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**OPERATIONAL MANUAL
for the
EUROVENT CERTIFICATION
of
ACTIVE AND PASSIVE CHILLED BEAMS**

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Modifications as against last version:

No.	Modifications	Section	Page
1	The reference to paragraph IV.2 is deleted	V.2	8
2	Participants have to send their software to ECC with their updated declaration list	A	9
3	The column certiflash is deleted	B.I	10
4	Method to have the relevant declared performances	C.II	13

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I. PURPOSE

The purpose of this Operational Manual is to prescribe procedures for the operation of the Certification Programme for Active and Passive Chilled Beams of Eurovent Certita Certification, in accordance with the its Certification Manual.

Participation to this programme is open to:

- Original Equipment Manufacturers (OEM)
- Brand Name companies (BN) selling products already certified by OEM

II. SCOPE

The programme for Chilled Beams applies to all Active and Passive Chilled Beams of the Applicant/Participant.

Chilled ceilings Radiant Heating panels are excluded.

Certify-all: Chilled Beams are presented by ranges (see definition in RS/ 2/C/001) and all ranges must be certified. This applies to all product ranges which have either catalogue leaflets with product details including technical data or similar product information in electronic format. Eurovent Certita Certification certifies the performances of the ranges as presented in their selection tool.

The Certify-all Principle applies for the whole world.

The following transitional arrangements apply, further to the new definition of active chilled beams (see definition in RS/ 2/C/001):

- During 2016 campaign beams which are not mounted under the ceiling or integrated into a false ceiling are excluded from the Certify-All Principle, it is not mandatory to declare them.
- From 2017 campaign the Certify-All Principle shall apply for all types of mountings.

III. BASIC OUTLINE OF THE PROGRAMME

III.1 Application

After signing the Licence Agreement, the applicant has to submit to Eurovent Certita Certification:

- list of all range names
- list of names and versions of the corresponding selection tools (selection softwares mandatory) and web link to the valid version of the selection tool(s)
- declaration list, i.e. list of all ranges with their characteristics (and eventually performance data) as required by the Rating Standard 2/C/001 for Chilled Beams.

III.2 Qualifying procedure

Once the application is completed, the qualification procedure is articulated as follows:

- For Original Equipment Manufacturers (OEM), units selected by Eurovent Certita Certification shall be tested in an Independent Laboratory selected by Eurovent Certita Certification. Measured performance shall be compared with the values declared in the selection tool. If the tests show conformity with the

requirements of the relevant Rating Standard and the payments have been completed, certification shall be granted: all product ranges and the associated selection tool shall be certified.

- For Brand Name companies (BN), if at least one of the related OEM is certified and the payments have been completed, certification shall be granted: all product ranges and the associated selection tool shall be certified.

III.3 Repetition procedure

Every year, Eurovent Certita Certification checks whether the certified characteristics and performances of the certified products still fulfil the requirements:

- For Original Equipment Manufacturers (OEM), units selected from regular production shall be tested in the independent laboratory selected by Eurovent Certita Certification.

The certification is renewed for another campaign on condition that:

- The previous test campaigns have been successfully completed.
- The product delivery together with the technical datasheets and the payments have been completed.

- For Brand Name companies (BN), if at least one of the related OEM is certified and the payments have been completed, certification shall be renewed.

III.4 Failure treatment

When the test results fail to comply with the requirements of the relevant Rating Standard, the failure treatment shall be applied.

III.5 Complaint procedure

Under special conditions a complaint procedure may be carried out as described in the Certification Manual.

IV. OPERATION OF THE PROGRAMME

IV.1 Declaration of Data

a. Rated Performance Data

All characteristics shall be expressed in SI Units.

b. Certification forms

Declarations shall be sent by email by the Manufacturer to Eurovent Certita Certification and forms shall be attached as .xls file (see B.I.):

- Range names
- Names and versions of the corresponding selection tool
- Web link to the valid version of the selection tool
- Declaration list of models through Form CB-1 for OEM
- For each model selected for testing, a Technical Datasheet (TDS), completed with technical description of all components along with declared data
- For each model selected for testing, corresponding drawings.

The selection tool, the technical datasheets and corresponding drawings have to be sent to Eurovent Certita Certification copying the Laboratory.

c. Update of product declaration list

If a characteristic of a range changes (example: fin spacing), but the measured performances comply with the claimed ones, the name of the range can be maintained when up-dating the declaration lists.

