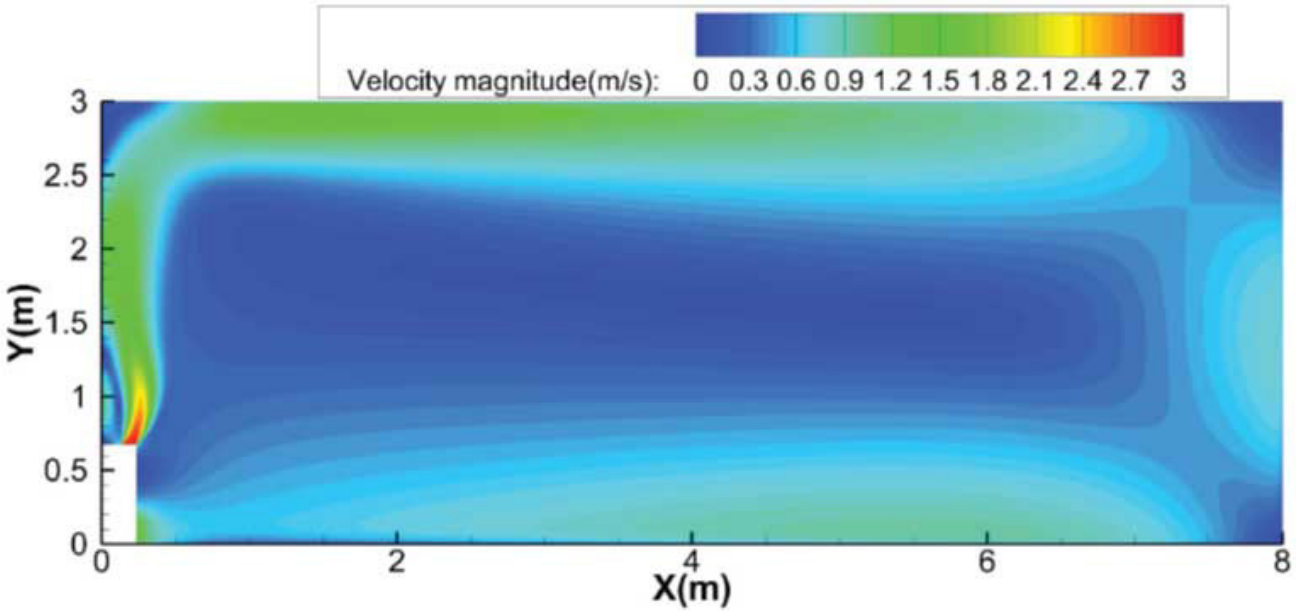


Fig. 39 – Heating Airflow Velocity Distributions

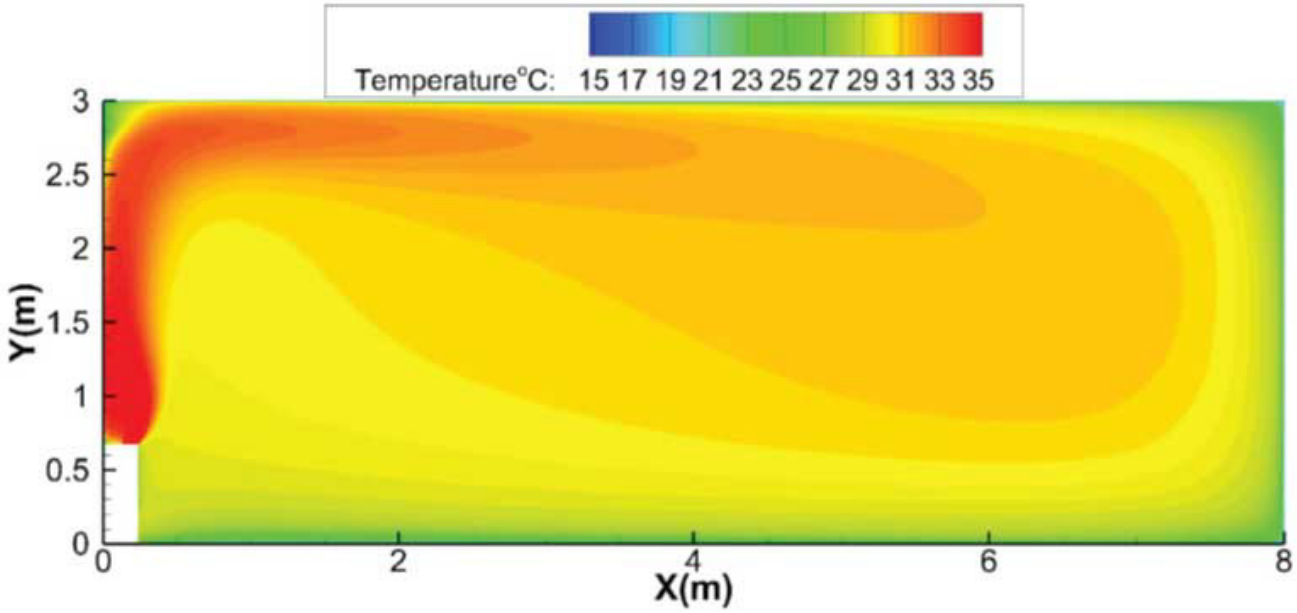


Fig. 40 – Heating Temperature Distributions

24K – Ceiling Installation:

Discharge Angle 30°

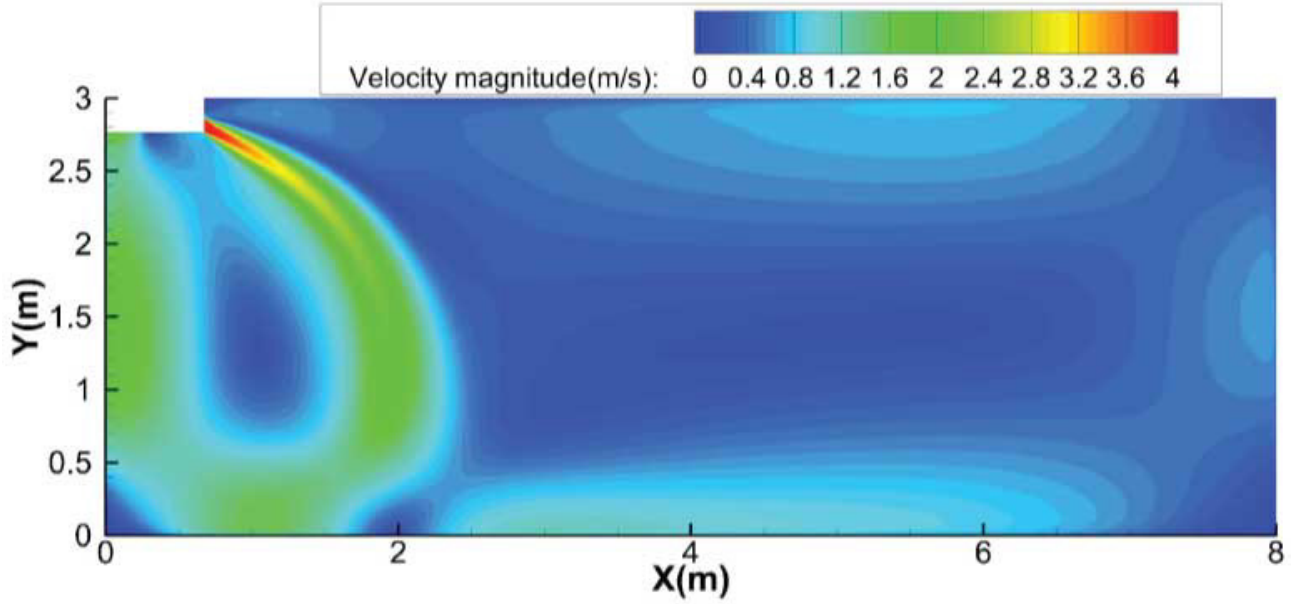


Fig. 41 – Cooling Airflow Velocity Distributions

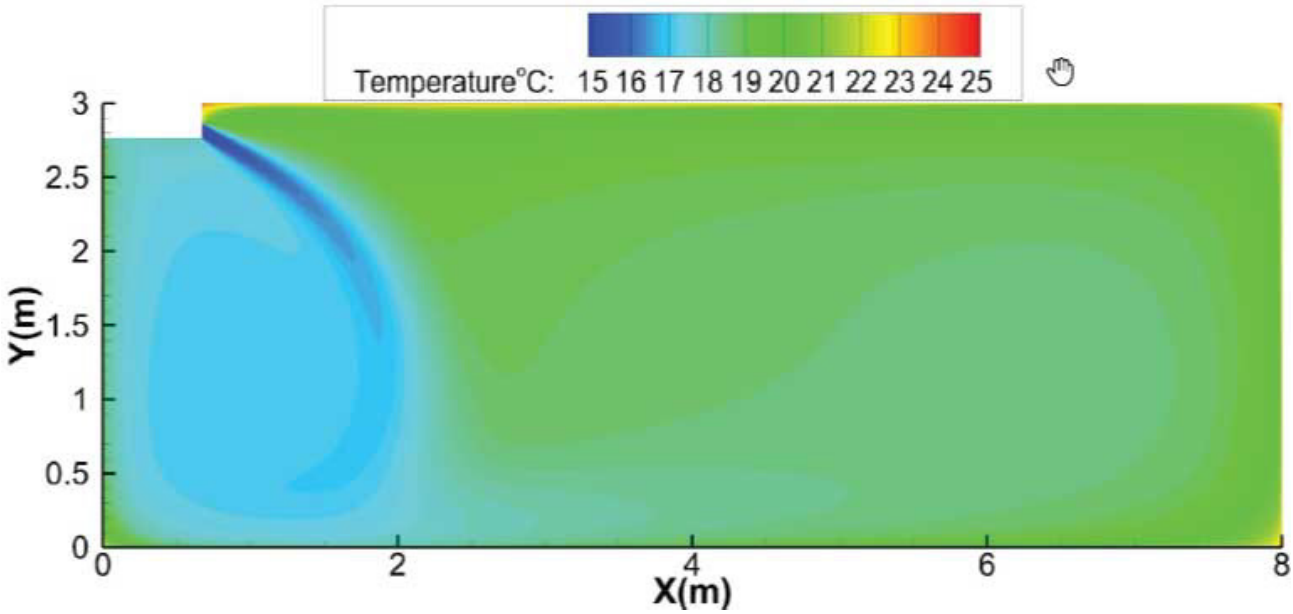


Fig. 42 – Cooling Temperature Distributions

Discharge Angle 60°

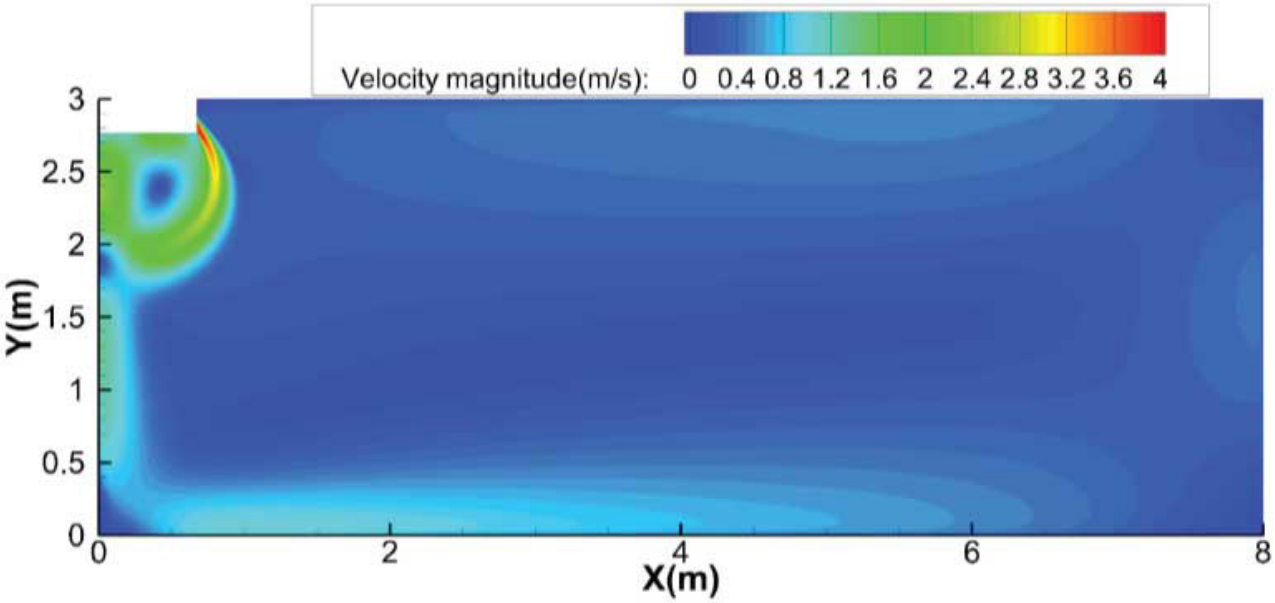


Fig. 43 – Cooling Airflow Velocity Distributions

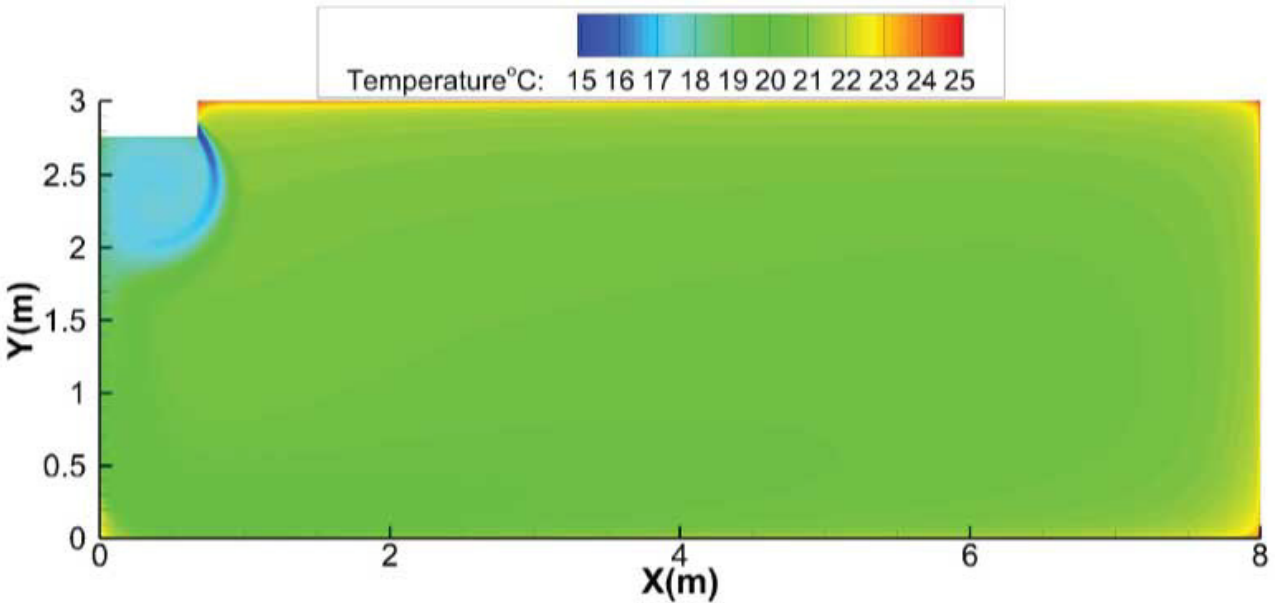


Fig. 44 – Cooling Temperature Distributions

Discharge Angle 30°

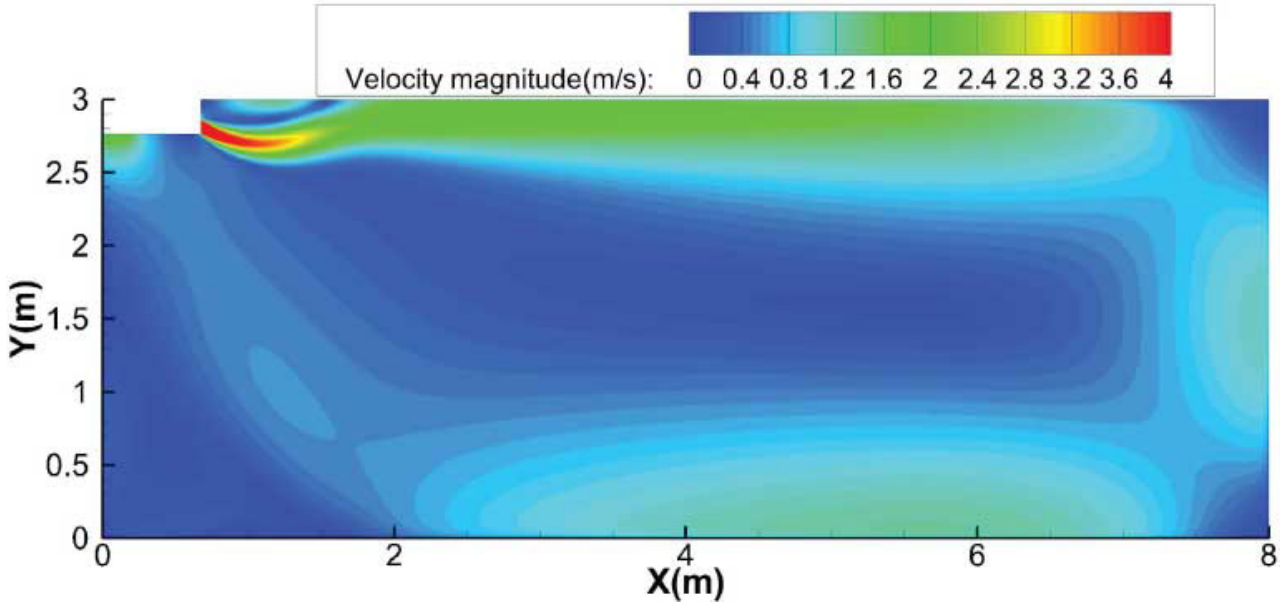


Fig. 45 – Heating Airflow Velocity Distributions

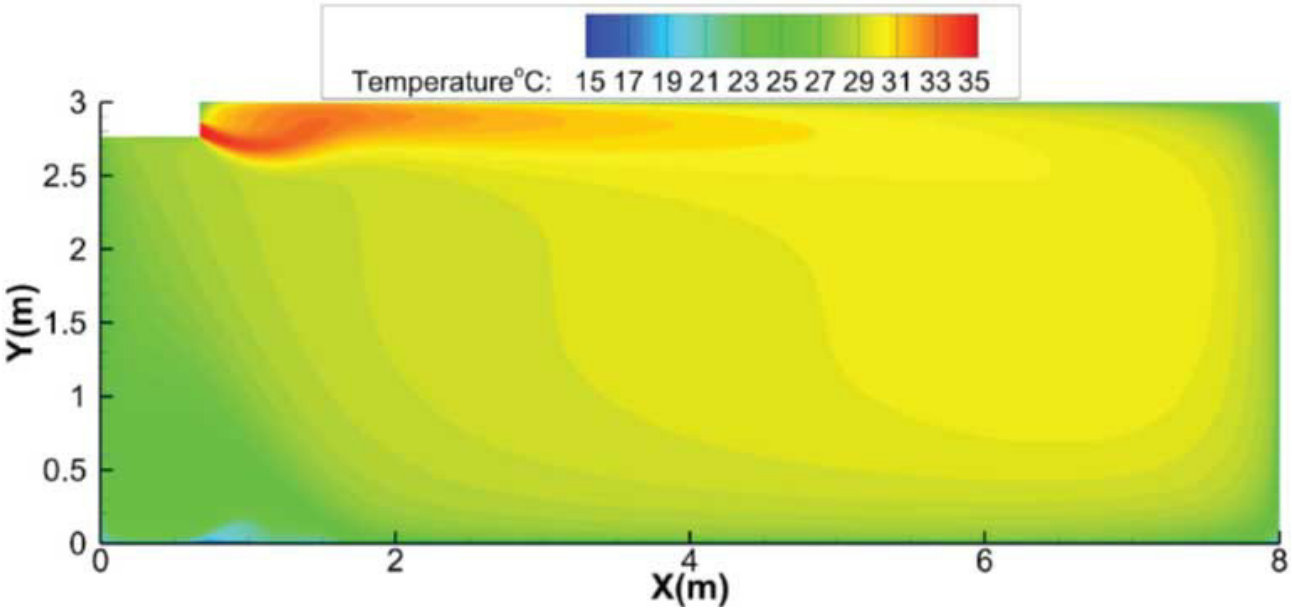


Fig. 46 – Heating Temperature Distributions

Discharge Angle 60°

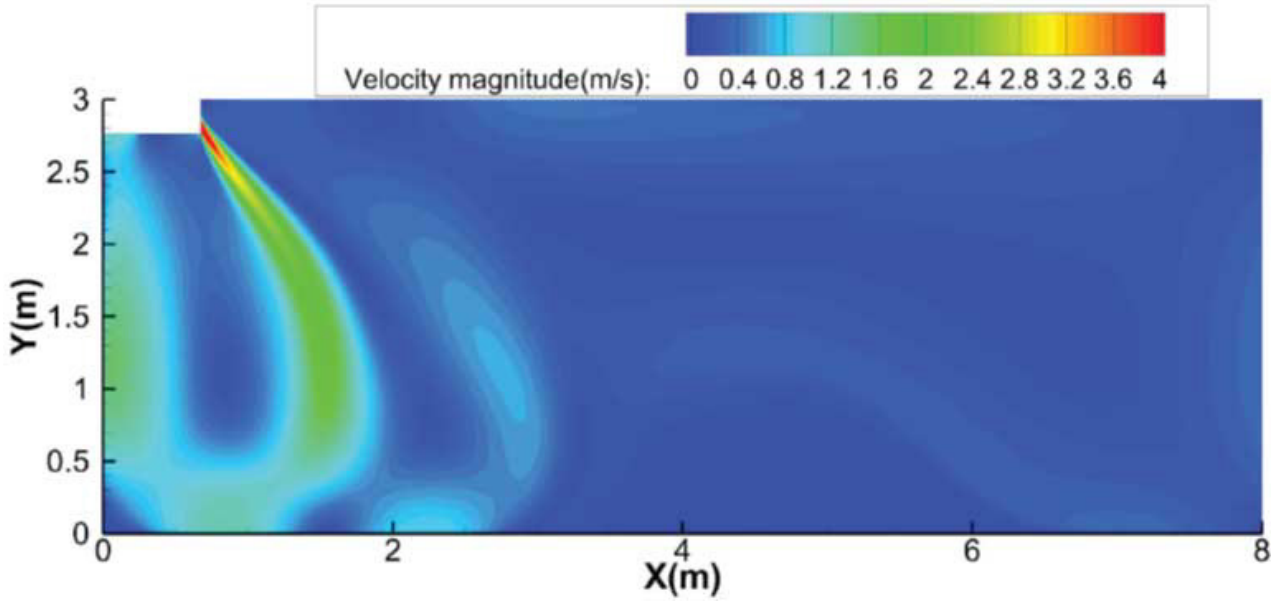


Fig. 47 – Heating Airflow Velocity Distributions

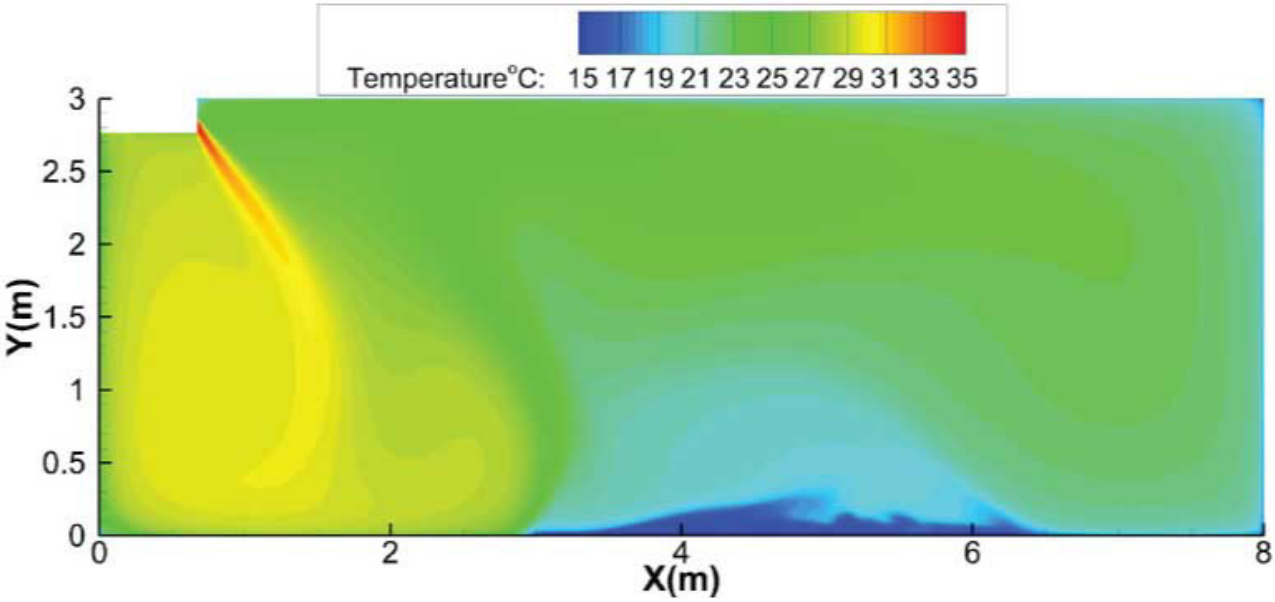


Fig. 48 – Heating Temperature Distributions

24K – Floor Installation:

Discharge Angle 30°

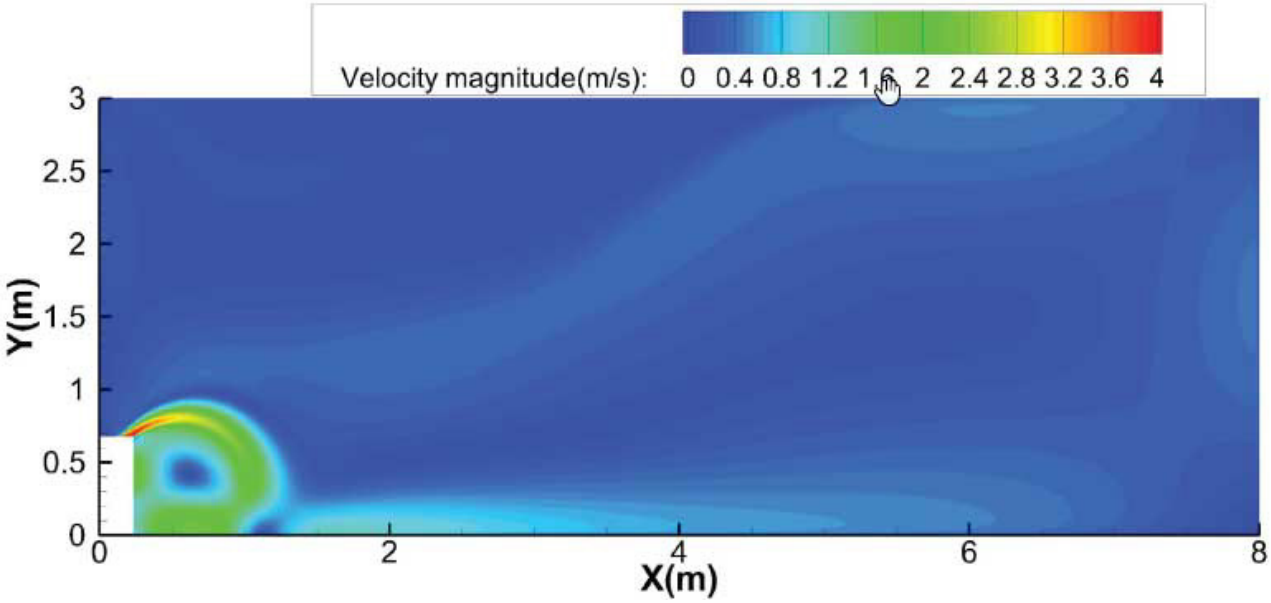


Fig. 49 – Cooling Airflow Velocity Distributions

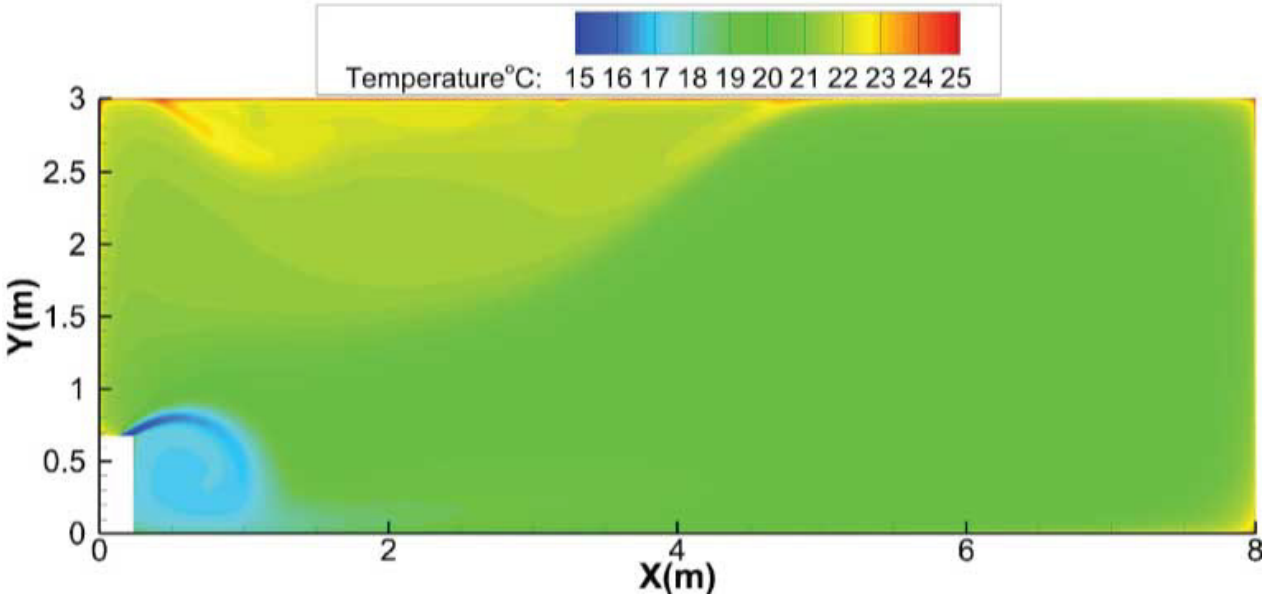


Fig. 50 – Cooling Temperature Distributions

Discharge Angle 60°

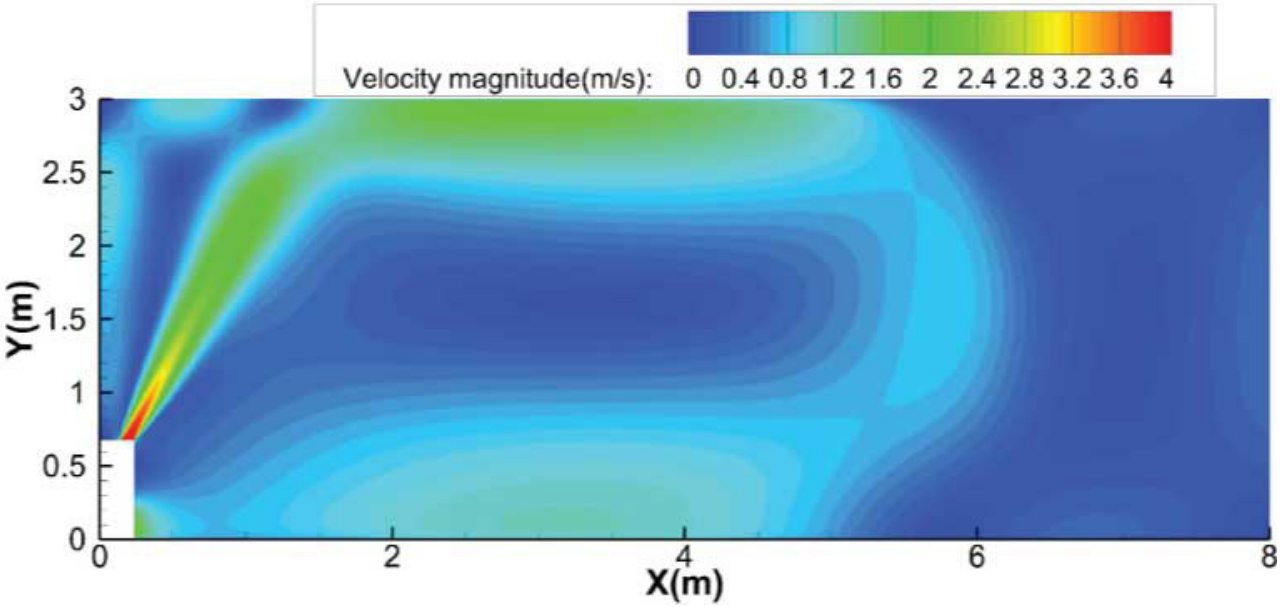


Fig. 51 – Cooling Airflow Velocity Distributions

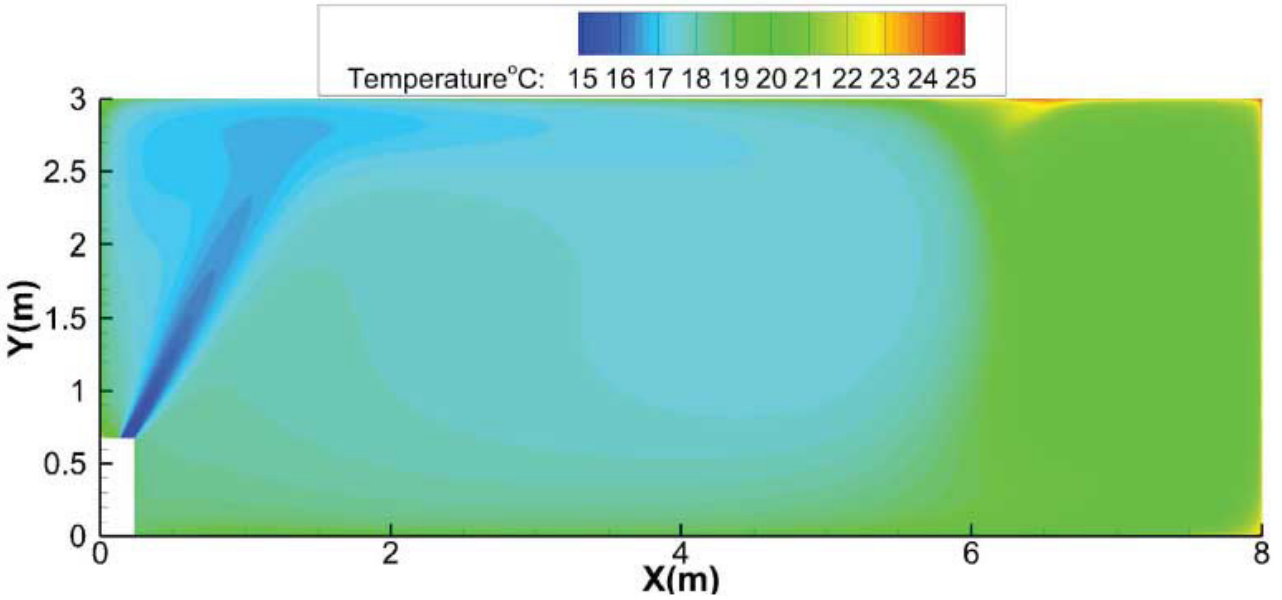


Fig. 52 – Cooling Temperature Distributions

Discharge Angle 30°

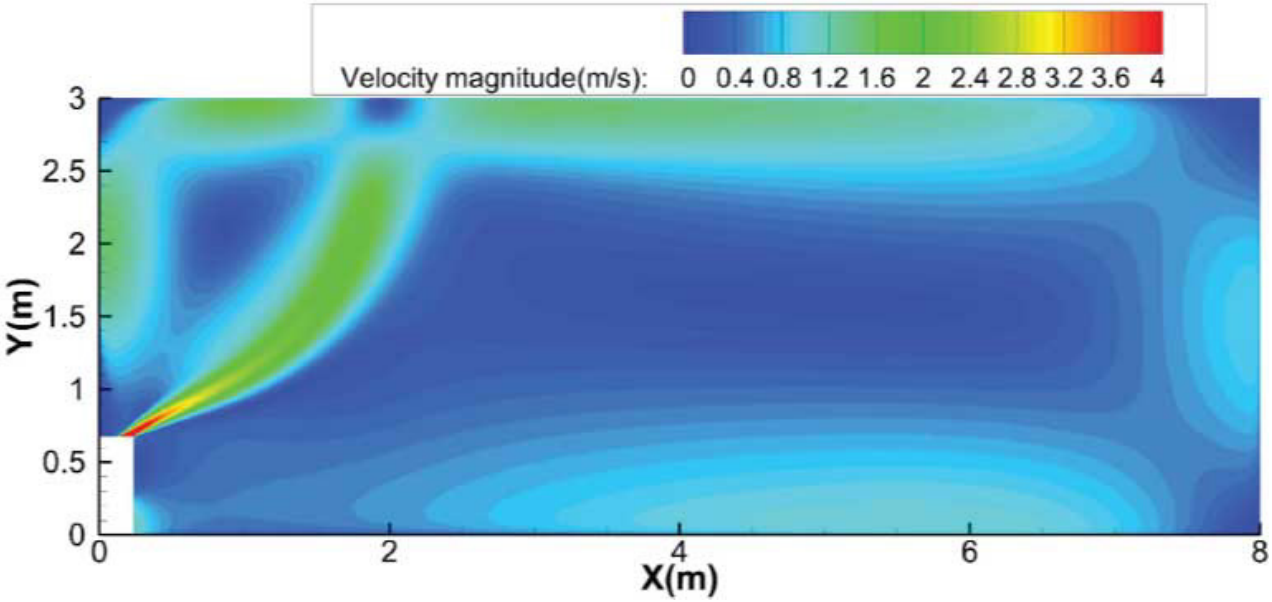


Fig. 53 – Heating Airflow Velocity Distributions

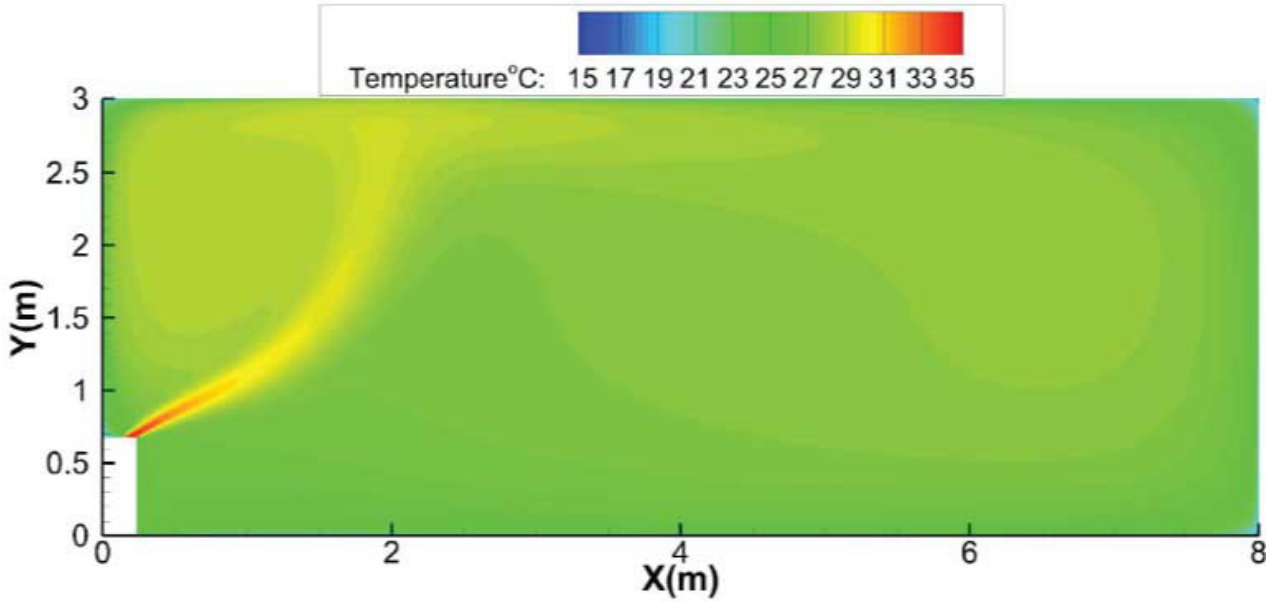


Fig. 54 – Heating Temperature Distributions

Discharge Angle 60°

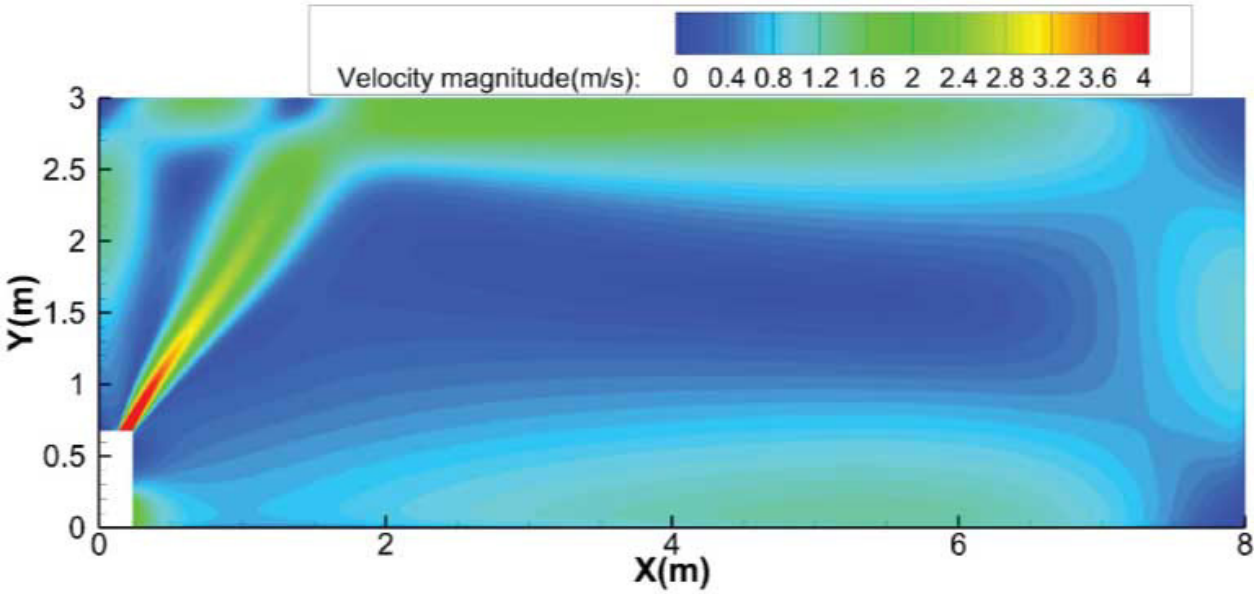


Fig. 55 – Heating Airflow Velocity Distributions

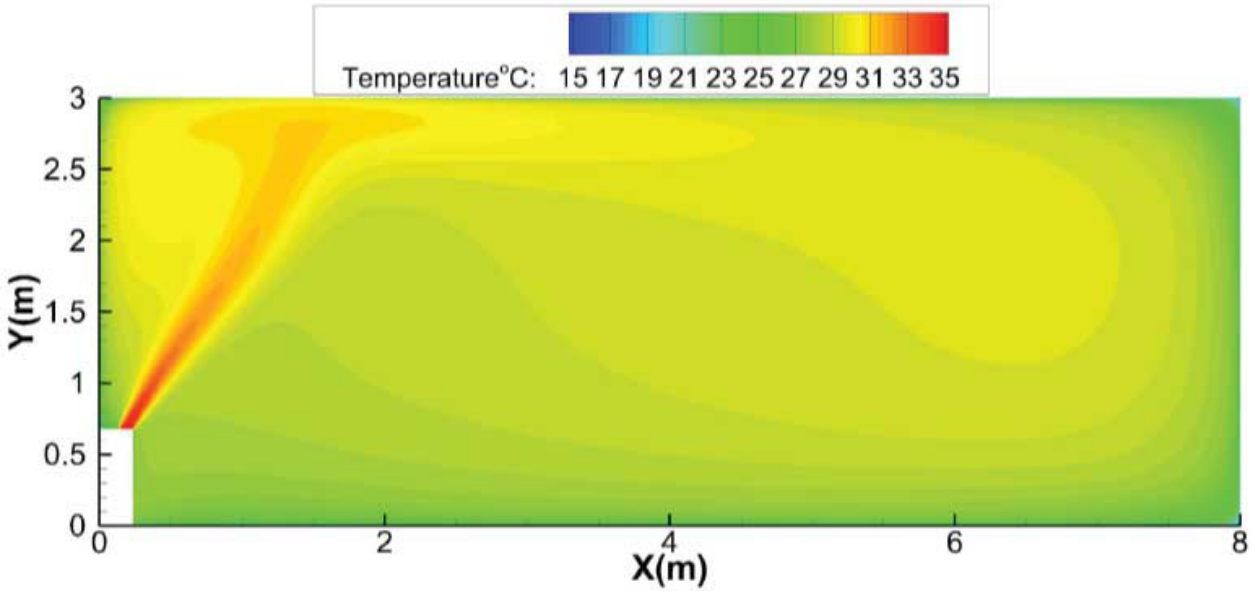


Fig. 56 – Heating Temperature Distributions

36K – Ceiling Installation:

Discharge Angle 30°

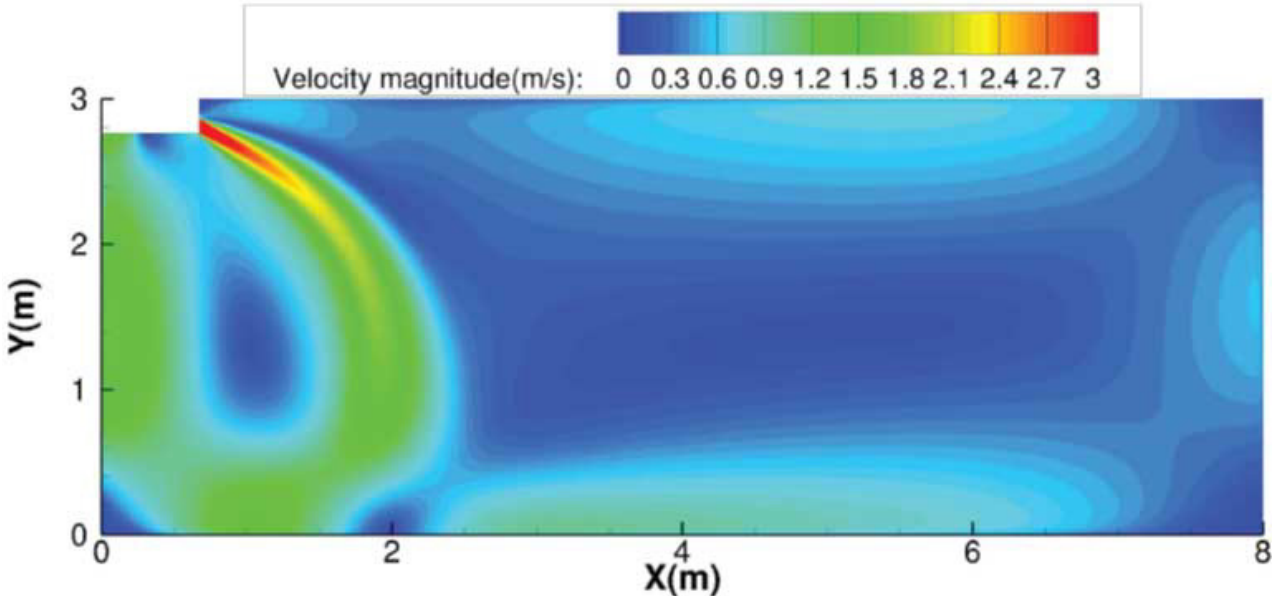


Fig. 57 – Cooling Airflow Velocity Distributions

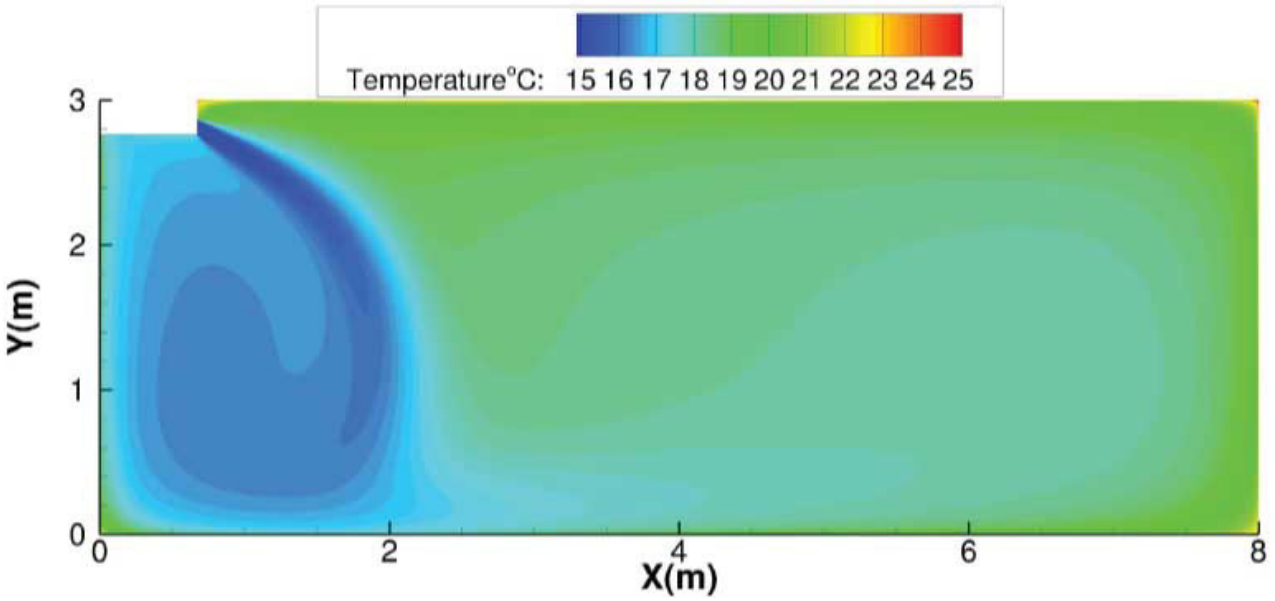


Fig. 58 – Cooling Temperature Distributions

Discharge Angle 60°

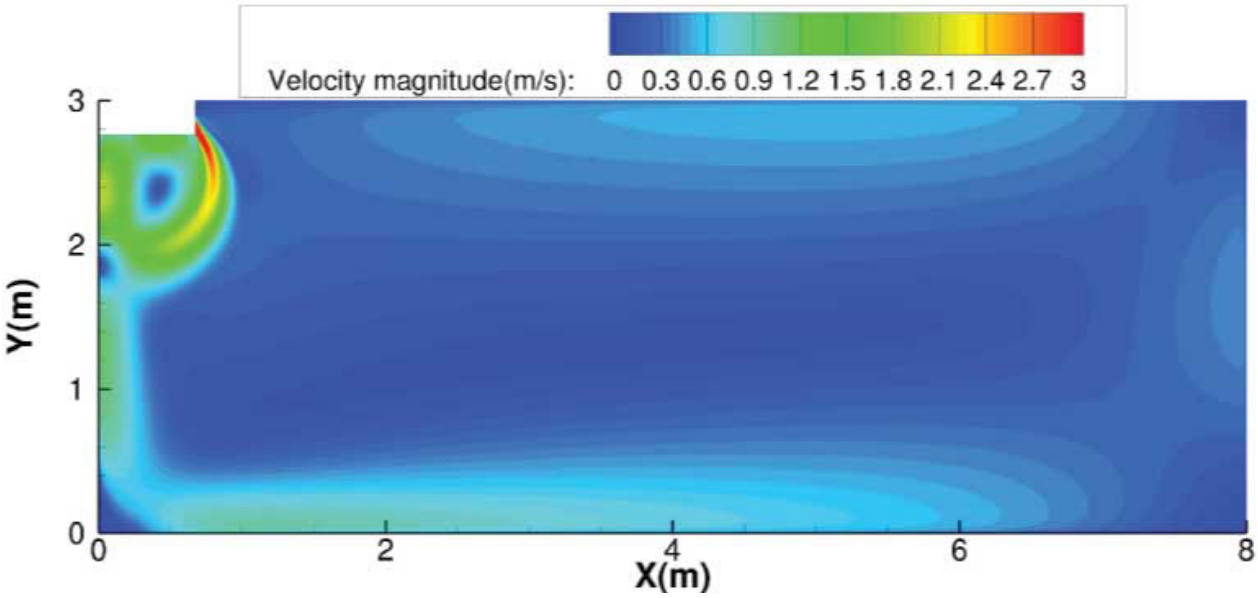


Fig. 59 – Cooling Airflow Velocity Distributions

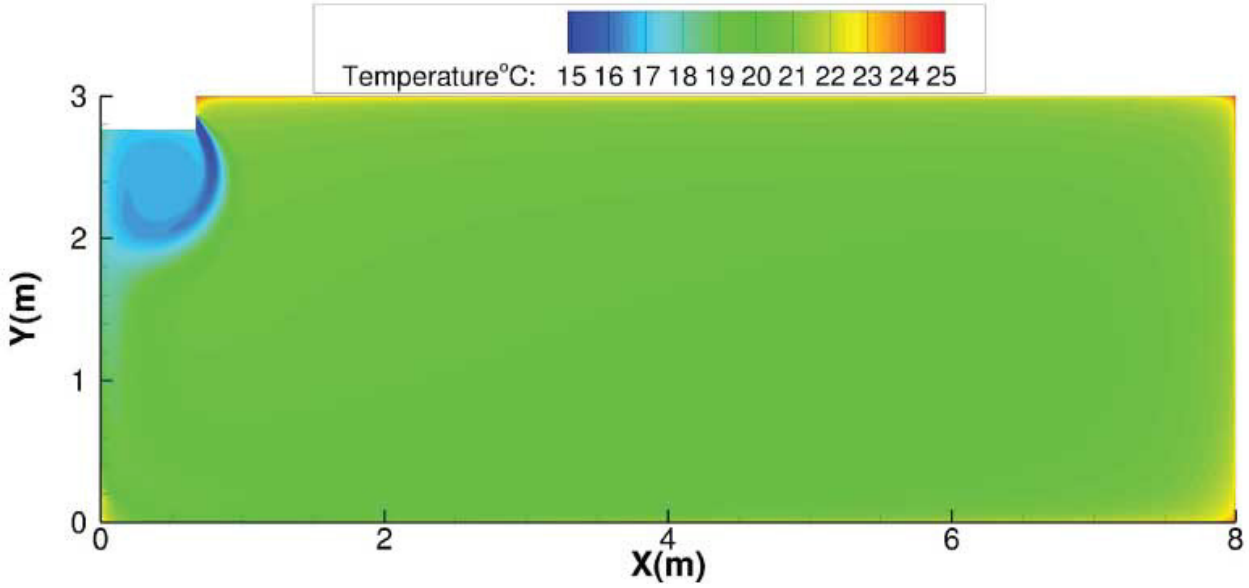


Fig. 60 – Cooling Temperature Distributions

Discharge Angle 30°

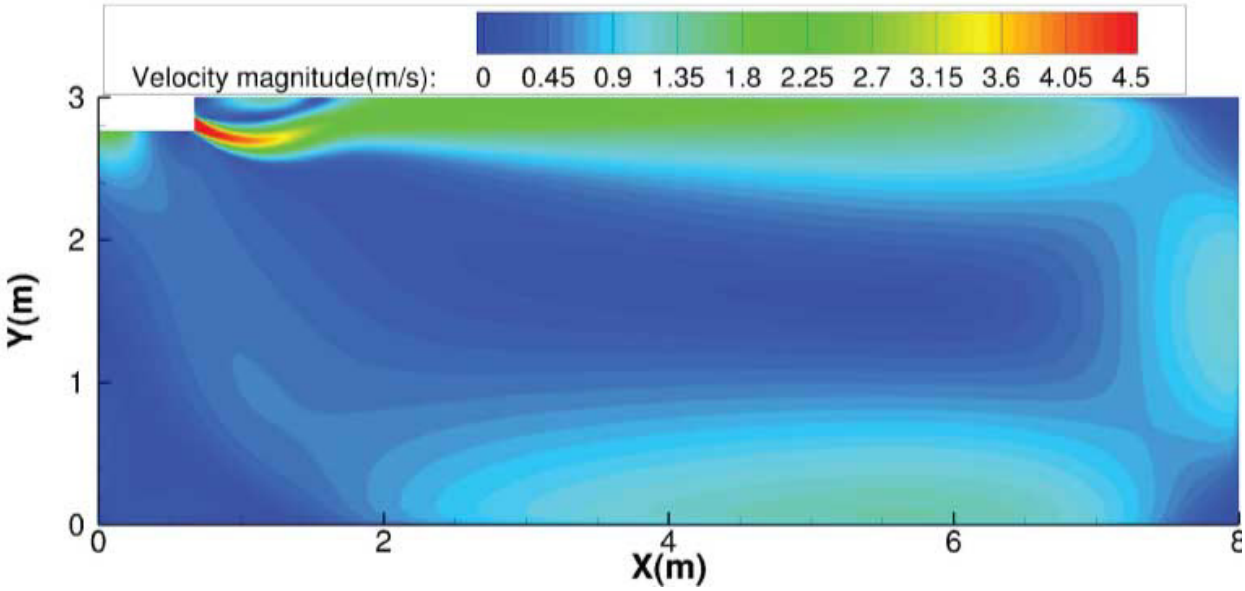


Fig. 61 – Heating Airflow Velocity Distributions

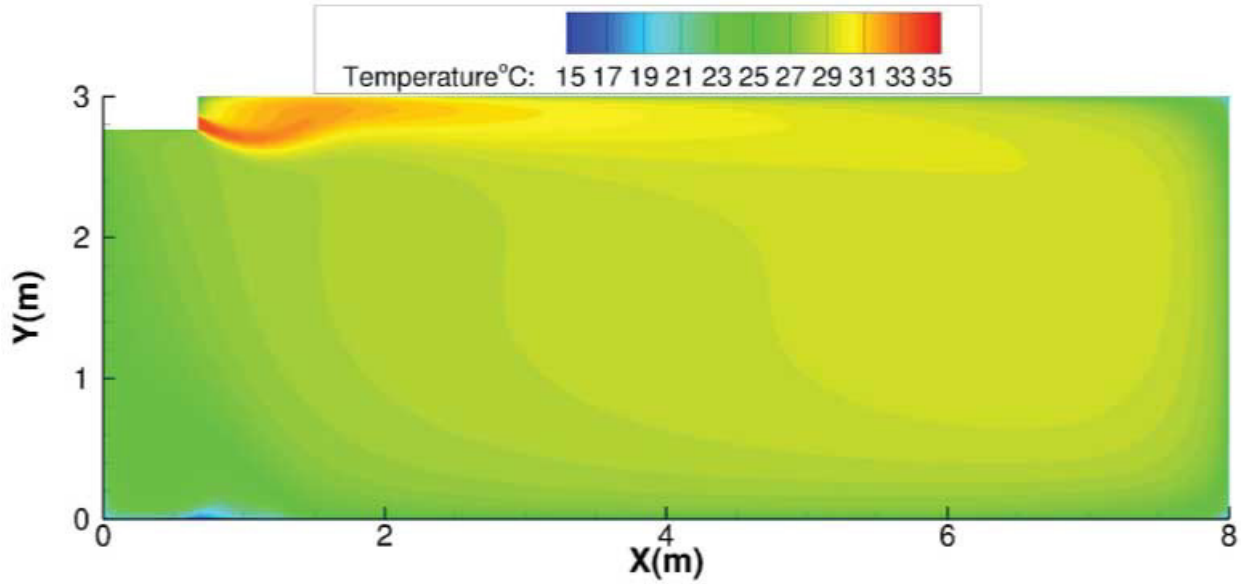


Fig. 62 – Heating Temperature Distributions

Discharge Angle 60°

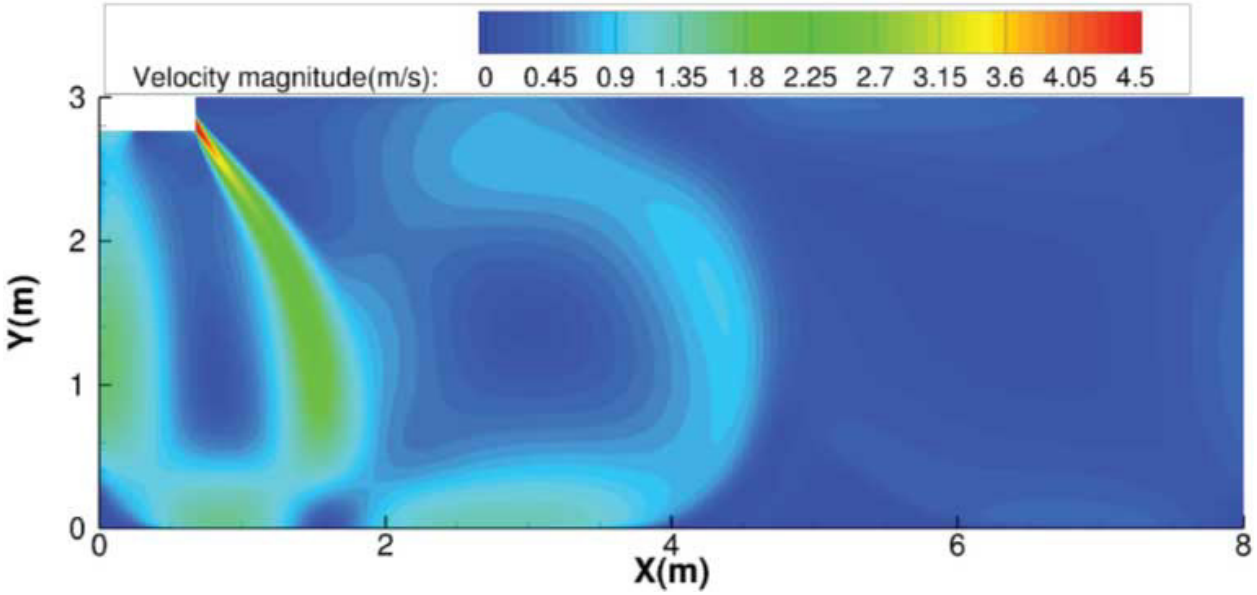


Fig. 63 – Heating Airflow Velocity Distributions

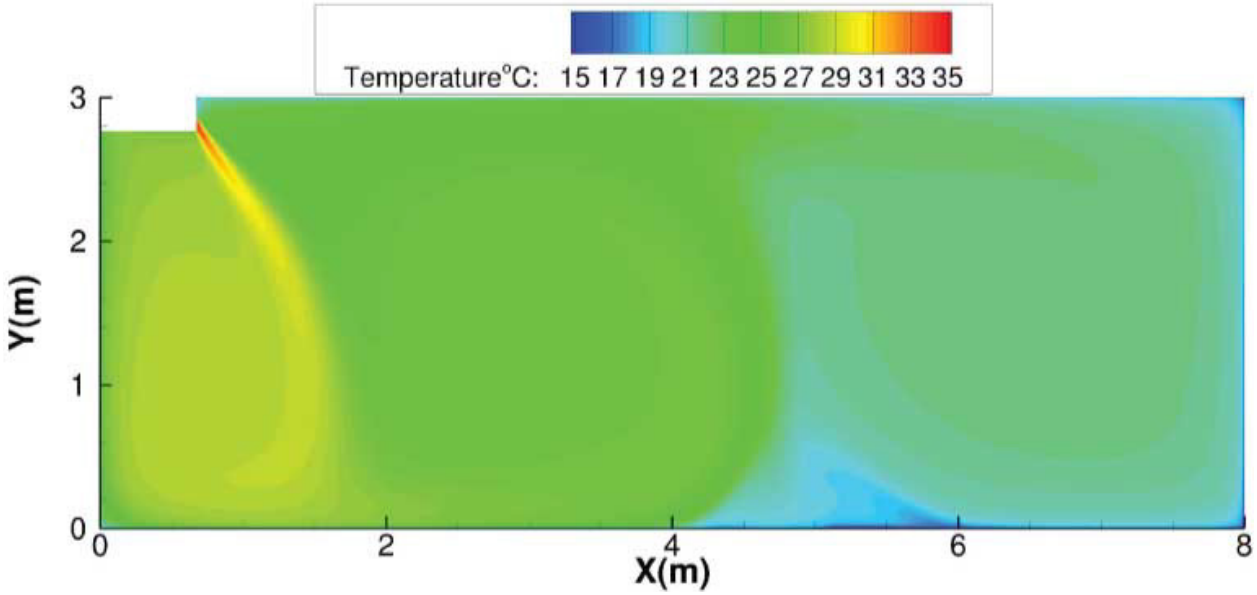


Fig. 64 – Heating Temperature Distributions

36K – Floor Installation:

Discharge Angle 30°

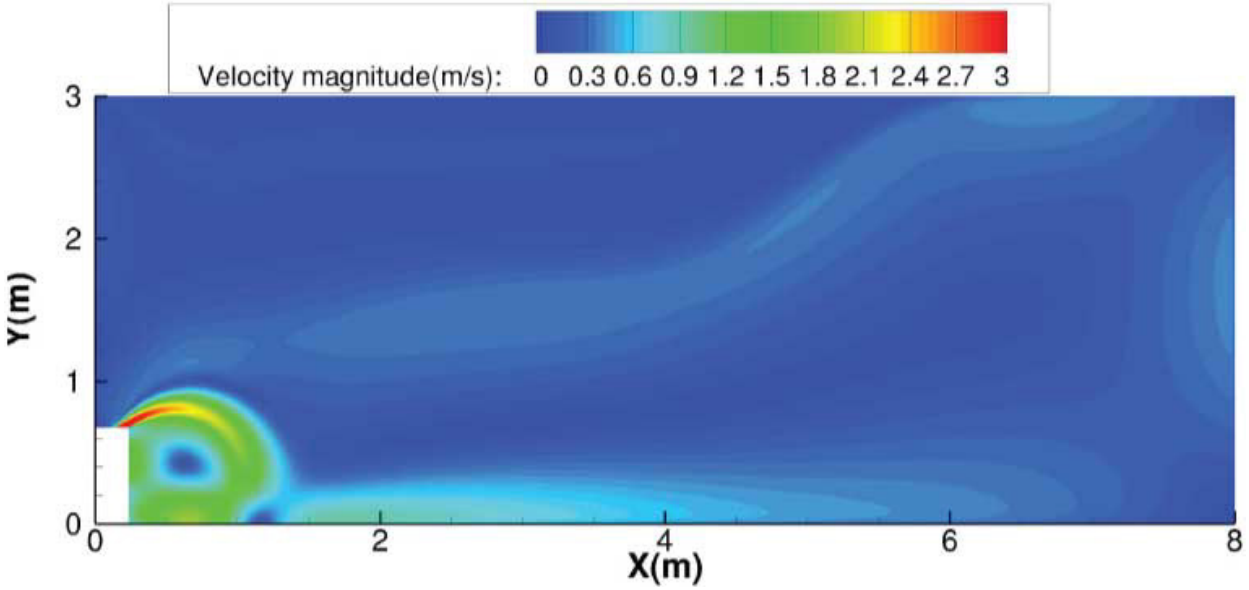


Fig. 65 – Cooling Airflow Velocity Distributions

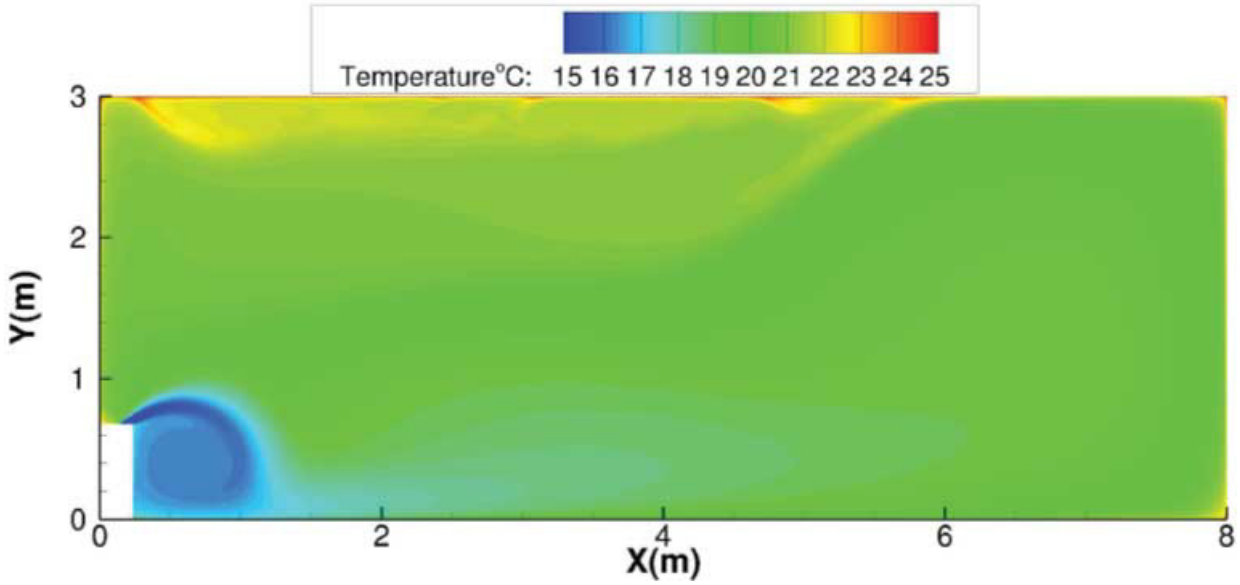


Fig. 66 – Cooling Temperature Distributions

Discharge Angle 60°

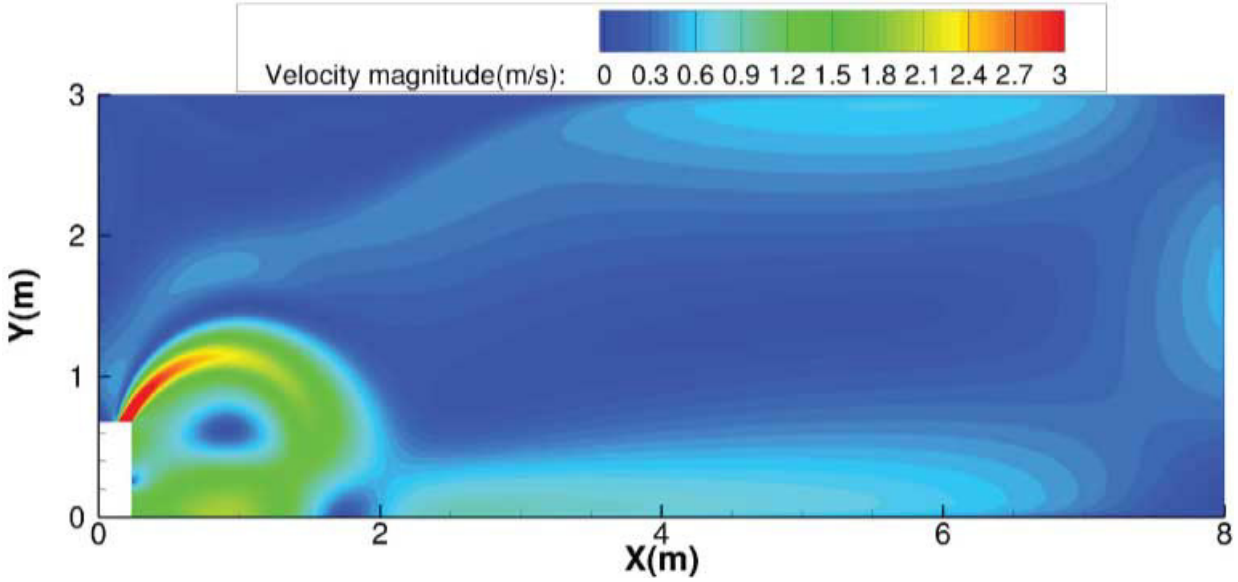


Fig. 67 – Cooling Airflow Velocity Distributions

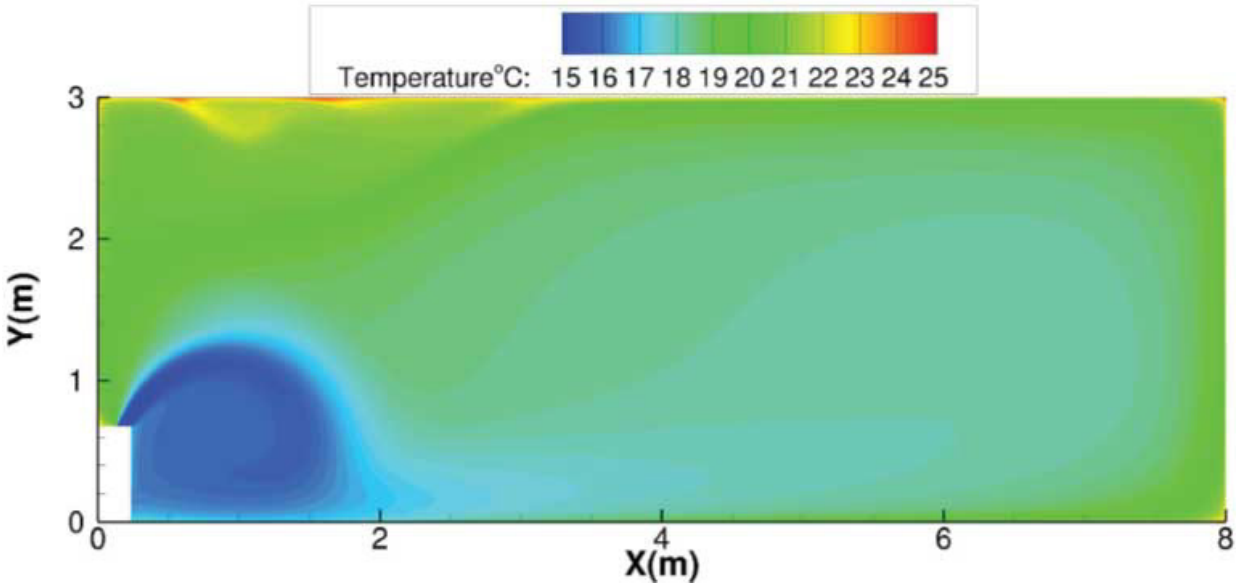


Fig. 68 – Cooling Temperature Distributions

Discharge Angle 30°

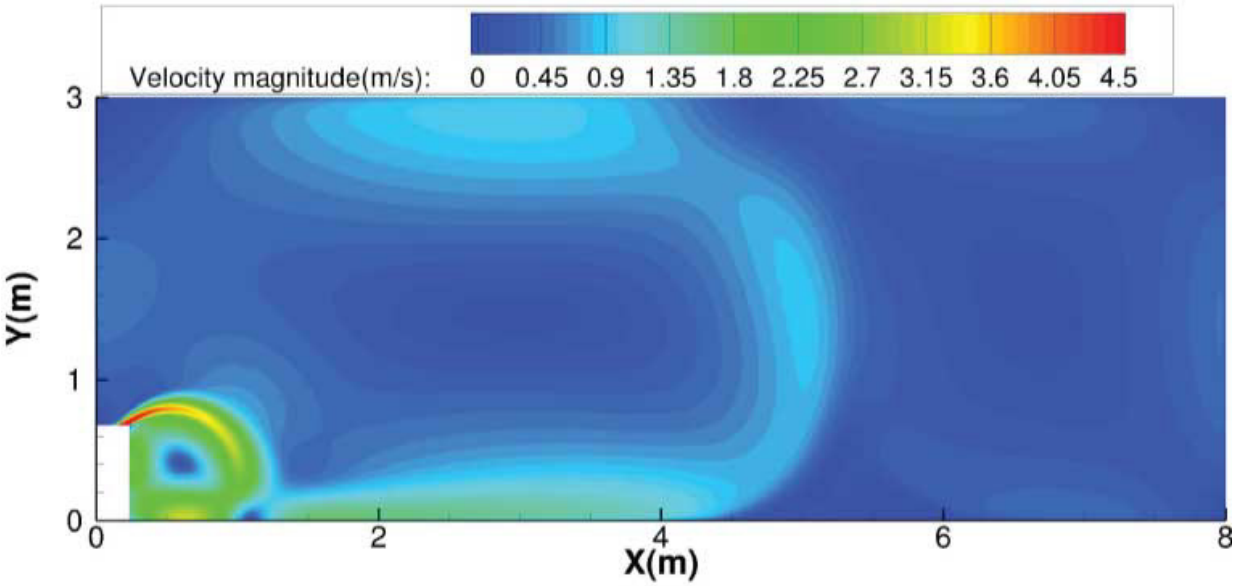


Fig. 69 – Heating Airflow Velocity Distributions

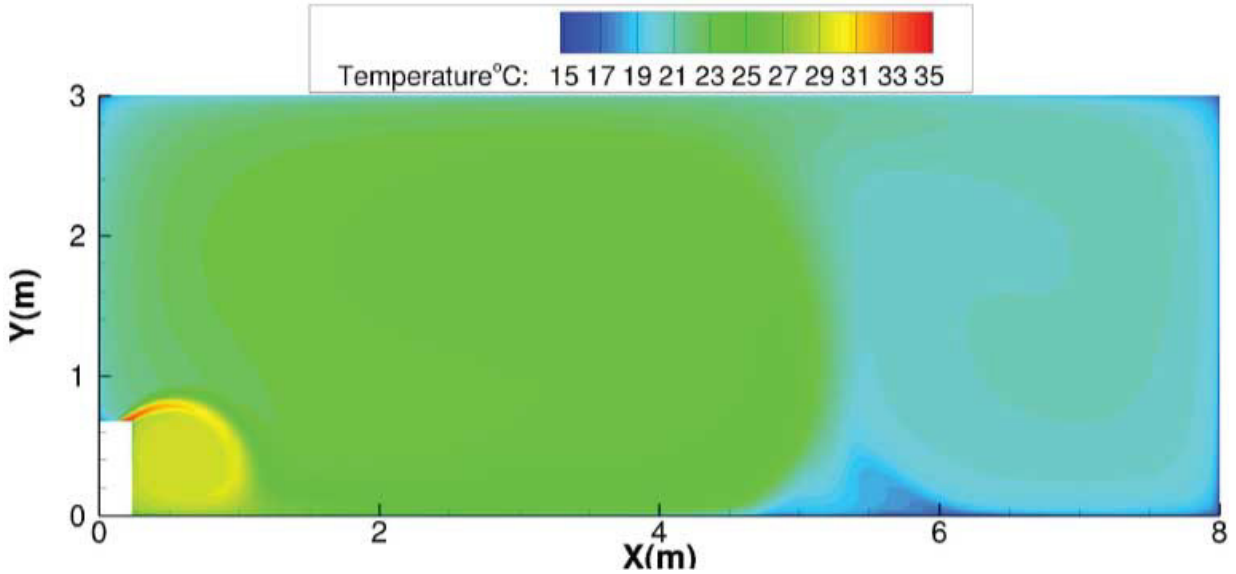


Fig. 70 – Heating Temperature Distributions

Discharge Angle 60°

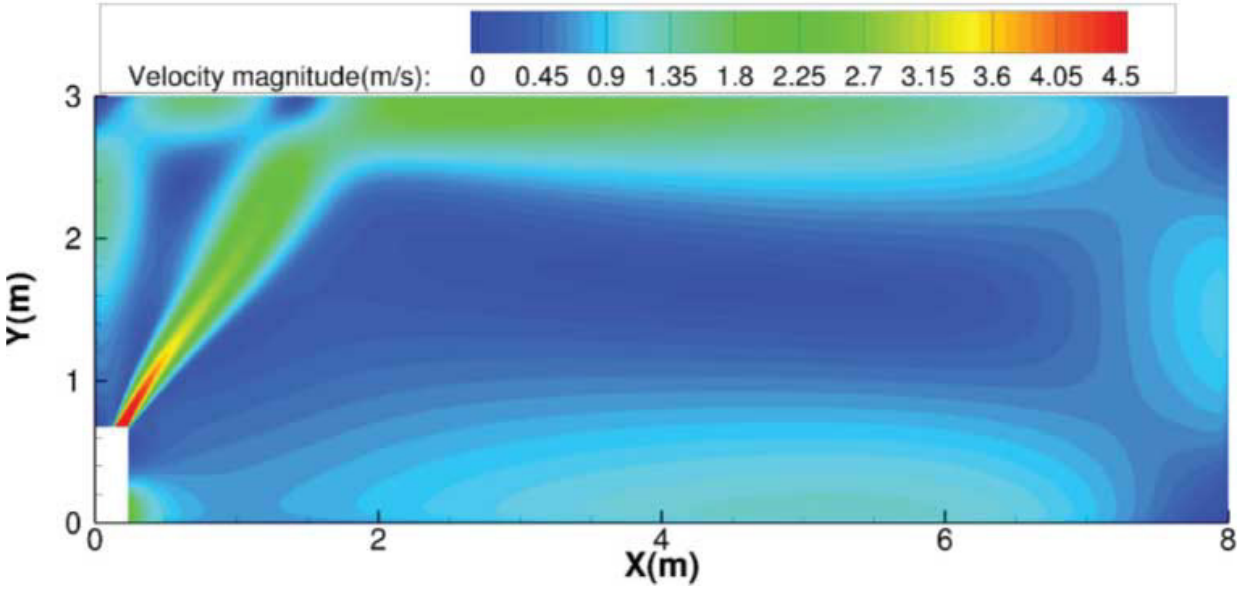


Fig. 71 – Heating Airflow Velocity Distributions

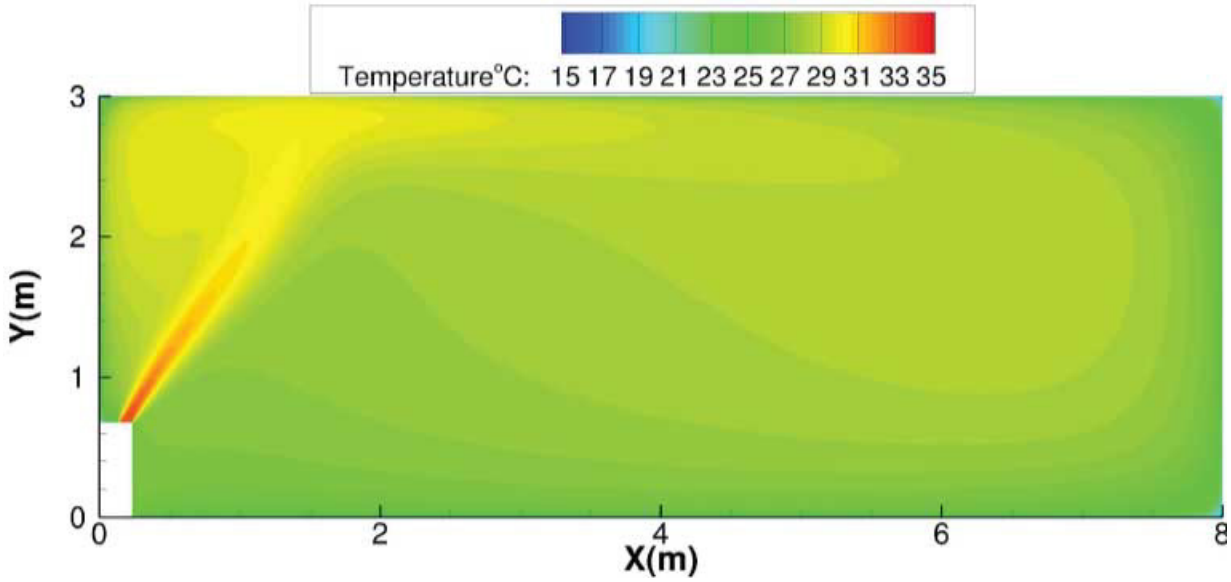


Fig. 72 – Heating Temperature Distributions

48K – Ceiling Installation:

Discharge Angle 30°

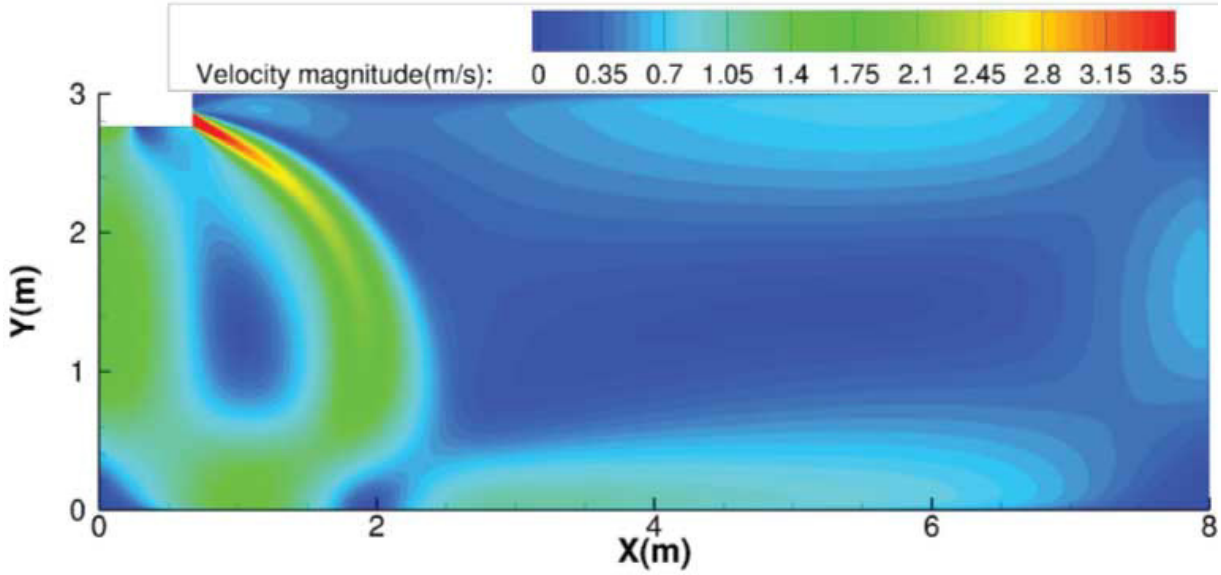


Fig. 73 – Cooling Airflow Velocity Distributions

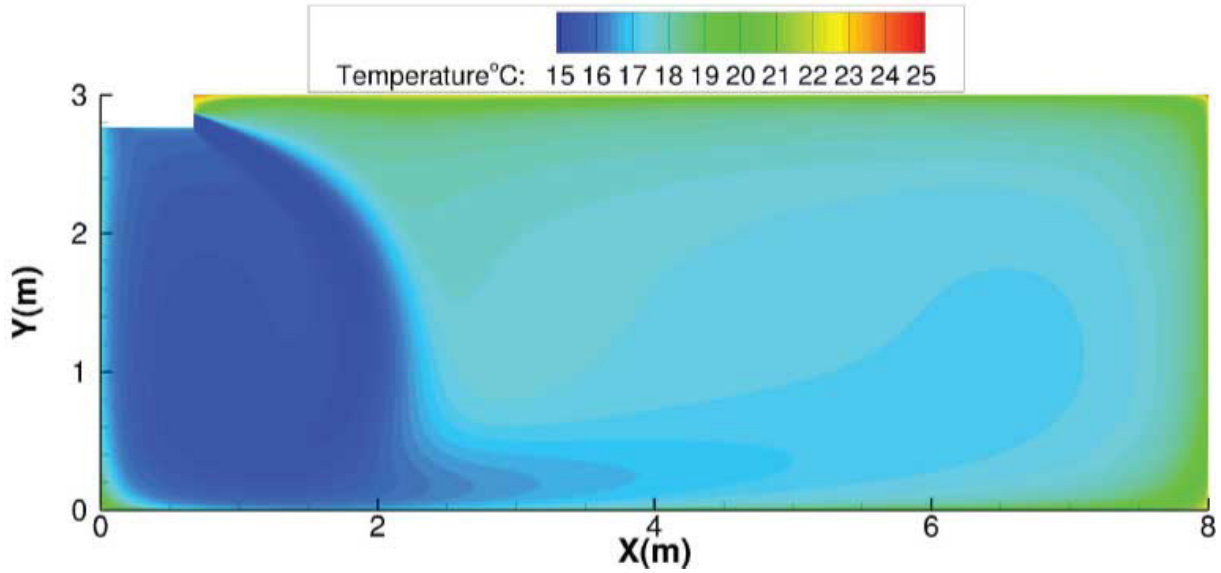


Fig. 74 – Cooling Temperature Distributions

Discharge Angle 60°

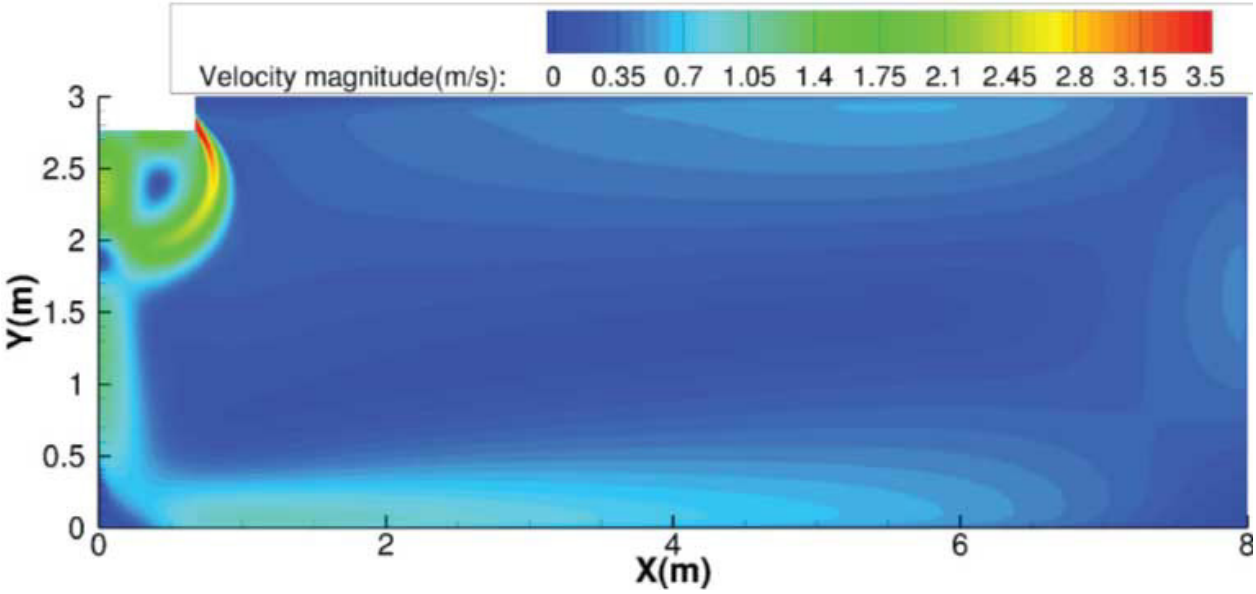


Fig. 75 – Cooling Airflow Velocity Distributions

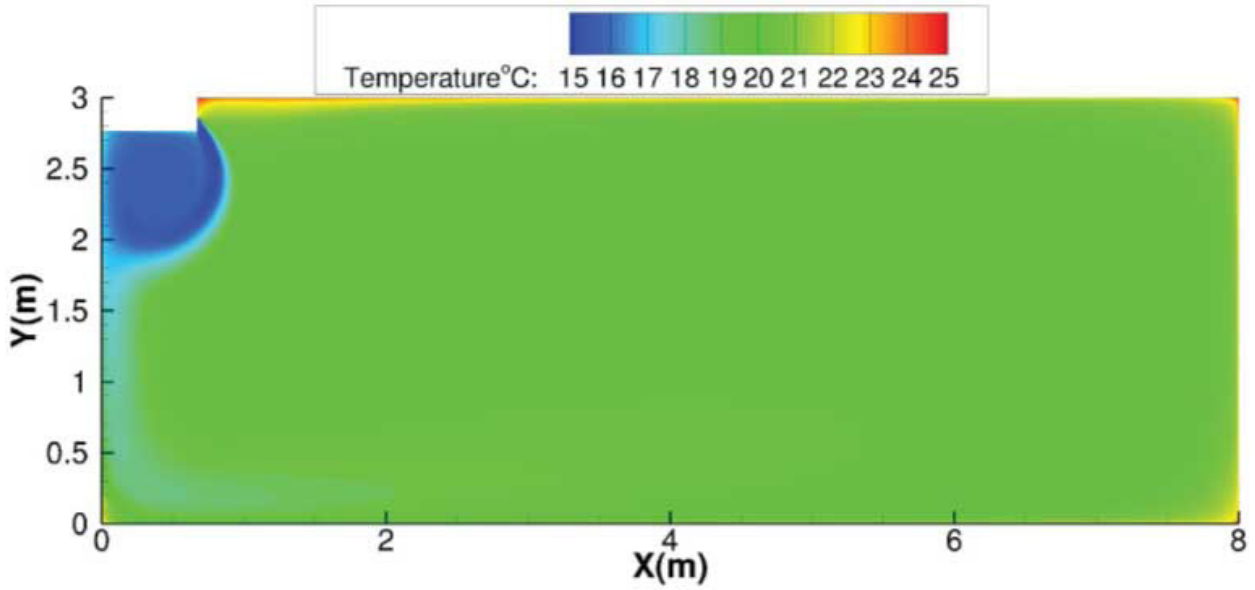


Fig. 76 – Cooling Temperature Distributions

Discharge Angle 30°

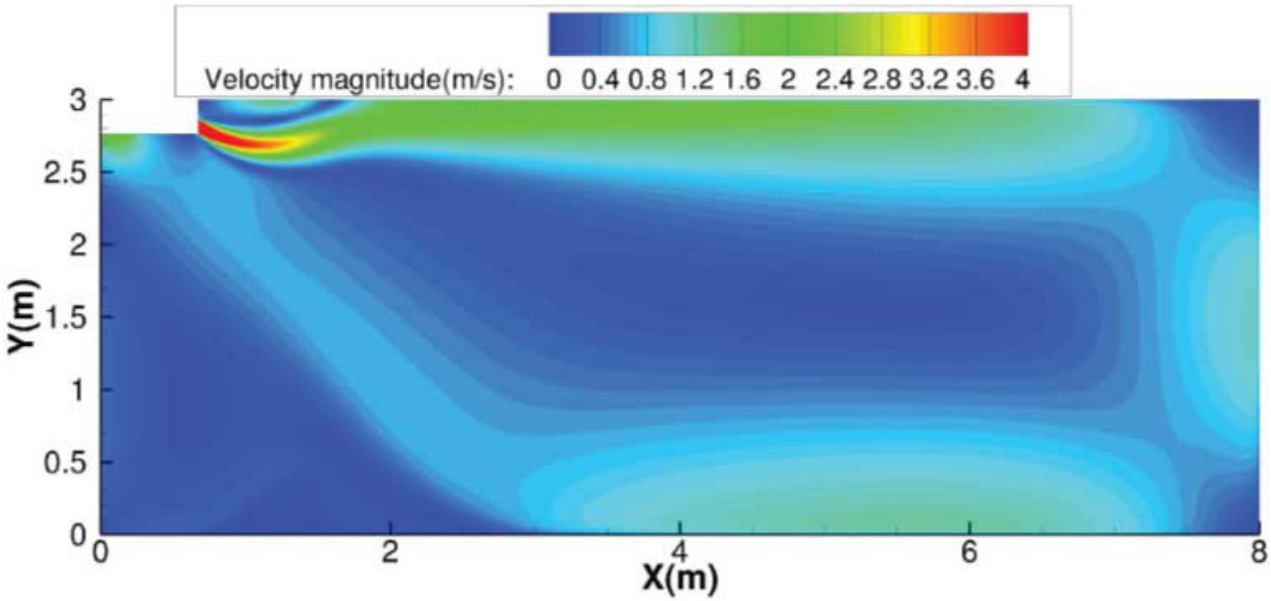


Fig. 77 – Heating Airflow Velocity Distributions

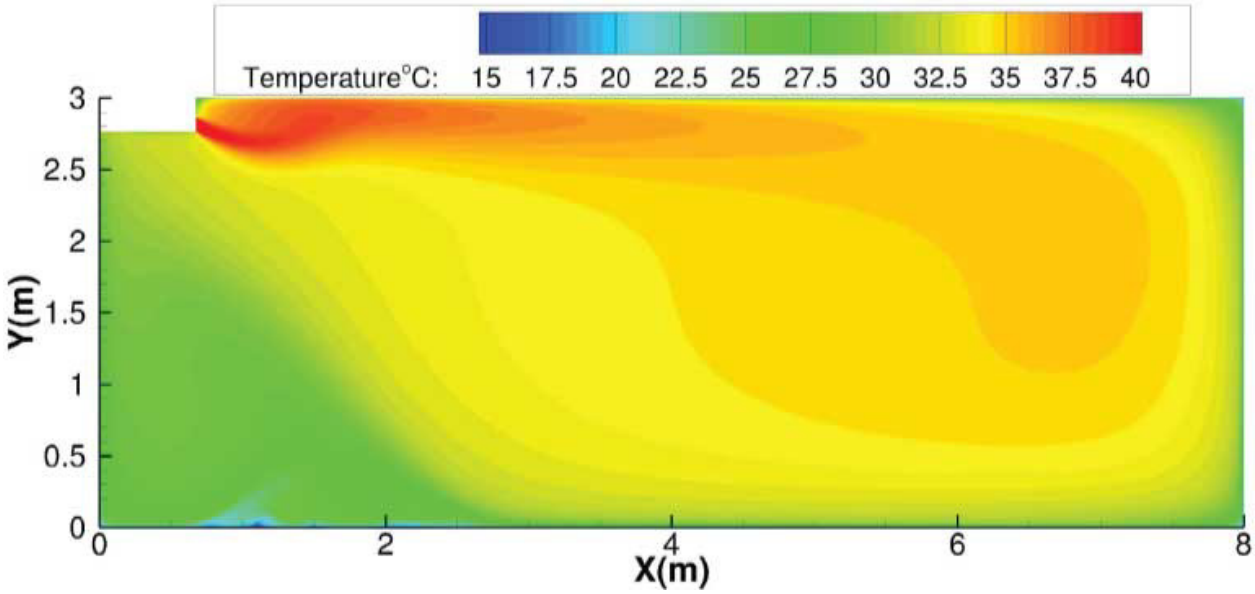


Fig. 78 – Heating Temperature Distributions

Discharge Angle 60°

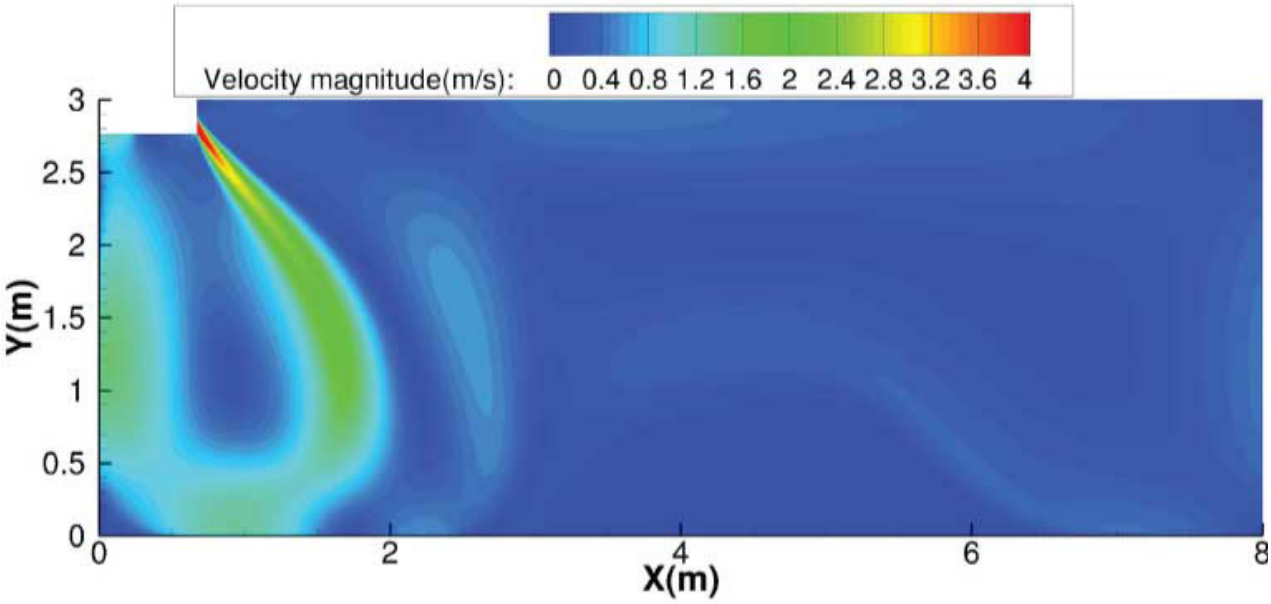


Fig. 79 – Heating Airflow Velocity Distributions

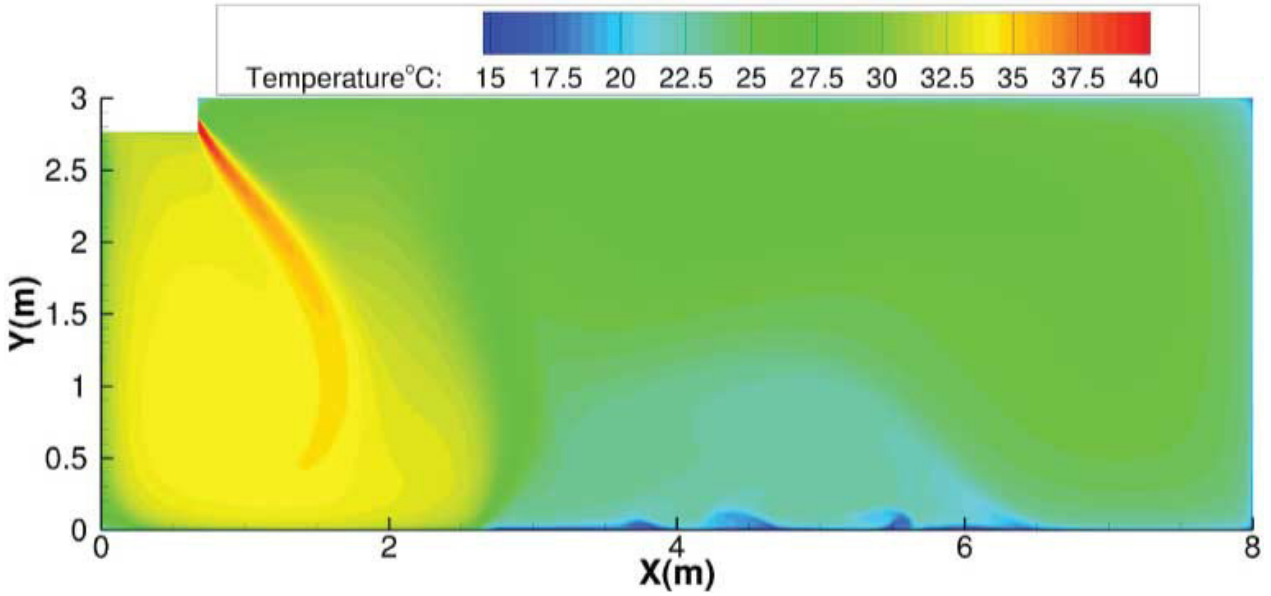


Fig. 80 – Heating Temperature Distributions

48K – Floor Installation:

Discharge Angle 30°

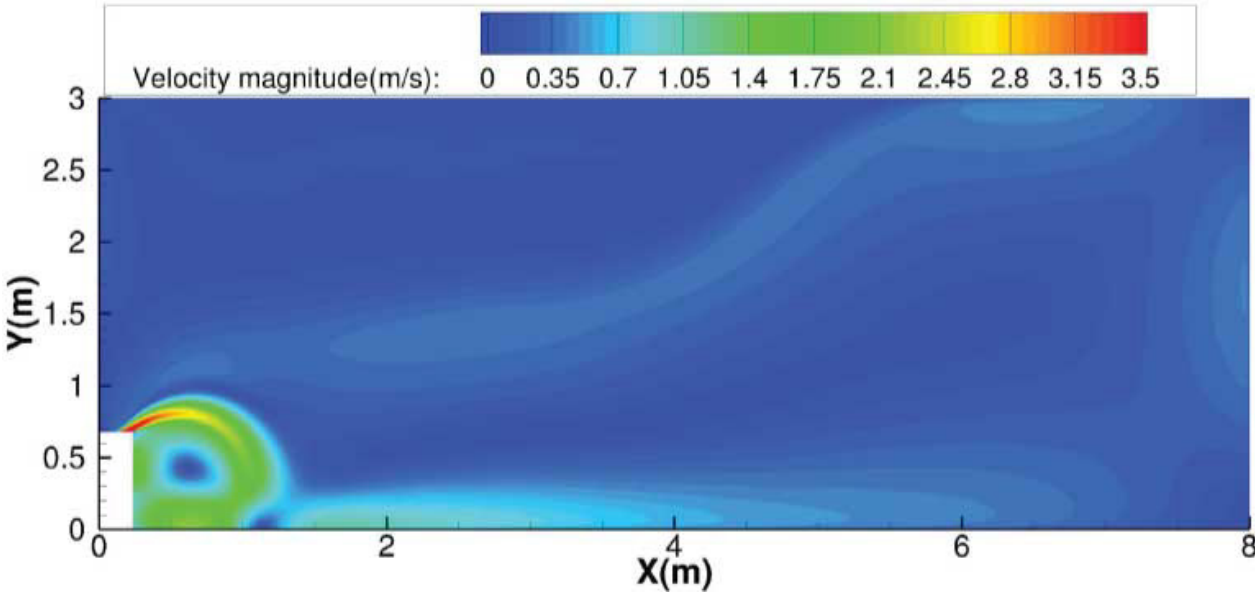


Fig. 81 – Cooling Airflow Velocity Distributions

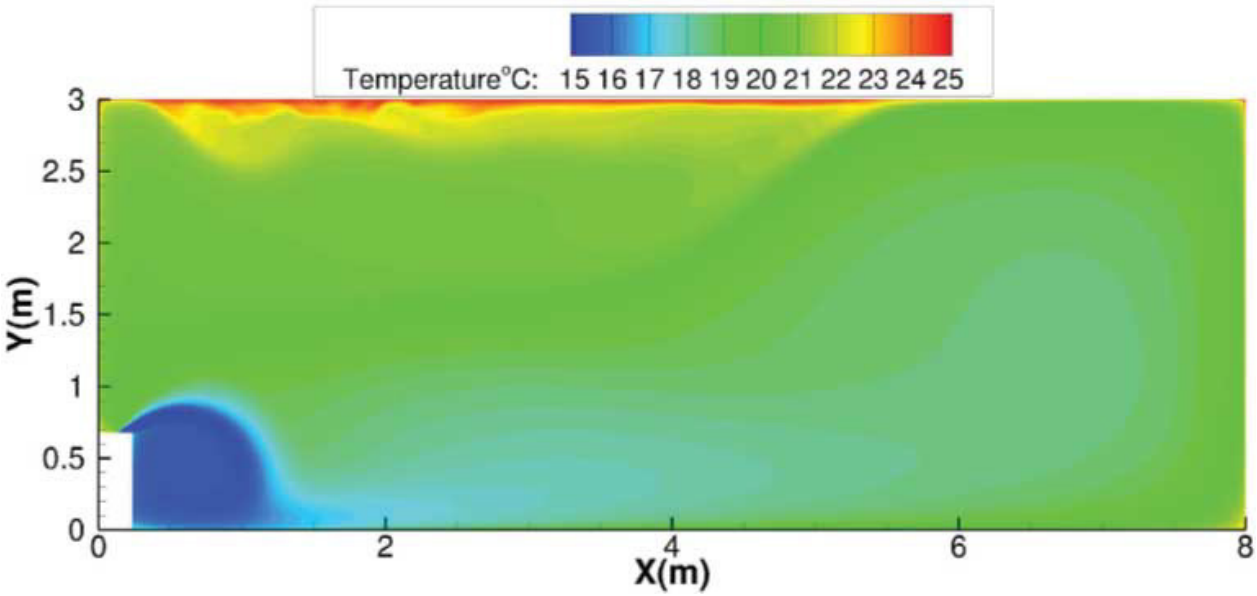


Fig. 82 – Cooling Temperature Distributions

Discharge Angle 60°

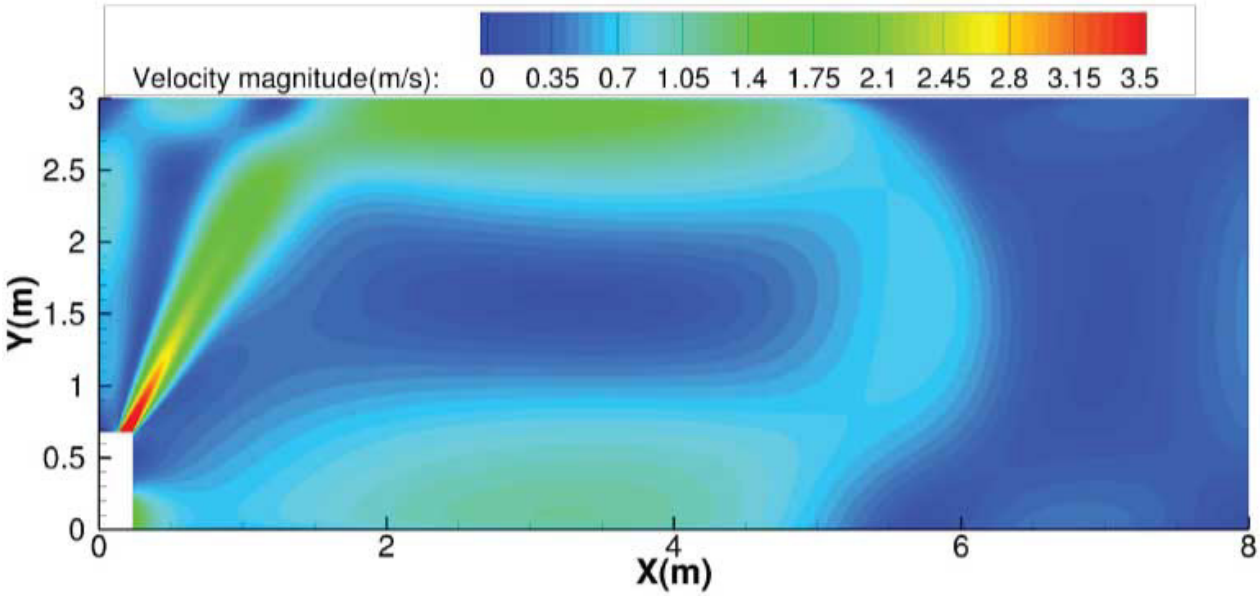


Fig. 83 – Cooling Airflow Velocity Distributions

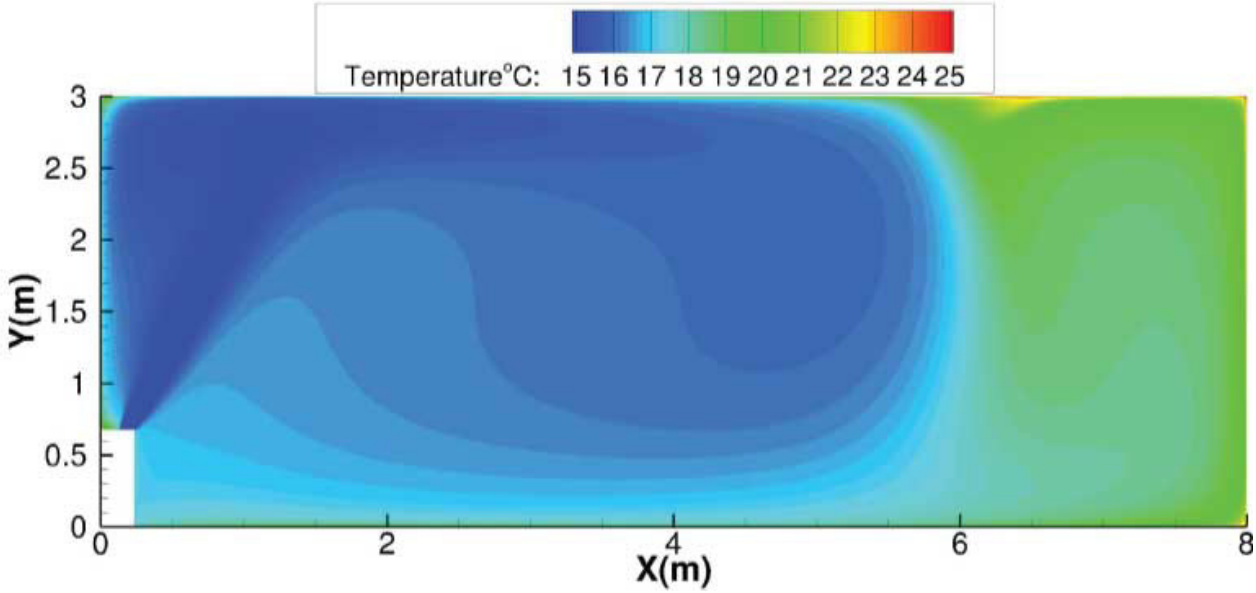


Fig. 84 – Cooling Temperature Distributions

Discharge Angle 30°

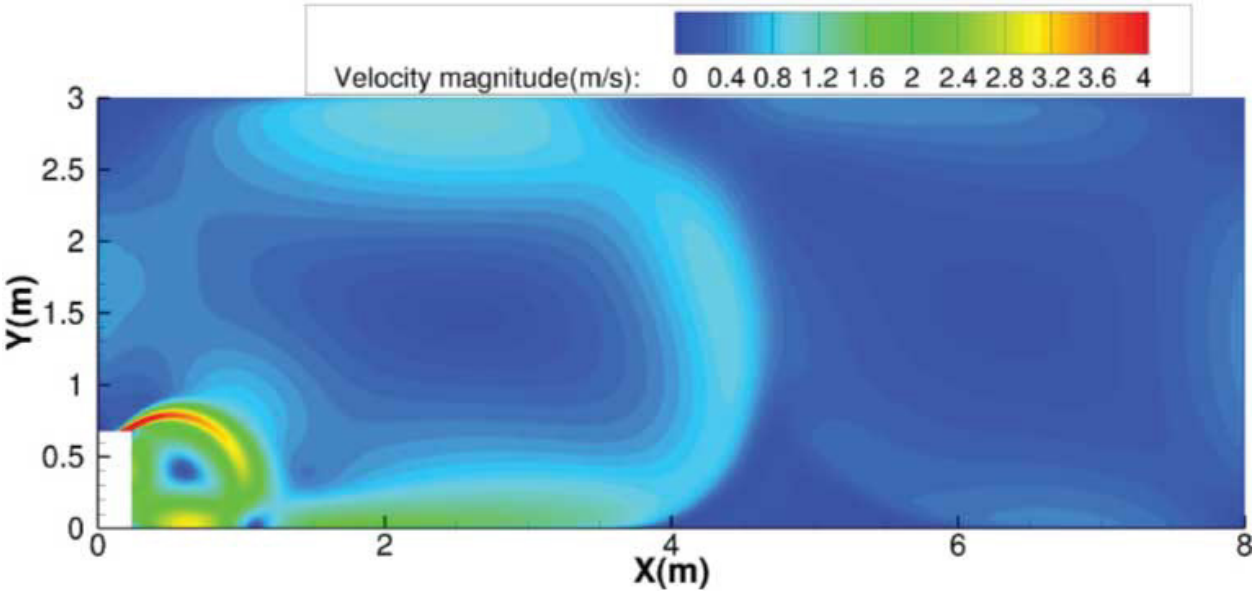


Fig. 85 – Heating Airflow Velocity Distributions

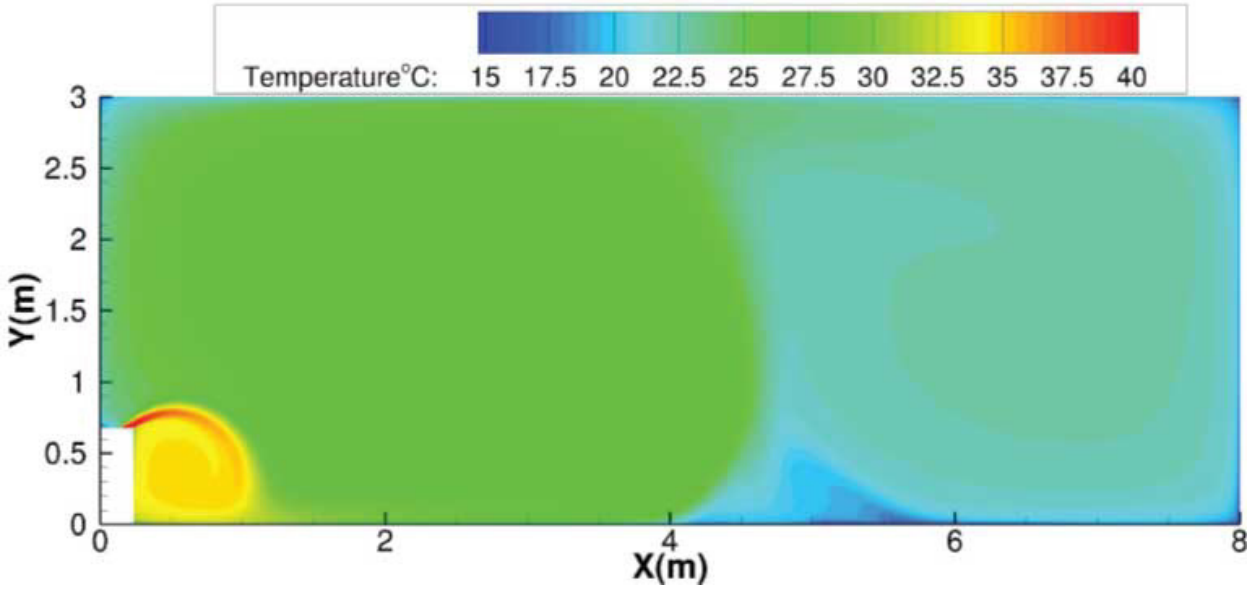


Fig. 86 – Heating Temperature Distributions

Discharge Angle 60°

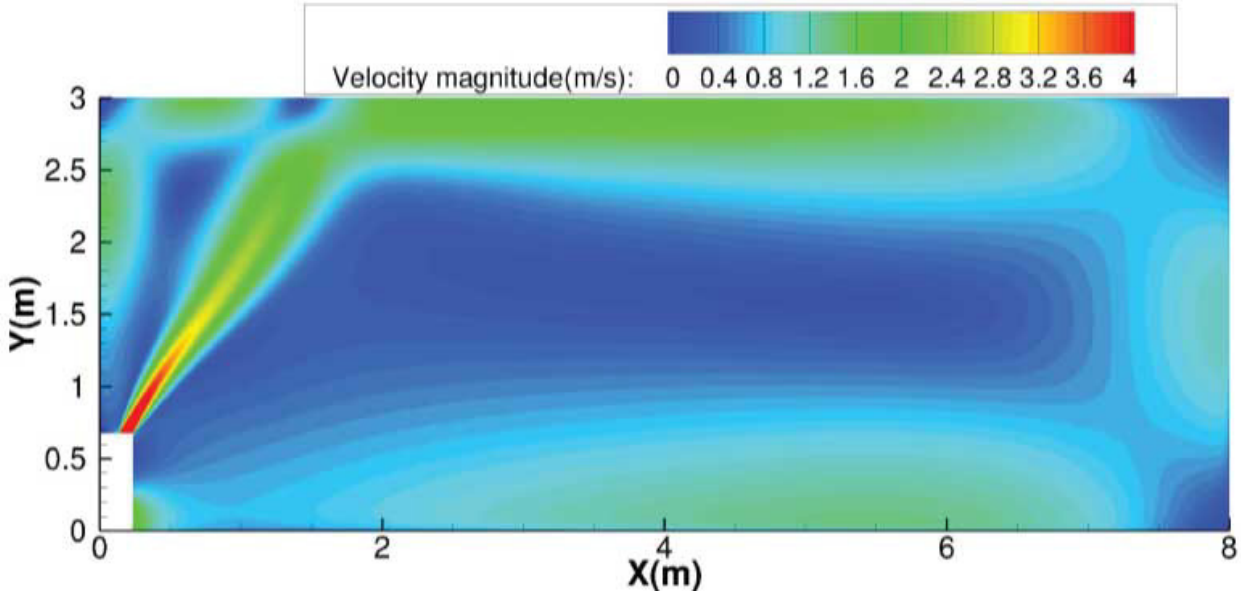


Fig. 87 – Heating Airflow Velocity Distributions

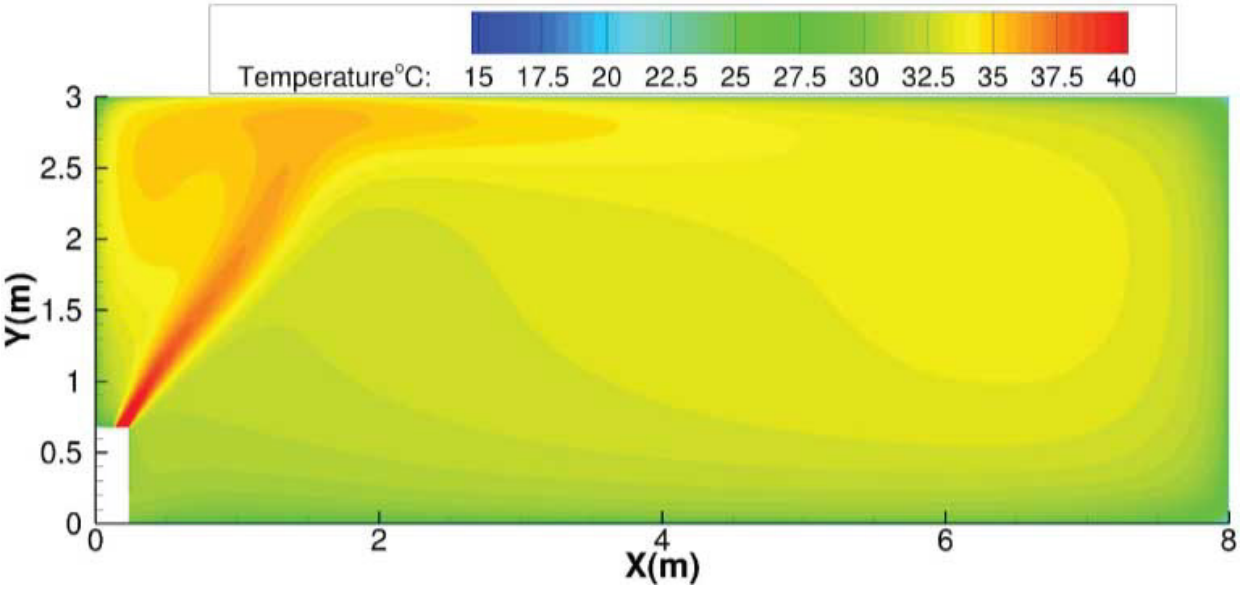


Fig. 88 – Heating Temperature Distributions

58K – Ceiling Installation:

Discharge Angle 30°

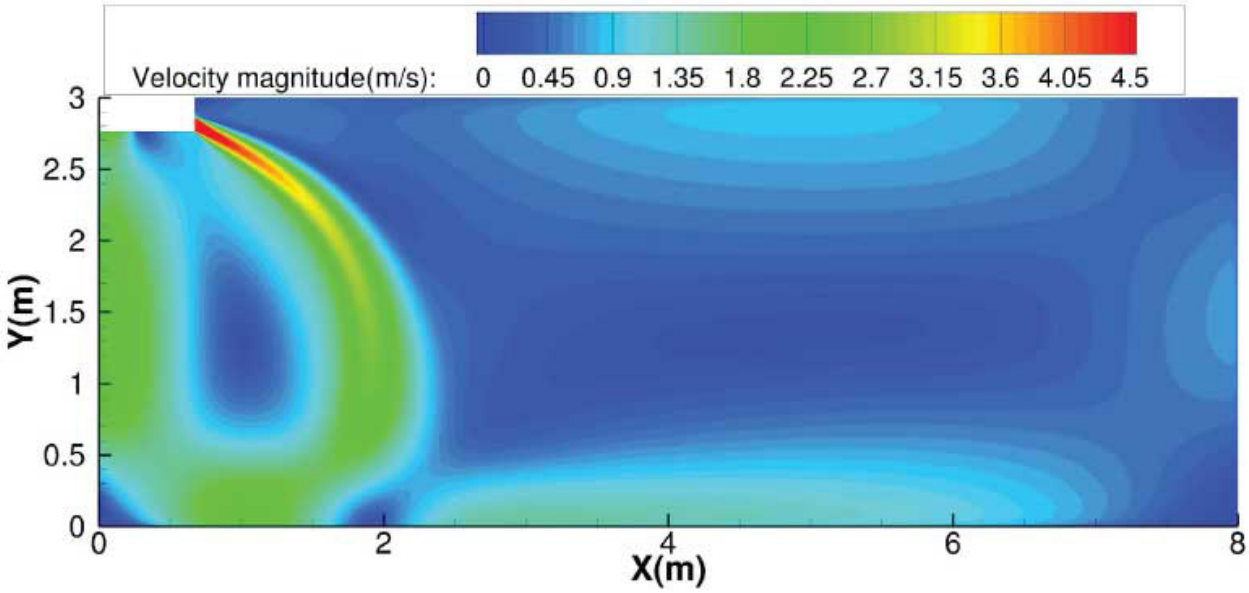


Fig. 89 – Cooling Airflow Velocity Distributions

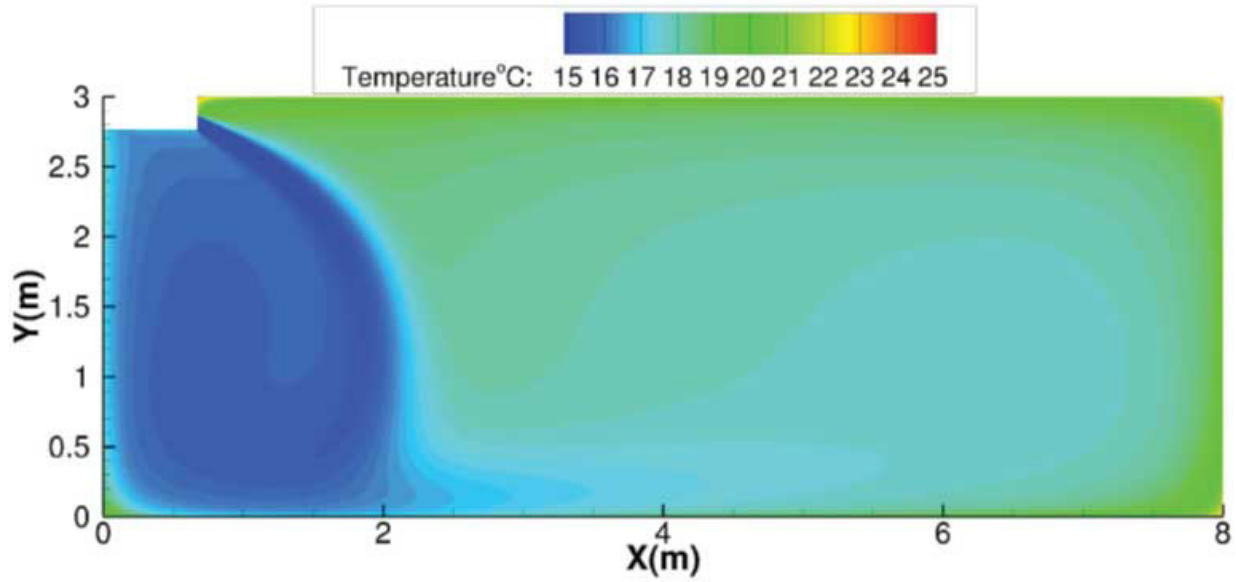


Fig. 90 – Cooling Temperature Distributions

Discharge Angle 60°

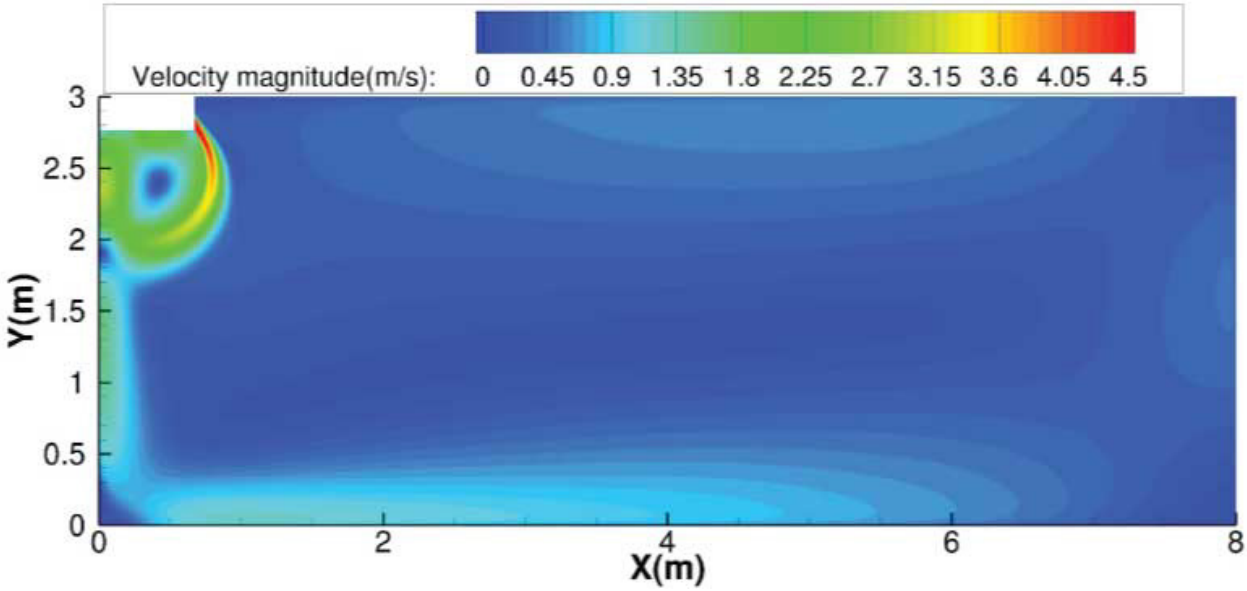


Fig. 91 – Cooling Airflow Velocity Distributions

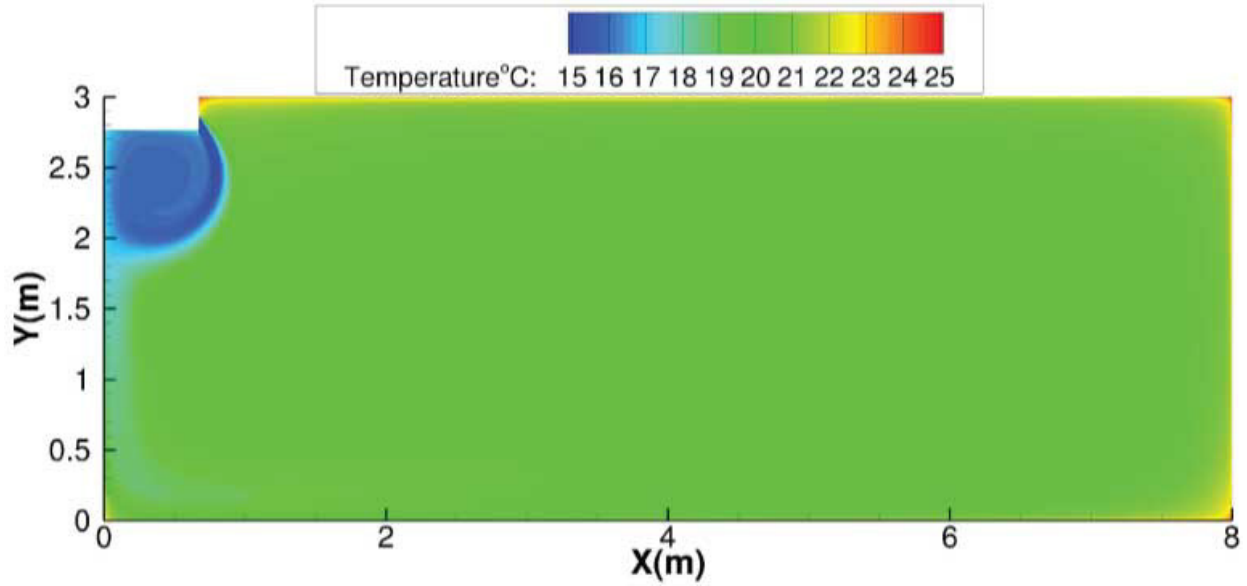


Fig. 92 – Cooling Temperature Distributions

Discharge Angle 30°

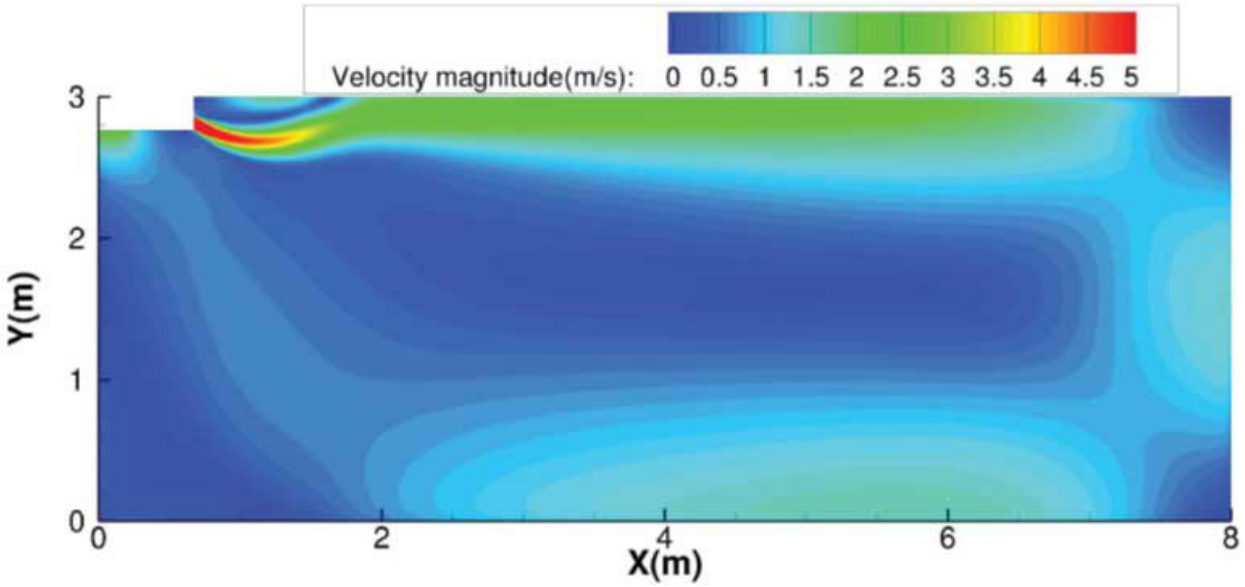


Fig. 93 – Heating Airflow Velocity Distributions

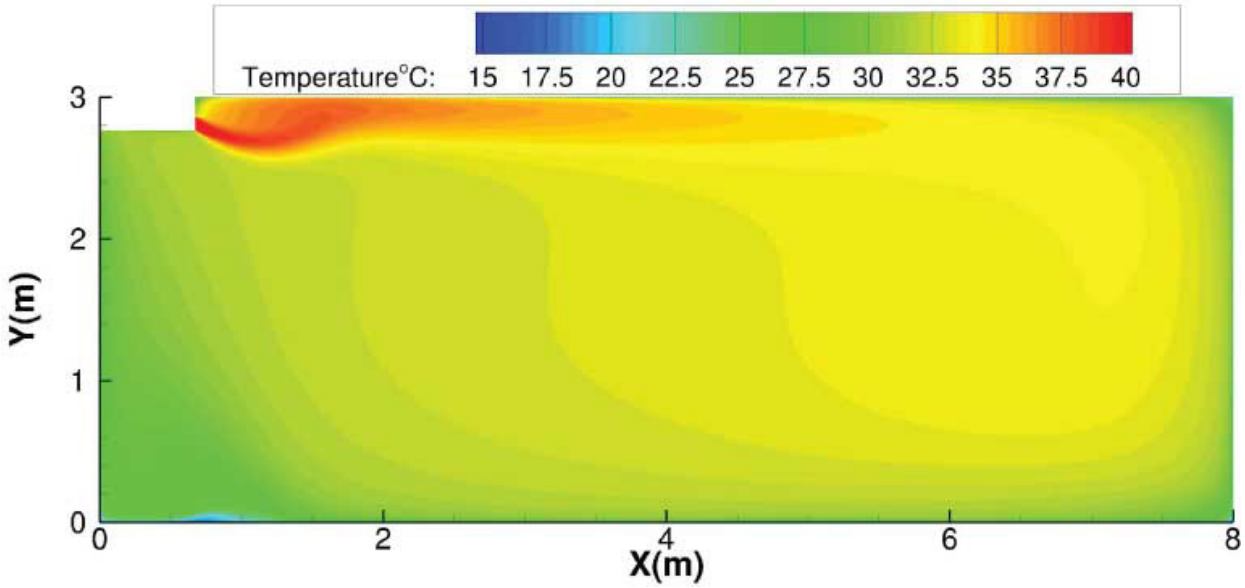


Fig. 94 – Heating Temperature Distributions

Discharge Angle 60°

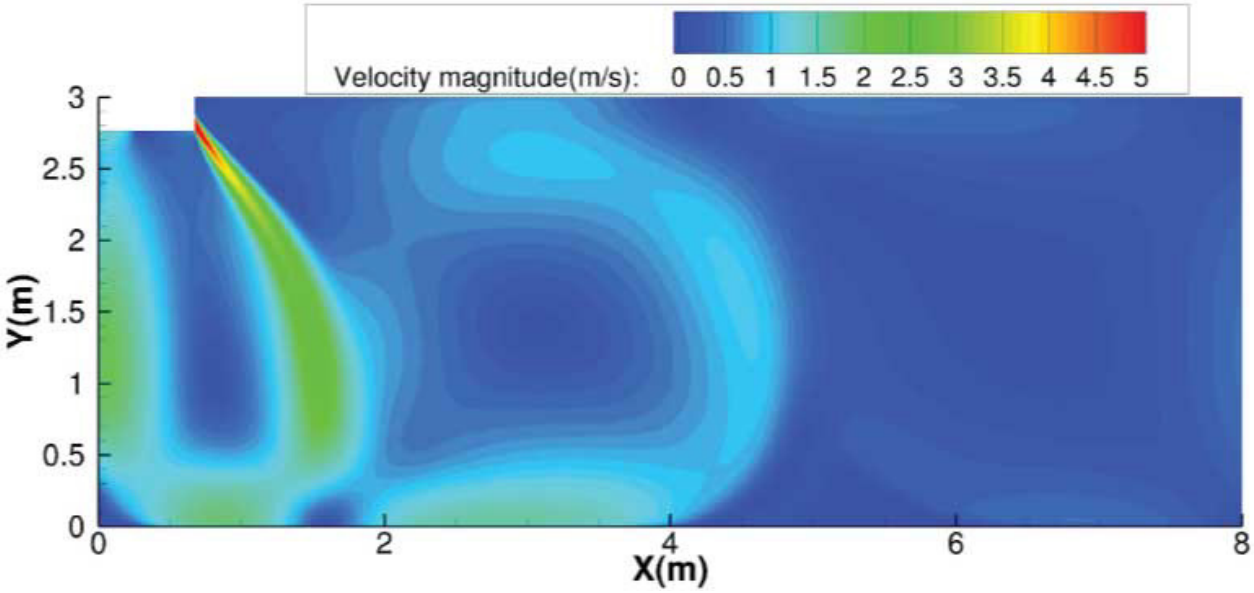


Fig. 95 – Heating Airflow Velocity Distributions

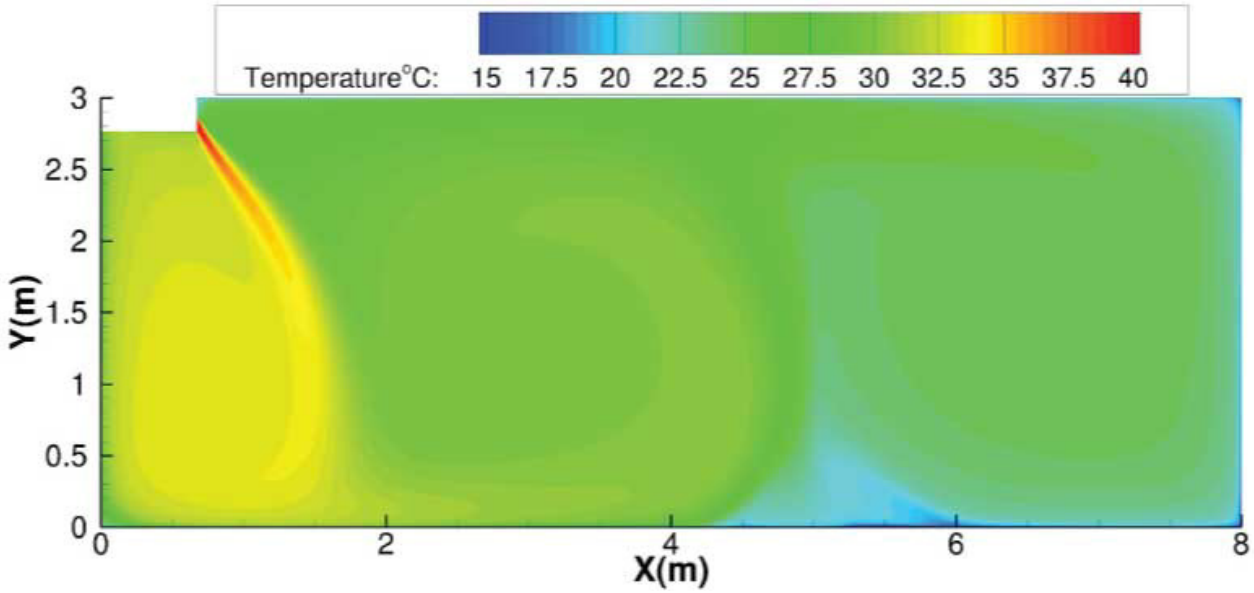


Fig. 96 – Heating Temperature Distributions

60K – Floor Installation:

Discharge Angle 30°

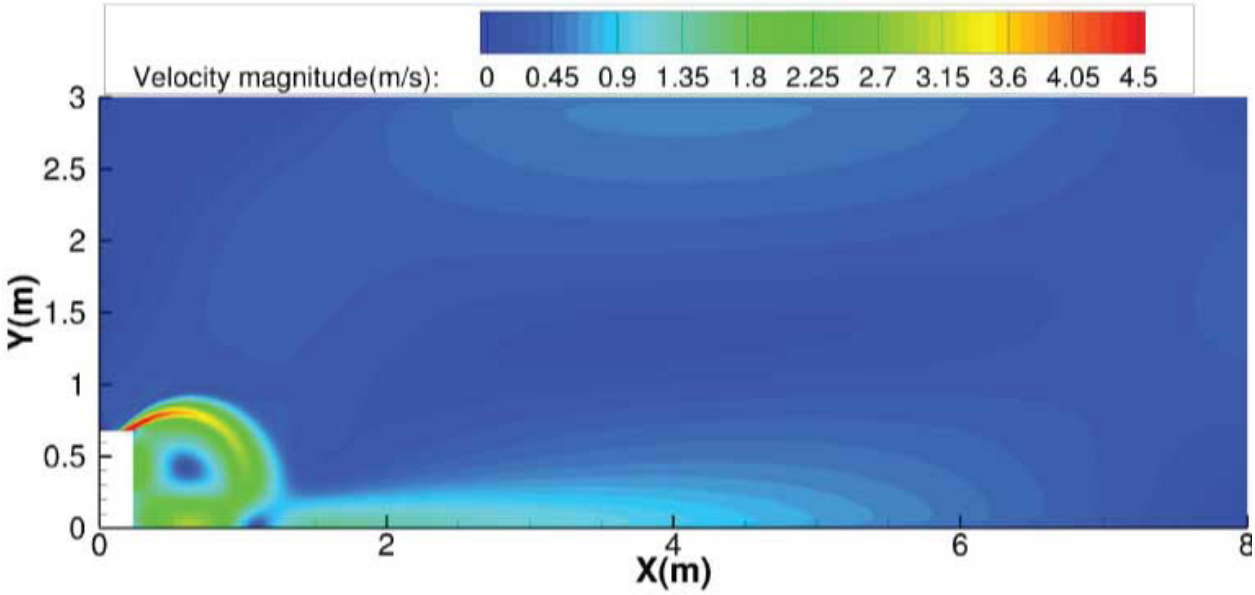


Fig. 97 – Cooling Airflow Velocity Distributions

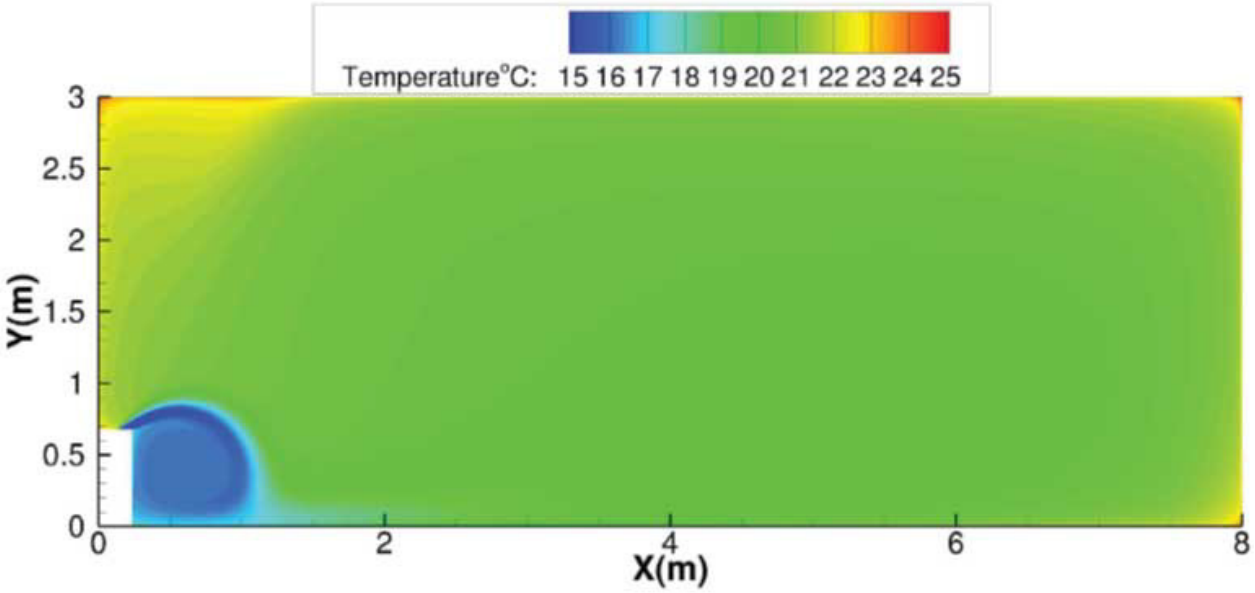


Fig. 98 – Cooling Temperature Distributions

Discharge Angle 60°

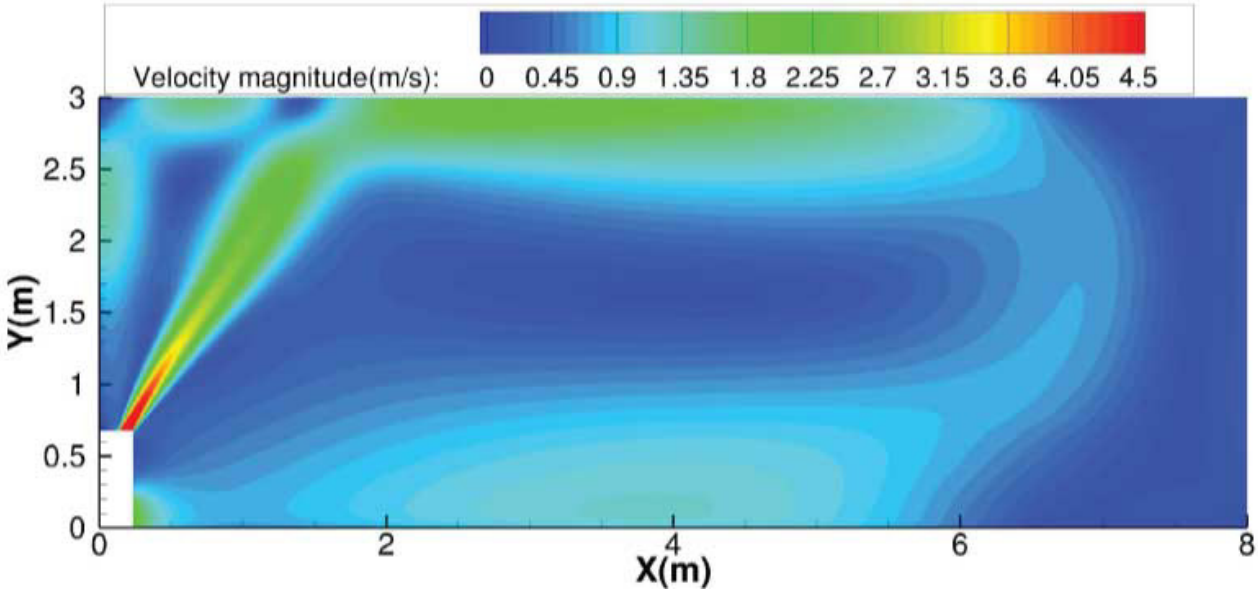


Fig. 99 – Cooling Airflow Velocity Distributions

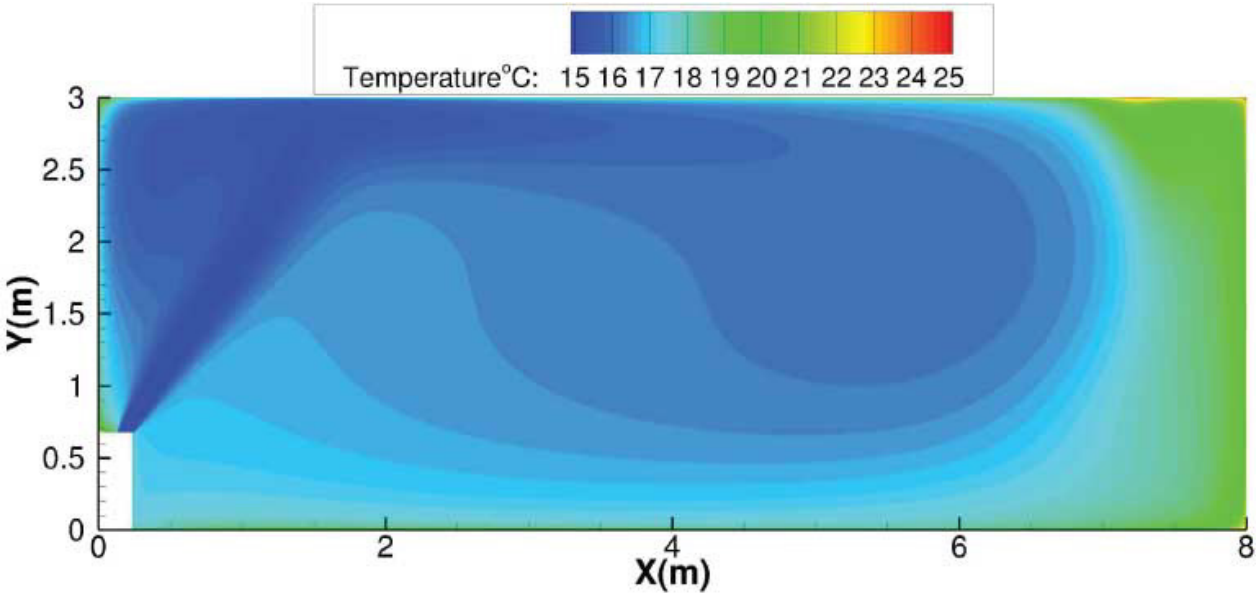


Fig. 100 – Cooling Temperature Distributions

Discharge Angle 30°

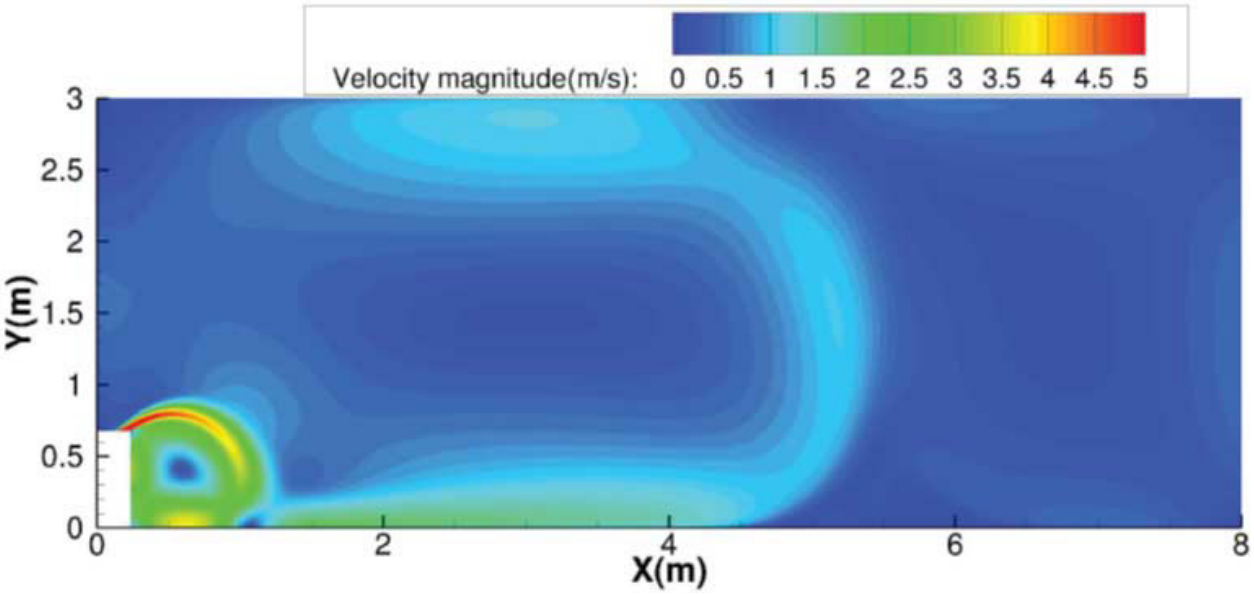


Fig. 101 – Heating Airflow Velocity Distributions

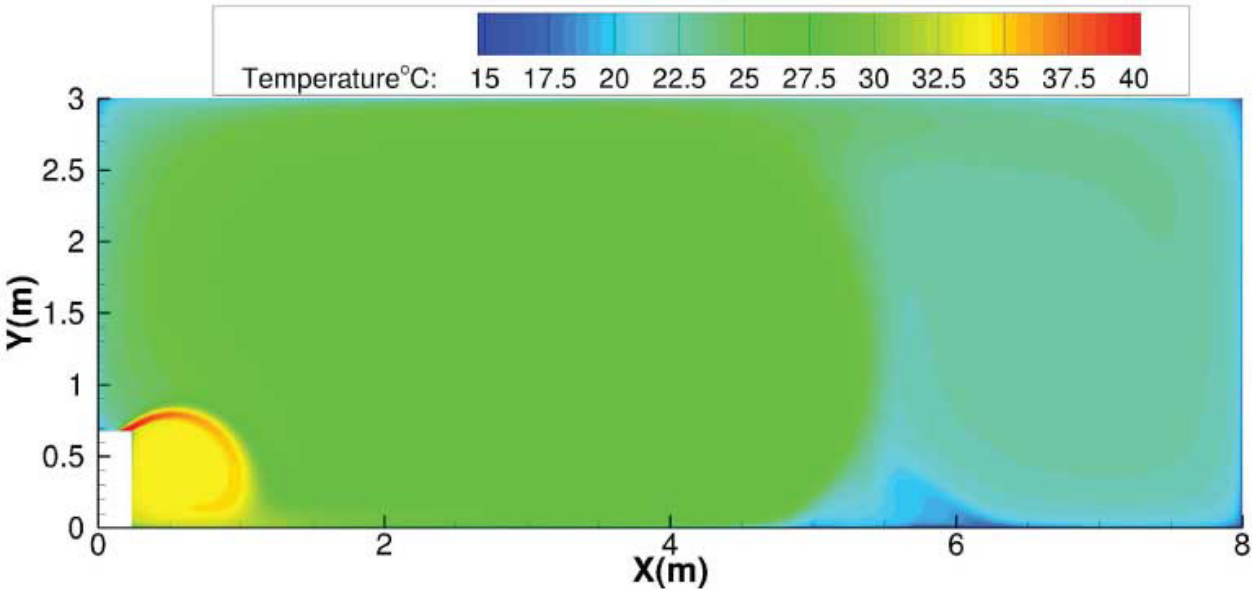


Fig. 102 – Heating Temperature Distributions

Discharge Angle 60°

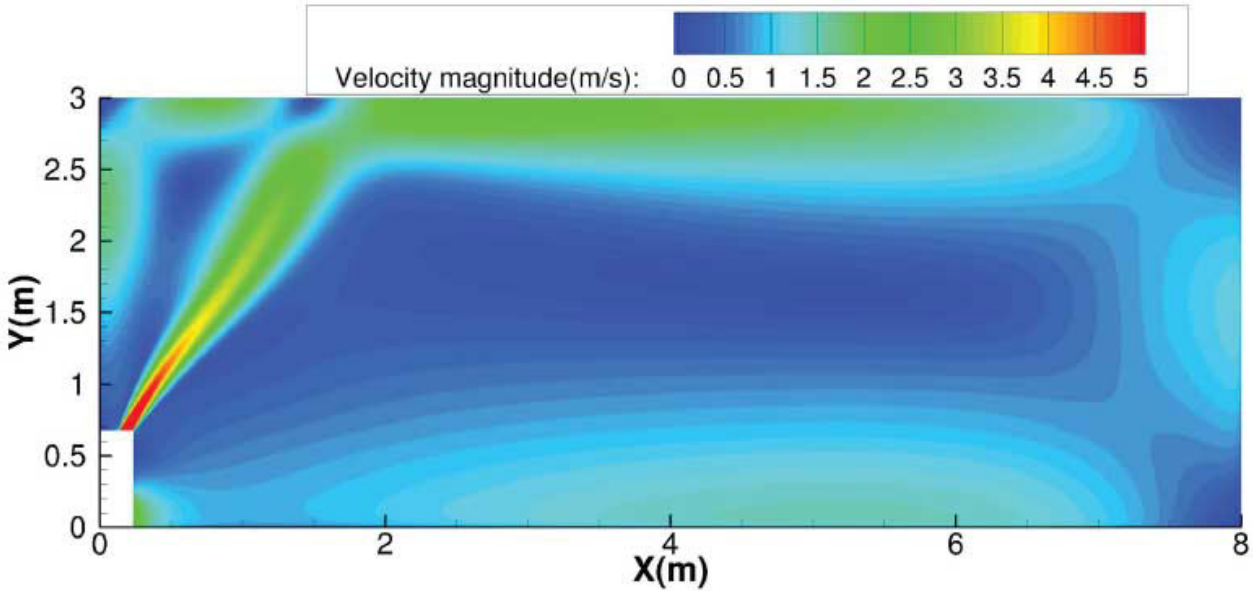


Fig. 103 – Heating Airflow Velocity Distributions

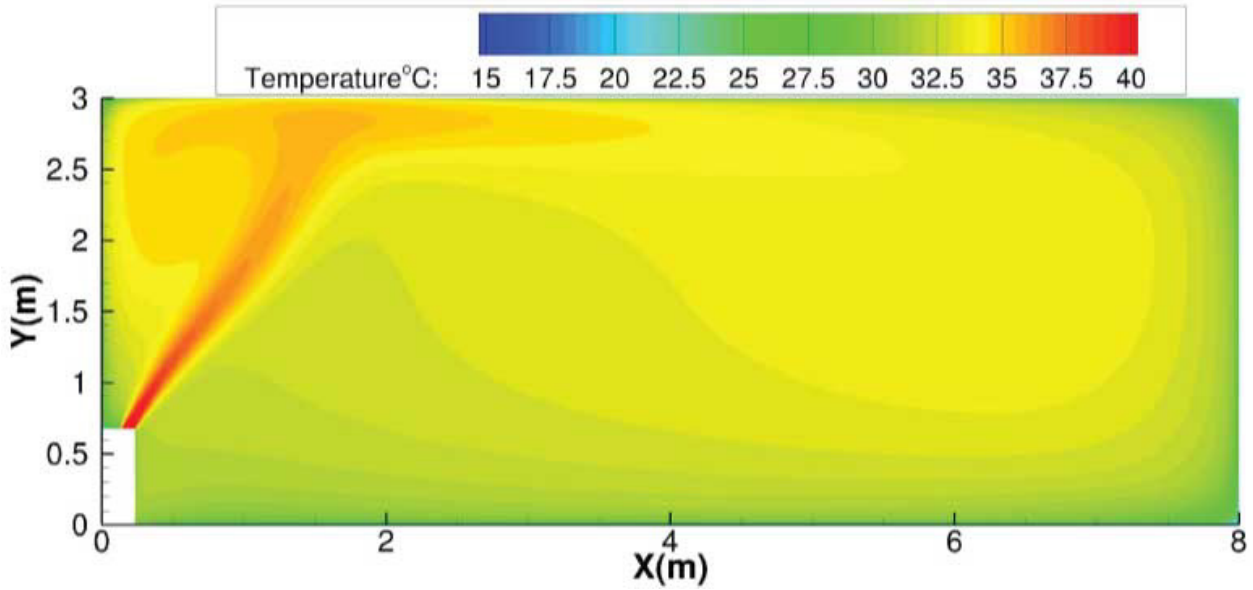


Fig. 104 – Heating Temperature Distributions

GUIDE SPECIFICATIONS
CEILING / FLOOR UNIT DUCTLESS UNITS
Size Range: 1.5 to 5 Ton Nominal Cooling and Heating Capacity
Model Number:**45MCFA**

Part 1 - GENERAL

1.01 System Description
Indoor console, direct-expansion fan coils are matched with a cooling only or heat pump outdoor unit.

1.02 Agency Listings
Unit is rated per AHRI Standards 210/240 and listed in the AHRI directory as a matched system.

1.03 Delivery, Storage, And Handling
Store and handle per the unit manufacturer's recommendations.

1.04 Warranty (For Inclusion By Specifying Engineer)

Part 2 - PRODUCTS

2.01 Equipment

A. General:

Indoor, direct-expansion, floor-mounted fan coil. Unit is complete with a cooling/heating coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing. Unit is furnished with an integral mounting bracket and mounting hardware.

B. Unit Cabinet:

Cabinet discharge and inlet grilles are attractively styled, high-impact polystyrene. Cabinet is fully insulated for improved thermal and acoustic performance.

C. Fans:

1. Fan is the tangential direct-drive blower type with an air intake in the center of the unit and discharge at the top and bottom front. An automatic, motor-driven vertical air sweep is standard.
2. Air sweep operation is user selectable. The vertical sweep may be adjusted (using the remote control) and the horizontal air direction may be set manually.

D. Coil:

Coil is a copper tube with aluminum fins and galvanized steel tube sheets. Fins are bonded to the tubes by mechanical expansion and specially golden hydrophilic pre-coated for enhanced wet-ability. A drip pan under the coil has a drain connection for hose attachment to remove condensate. The condensate pan has an internal trap.

E. Motor:

The motor has an open drip-proof, permanently lubricated ball bearing with overload protection. The fan motor has 4-speeds.

F. Controls:

Controls consist of a microprocessor-based control system which controls the space temperature, determines the optimum fan speed, and runs self diagnostics. The temperature control ranges from 62°F to 86°F (17°C to 30°C) in increments of 1°F or 1°C, and have 46°F Heating Mode (Heating Setback). The wireless remote controller has the ability to act as the temperature sensing location for room comfort.

The unit has the following functions as a minimum:

1. An automatic restart after power failure at the same operating conditions as at failure.
2. A timer function to provide a minimum 24-hour timer cycle for system Auto Start/Stop.
3. Temperature-sensing controls to sense the return air temperature.
4. Indoor coil freeze protection.
5. Wireless infrared remote control to enter set points and operating conditions.
6. Automatic air sweep control to provide on or off activation of air sweep louvers.
7. Dehumidification mode to provide increased latent removal capability by modulating system operation and set point temperature.
8. Fan-only operation to provide room air circulation when no cooling is required.
9. Diagnostics to conduct continuous checks of unit operation and warn of possible malfunctions. Error messages appear on the unit.
10. Fan speed control is user-selectable: high, medium, low, or microprocessor controlled automatic operation during all operating modes.
11. Automatic heating-to-cooling changeover in heat pump mode. Control includes a deadband to prevent rapid mode cycling between heating and cooling.
12. Indoor coil high temperature protection is provided to detect excessive indoor discharge temperature when the unit is in heat pump mode.

G. Filters:

Unit has a filter track with factory-supplied cleanable filters.

H. Electrical Requirements:

Indoor fan motor to operate on 208-230V as specified. Power is supplied from the outdoor unit.

I. Operating Characteristics:

The **45MCFA** system has a minimum SEER (Seasonal Energy Efficiency Ratio) and HSPF at AHRI conditions, as listed on the specifications table of the outdoor unit.

J. Refrigerant Lines:

All units should have refrigerant lines that can be oriented to connect from the left, right or back of unit. Both refrigerant lines need to be insulated.

K. Refrigerant Leak Detection

This system comes with a Refrigerant Leak Detection and Mitigation system.

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