Each year, maximum of one range of the ranges for which there was a failure, can be declared as obsolete (OBS, removed from the Eurovent Certified Performance website). Each removal of a failed range leads to a penalty test for the following testing campaign. Other failures have to be re-rated and kept for one year as deleted models (DEL status). Removal of more than one failed range is considered as a Non-respect of procedures (see IV.6).

IV.2 Selection of units to be tested

Eurovent Certita Certification shall select units using manufacturers' software.

For the qualifying procedure Eurovent Certita Certification shall select three units from different ranges to be tested at random, on the basis of its evaluation of applicant's declaration.

For the repetition procedure Eurovent Certita Certification shall select every year three units from different ranges to be tested with a maximum of one unit per range per year.

IV.3 Software

See APPENDIX C.

IV.4 Tests at the laboratory

a. General

Tests shall be performed at the independent laboratory selected by Eurovent Certita Certification.

All shipment cost shall be paid by the manufacturer. The laboratory personnel shall install and check out test units. The laboratory shall have the responsibility of un-crating, handling, testing and re-crating the unit for shipment.

The manufacturer shall provide the laboratory with full information about the installation. Units shall be installed in the test facility in accordance with the manufacturer's published installation instructions. The procedures used shall be in accordance with the manufacturer's start-up and service instructions.

If during a test, one or more of the requirements of the testing standard cannot be met, the laboratory shall promptly notify Eurovent Certita Certification and the manufacturer. Eurovent Certita Certification shall take a decision in agreement with the manufacturer and inform the laboratory for further actions.

No manufacturer's personnel shall be allowed in the laboratory test facility for the first test of a selected model. The manufacturer may review the test set-up prior to a second test of the selected model. During this second test the manufacturer may be present to witness, but not participate or interfere with the test.

b. Time limitation of acquisition of units

The deadline for delivery of units to the laboratory together with the duly filled in technical forms and orders shall be decided by Eurovent Certita Certification in accordance with the Compliance Committee (see APPENDIX A).

If units, technical forms and orders are not delivered within the time limitations, it is considered as Non-respect of procedures (see IV.6).

c. Report of Tests Results

Upon completion of the tests on each unit, the laboratory will send Eurovent Certita Certification its complete report as pdf file.

When checking the software after test, the laboratory has to input the measured flow-rate, whatever the output of outlet temperature.

Eurovent Certita Certification will transmit a copy of the report together with reporting result (Form CB-2) and request for decision after failure to the manufacturer.

A manufacturer has 30 days after the reception of a test report to decide if he wants to get back the tested beam or to scrap it. After 30 days the unit will automatically be scrapped by the laboratory and the manufacturer will be invoiced accordingly.

IV.5 Failure treatment

a. Component failure

Whenever a functional component is inoperative, or the unit is damaged and cannot be repaired at the laboratory, the unit is considered as "Component Failure". A further unit of the same model shall then be sent within one month for test.

b. General

For each test, a performance item fails when the difference between the declared value and the measurement is out of the allowable tolerance (see relevant Rating Standard). A test fails when one or more performance item fails.

If the failure is confirmed and accepted by the manufacturer, he will have 30 days from the notification of the failure to select one of the following alternatives:

- (1) Re-rate performance data for all units in the range in accordance with the test results following the re-rating procedure described below.
- (2) Ask for a second test on the same unit or on a new unit. If this second test is successful, the model shall continue to be listed on the ECC website as initially declared. If the second test is unsuccessful, the manufacturer shall re-rate all products in line with second test results according to the re-rating procedure described below.
- (3) Ask to perform tests on two units from extremes of range. After these tests, all models of the range shall be re-rated with the average deviation of the three tests.

c. Re-rating procedure

In case of failure on one unit of a range, all products in the same range shall be re-rated by the deviation found for the tested model.

In case of failure on two units from extremes of range, all products of the range shall be re-rated with the average deviation of the three tests.

Each year, maximum of one range of the ranges for which there was a failure, can be declared as obsolete (see IV.1c).

d. Test checking procedure

After re-rating, the software shall be checked again to compare updated values with values obtained during the test.

IV.6 Non-respect of procedures

Non-respect of procedures is detailed in the Certification Manual.

V. PROMOTION OF THE PROGRAMME

V.1 By Eurovent Certita Certification

The certified technical items (characteristics and eventually performance data) and name(s) and version(s) of certified selection tool for the certified models shall be published on the Eurovent Certified Performance website: www.eurovent-certification.com.

The following information pertaining to each certified model shall be published on the Eurovent Certified Performance web page for Chilled Beams:

- Name of company
- Trade or brand name
- Range names
- Name and version of the corresponding selection tool(s)
- Web link of the valid version of the selection tool

Eurovent Certita Certification will supply, upon request, to any interested party, the current status of any Participant or of any model.

V.2 By Participants

For the purpose of displaying the Eurovent Certified Performance marks on specification sheets, sales promotion or other literature and advertising, reproduction proofs are available for each case and can be obtained from Eurovent Certita Certification. No data or other marking shall be added to the Eurovent Certified Performance marks.

The design of the Eurovent Certified Performance mark for Chilled Beams, letter size and style are presented in the Licence Agreement. Display of Eurovent Certified Performance mark in literature is detailed in the Certification Manual.

Each Participant is entitled to display the Eurovent Certified Performance mark on units of ranges which have been certified:

- By using the relevant Eurovent Certified Performance mark
- By application of the relevant Eurovent Certified Performance mark directly on the nameplate.

APPENDIX A. CAMPAIGN TEST SCHEDULE

Eurovent Certita Certification asks for up-date of product list before:	27/02/n
The Participant confirms the up-date of their product list and provides his selection tool before:	15/03/n
Eurovent Certita Certification sends the selection list of models to be tested before:	31/03/n
The Participant confirms its selection before:	15/04/n
The Participant sends all the technical datasheets and the purchase orders before:	15/06/n
All the units are delivered before:	15/06/n
Eurovent Certita Certification sends the diploma (only if the units and documentation are available) before :	15/06/n
The diplomas are valid until:	15/09/n+1
The Laboratory completes all first tests before:	31/07/n
Eurovent Certita Certification sends all the test reports before:	15/08/n
The Participant can ask for second tests before:	15/09/n
Eurovent Certita Certification sends the selection list of models to be re-tested before:	30/09/n
The Participant sends all the units, technical datasheets and orders for second tests before:	15/11/n
The Laboratory completes all second tests before:	15/12/n
Eurovent Certita Certification sends the Participants a report on failure rate before:	15/12/n
The Participant corrects its software after failure before:	20/12/n

APPENDIX B. FORMS

B.I. Form CB-1: Submittal for certification

GENERIC	Product Number		
	Master product number		Product number of the master product in OEM list of products (for brandname products only)
	Tested On		
	Rerated on		
	Created on		
	Last update on		
	Status		New / Certified / Deleted / Obsolete
	Participant Name		
	Product Name		Range name can be reported here
	Trade Name		
	Type of product		CB/A for active chilled beams, CB/P for passive chilled beams
	Range Name		
	BMG		
	TECHNICAL CHARACTERISTICS OF THE PRODUCT	Standardized	Primary air flow
Mounting base			- Integrated - Free hanging - ...
Coil width			[mm] {integer}
Coil height			[mm] {integer}
Fin material			- Aluminium - ...
Fin spacing			[mm] {decimal}
Pipe material			- Copper - ...
Pipe shape			- Smooth - Rifled
Pipe pattern			- Serial - Square - Shifted - ...
No. of tubes (total amount in cooling battery/batteries)			- {integer}
No. of rows (No of tubes passed by the induced air)			- {integer}
Plenum geometry			- Rectangular - Square - ...
Diffuser geometry			- 2-ways - Rectangular - Square - Linear - ...
Refrigerant			- Water - ...
Selection Software link			- Hyperlink to the valid version of the selection software

B.II. Form CB-2: Test result form

EUROVENT CERTITA CERTIFICATION S.A.S.
 48/50, rue de la victoire - 75009 PARIS FRANCE
 Tel: 33 (0)1 7544-7171

REPORTING OF TEST RESULT										
GENERIC		Test key: Created on: Last update on: Status:								
MANUFACTURER		Participant key: Participant name:								
MODEL		Model key: Model name: Product type: Serial number:								
TEST		Programme - Sub-programmes: Date of reception of the unit: Date of reception of test report: Unit tested on:								
RESULT DETAILS										
					Measurement		MFV		High failure	
APPLICATION	Performances	Measured	Declared	Deviation	Limit	Result	Limit	Result	Limit	Result
Cooling capacity P _{cw1}	W									
Cooling capacity P _{cw2}	W									
Cooling capacity P _{cw3}	W									
Mean deviation	-									
Water Pressure Drop	kPa									
TEST CONCLUSION										
					Test			MFV		
							High failure			

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B.III. Form CB-3: Test rerate form

EUROVENT CERTITA CERTIFICATION S.A.S.
 48/50, rue de la victoire - 75009 PARIS FRANCE
 Tel: 33 (0)1 7544-7171

PROPOSAL OF RERATE	
GENERIC	Rerate key: Created on: Last update on: Status:
MANUFACTURER	Participant key: Participant name:
TEST	Test key: Unit tested on:

APPLICATION Performances

DECLARED												
Product key	Product name	Type of product	Range name	BMG	Perf 1.1	Perf 1.2	Perf 1.3					
RERATED												

LEGEND			
Code	Name	Product type	Component type
Perf. 1.1	Cooling capacity P _{cw1}	CB/A	
Perf. 1.2	Cooling capacity P _{cw2}	CB/A	
Perf. 1.3	Water Pressure Drop	CB/A	

APPENDIX C. SOFTWARE REQUIREMENTS

C.I. General software requirements

General software (selection tool) requirements are described in the dedicated appendix of the Certification Manual.

In addition software shall have at least the following inputs and outputs:

<u>Input:</u>	<u>Output:</u>
<ul style="list-style-type: none"> • Primary air flow rate • Primary air temperature • Reference air temperature • Water flow rate and inlet water temperature <u>or</u> Inlet and outlet water temperature 	<ul style="list-style-type: none"> • Air side capacity or total capacity (air side capacity + water side capacity) • Air side pressure (static plenum pressure or total pressure) • Water side capacity • Outlet water temperature or difference of water outlet and water inlet • Water flow rate if input is inlet and outlet temperature • Water pressure drop

C.II. Relevant declared values of capacities and water pressure drops in the software

Case of software with water flow rate and inlet water temperature as inputs:

- Measured values of primary air flow rate, primary air temperature, reference air temperature, water flow rate and inlet water temperature shall be set in input of the software.

After computing, the software will give relevant declared values of capacities and water pressure drop.

Case of software with inlet and outlet water temperatures as inputs:

- Measured values of primary air flow rate, primary air temperature, reference air temperature, inlet and outlet water temperatures shall be set in input of the software.

After computing, the software will give relevant declared values of capacities. The water flow rate calculated by the software may differ from the measured one. If so, the water pressure drop of this flow rate cannot be used for comparison with the measured one.

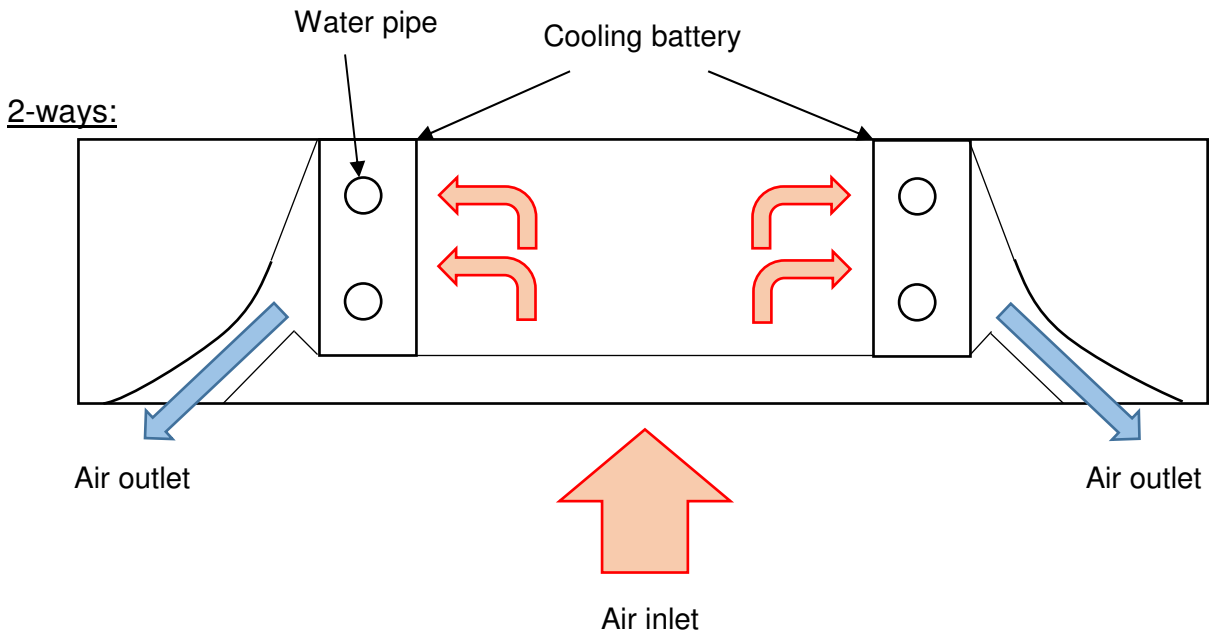
- Then the value of outlet temperature shall be changed step by step in input to have a computed value of water flow rate in output equal to the value measured during the test.

The relevant declared values of water pressure drop will be in output.

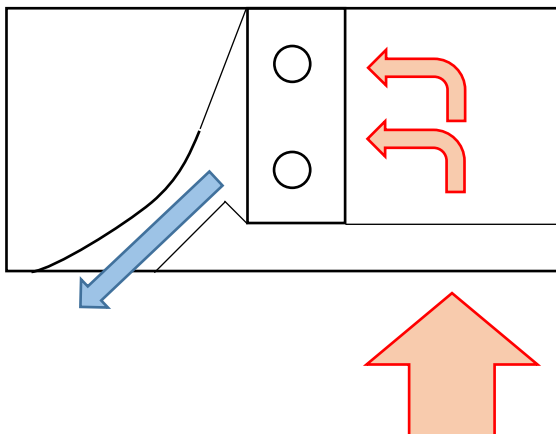
APPENDIX D. PLANS OF CHILLED BEAMS

Hereunder several sectional plans to illustrate some technical characteristics of the chilled beams that must be filled in the declaration table (see APPENDIX B.).

Diffuser geometry:

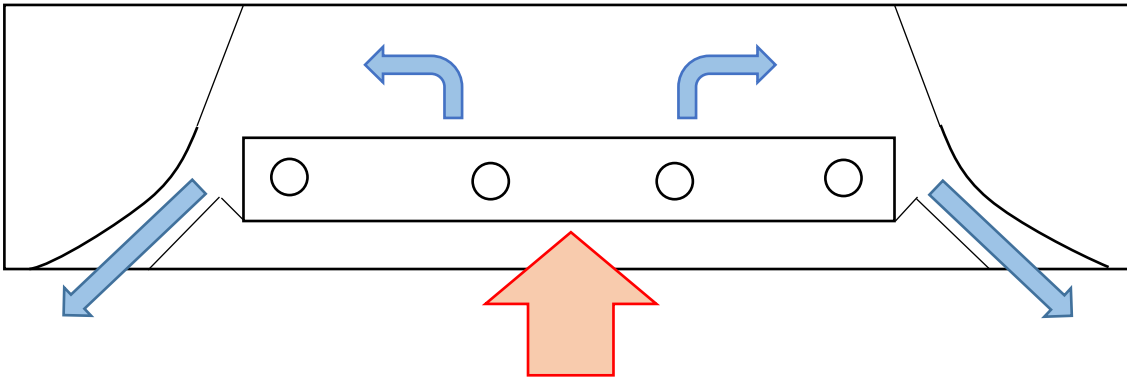
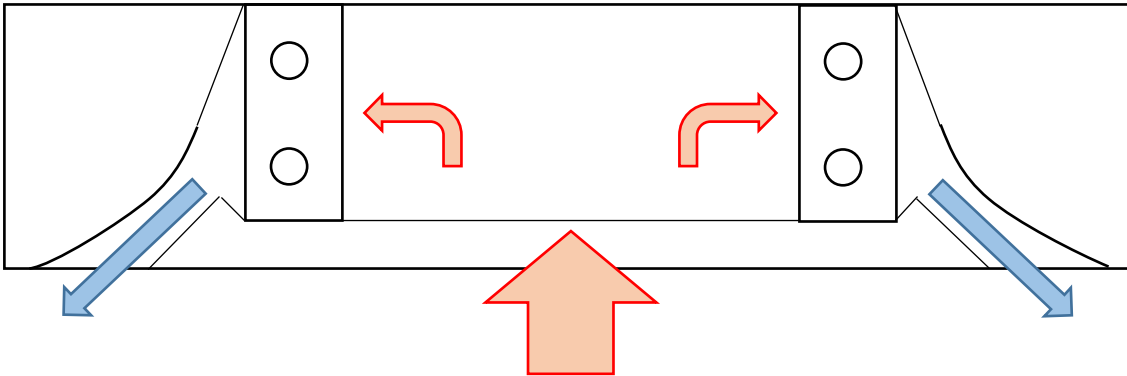


1-way:

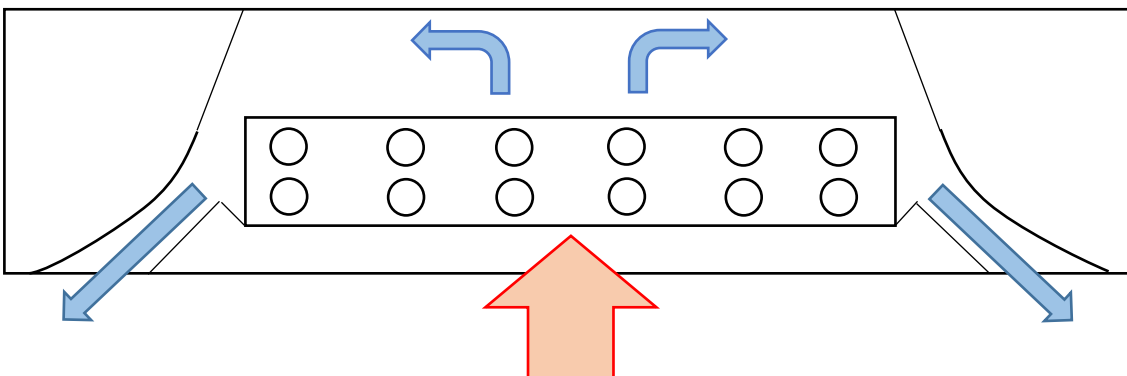
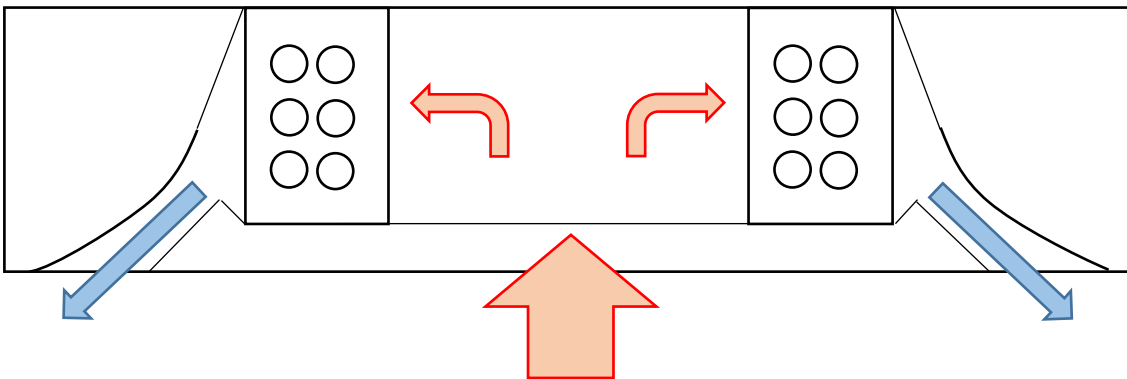


No of Rows and Tubes:

No of Rows: 1; No of Tubes: 4

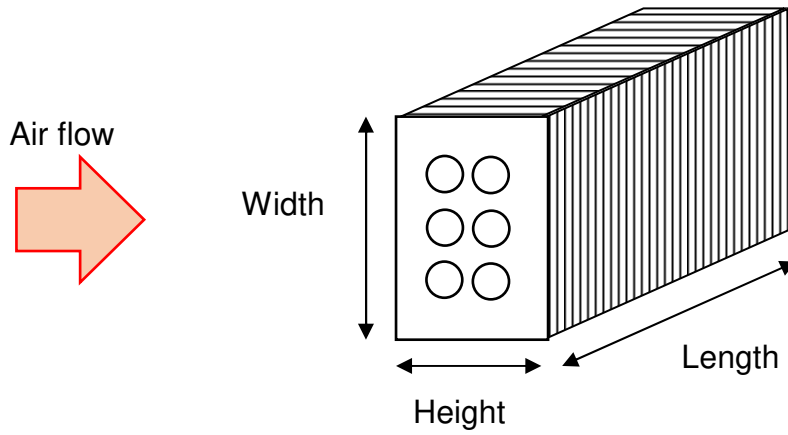


No of Rows: 2; No of Tubes: 12



Coil Length, Width and Height:

Air flow direction - case 1:



Air flow direction - case 2:

