



klimagiel.it



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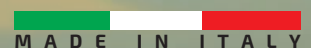


KLIMAGIEL constantly strives to improve its products and search for innovative solutions and therefore reserves the right to change the characteristics indicated in this information sheet without prior notice.

Verona - 2022



GENERAL CATALOGUE





# KLIMAGIEL®

l'aria che ti rispetta



KLIMAGIEL is the European leader in the production and sales of metal and fabric air diffusers, with more than 33 years of experience.

KLIMAGIEL's network of distributors, agents and agencies spans 40 countries worldwide.

With more than 40 agencies and 145 sales agents in Italy, KLIMAGIEL interacts efficiently and effectively with the entire aeraulic market.



## MISSION

To create a healthy and comfortable environment, using the best cutting-edge technologies while respecting the planet's resources.



## VISION

To offer the best customised solutions for comfortable space in civil and industrial environments.



## FOCUS

To offer customised solutions by designing air diffusion perforation for each individual Customer. Strong technical and commercial support throughout project implementation.



## STRENGTHS

- Technical and commercial assistance throughout the project.
- All products and semi-finished products Made in Italy.
- Each project is tailor-made according to Customer request.

## PRINCIPLE OF OPERATION

The **high induction diffusion** system exploits the possibility generated by the airflow coming out of the calibrated holes to mix optimally with the ambient air flow, resulting in a **high level of environmental comfort**.

In particular, the KLIMAGIEL **JET-IN** system guarantees a very high exchange and mixing surface with the ambient air, which is moved by friction and the vacuums and vortices created by the movement of the air itself.

This phenomenon is due to the principle of conservation of momentum

$$Q_{IN} \times \rho \times V_{IN} = COST = K$$

$Q_{IN}$  = volumetric flow [ $m^3/sec$ ];  $\rho$  = fluid density [ $kg/m^3$ ];  $V_{IN}$  = fluid velocity in motion [ $m/s$ ]

This **inductive effect** makes it possible to move a much larger volume of air than the volume fed into the room, thanks to a certain initial impulse. Depending on the hole diameter, hole geometry and static pressure, it can reach values up to 50 times higher than the primary air flow rate.

The ratio between the volume of air moved and the volume of air supplied is called the **INDUCTION RATIO**.

Thanks to the choice of an inductive JET-IN system, the typical phenomena associated with traditional air distribution systems are avoided, which, being characterised by localised input points, do not allow for homogeneity of the thermo-fluid-dynamic characteristics of the air in the room.

Thanks to our software, it is also possible to assess the phenomenon of thermal pressure drop of the air flowing inside the duct. It in fact exchanges heat with the environment and, therefore, particularly in the case of long pipelines, a temperature variation is created within the diffuser.

It may therefore be appropriate in some cases to balance this thermal difference by increasing the specific flow rate into the room (flow rate per linear metre). This ensures an optimal distribution of the energy fed from the first to the last section of the diffuser.

## THE PRINCIPLE OF INDUCTION

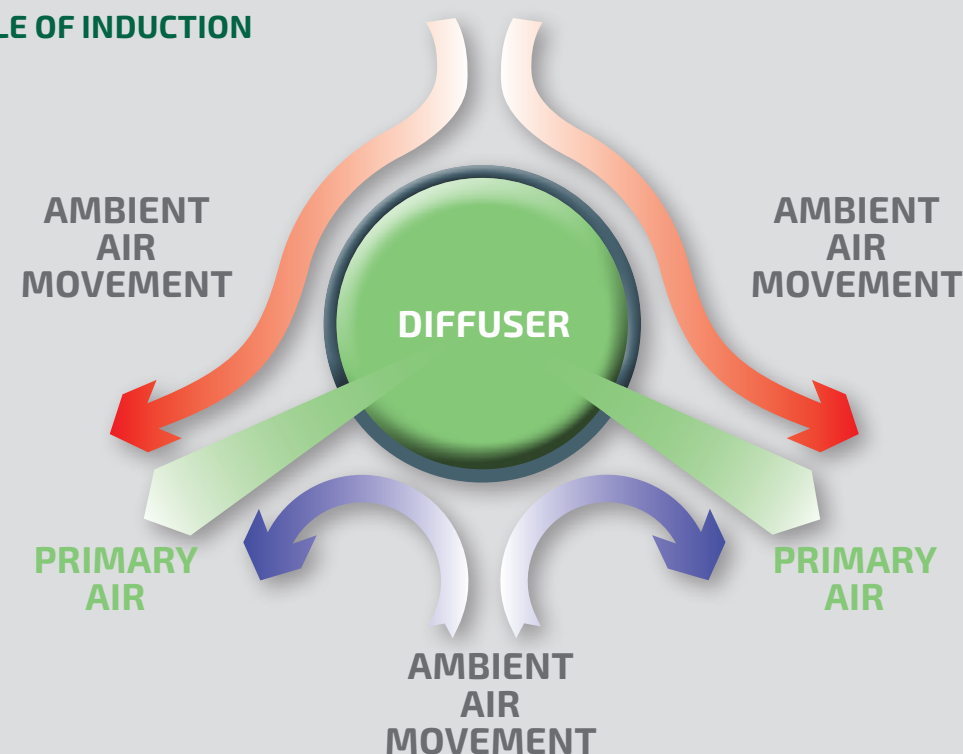


Fig. 1



## SUMMER SEASON AIR SPEED RATE

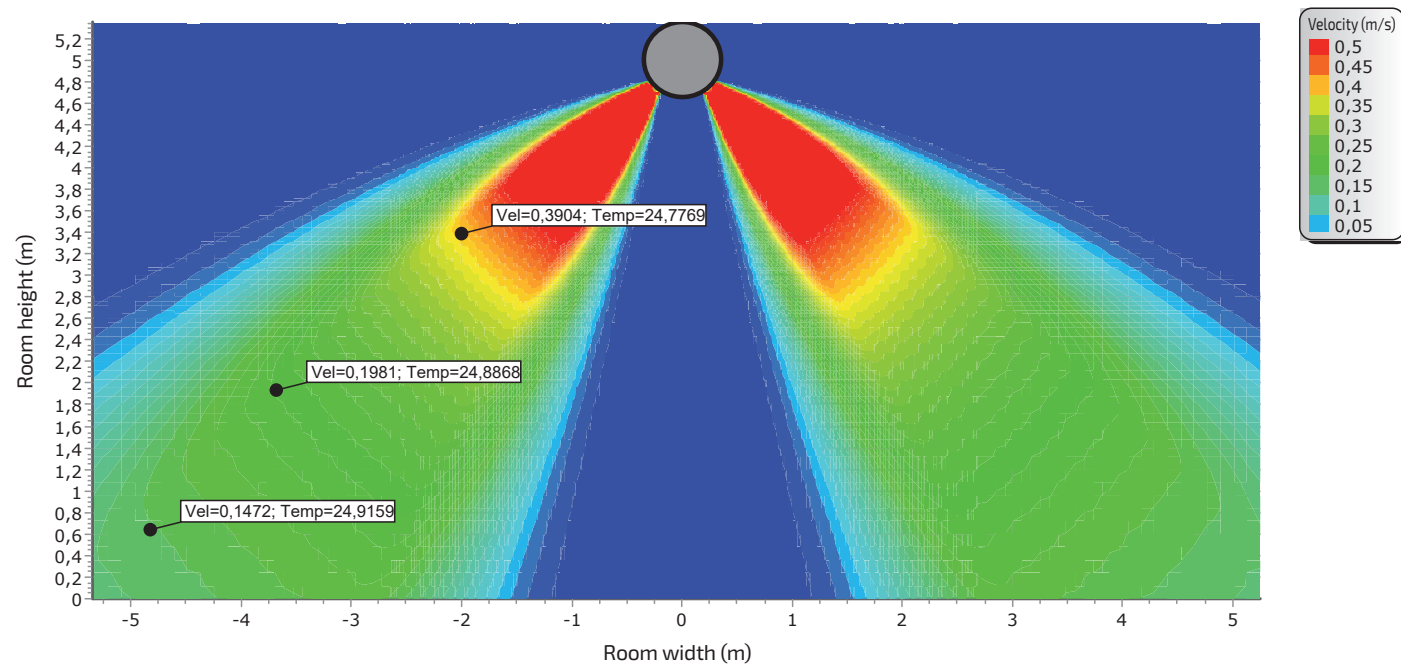


Fig. 2

## WINTER SEASON AIR SPEED RATE

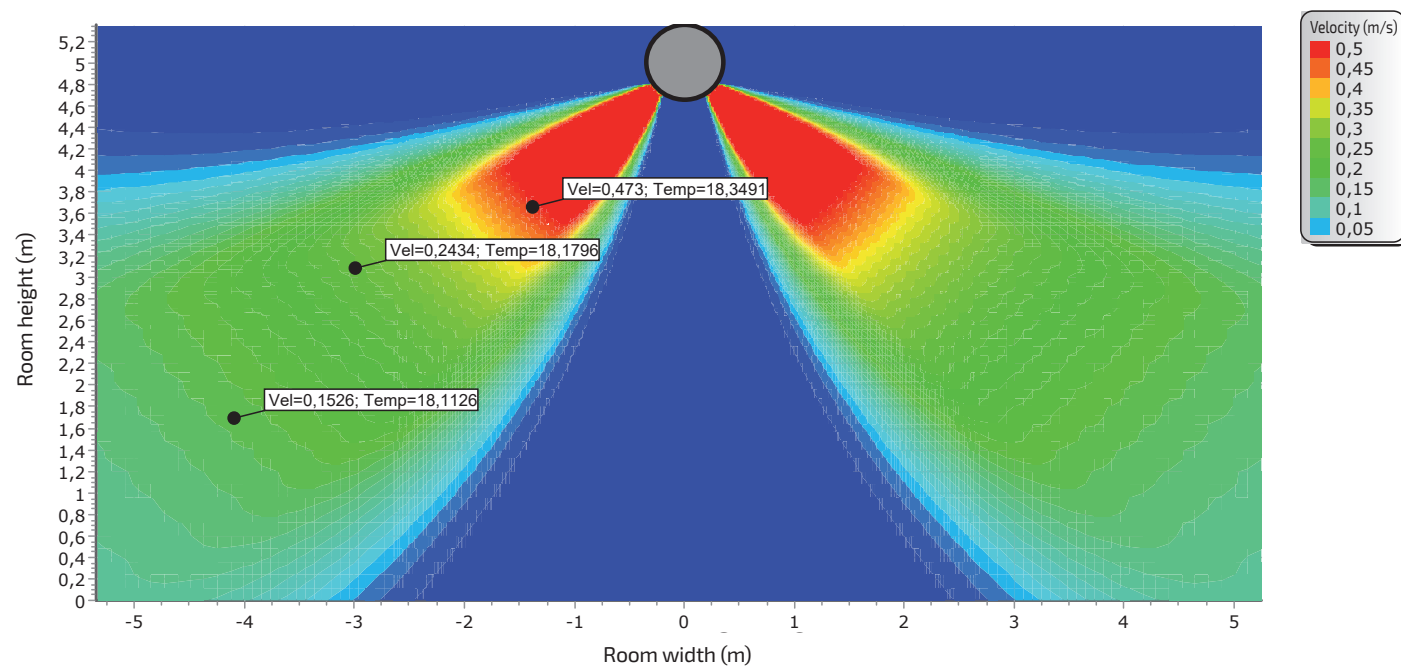


Fig. 3

The high degree of mixing guaranteed by KLIMAGIEL diffusers eliminates air stratification phenomena in the winter season, treating the entire air volume, **improving comfort and reducing consumption**. At the same time, during the summer season, air velocities in accordance with UNI 10339 and EN 13182 are ensured so as not to cause discomfort and to maintain a high level of comfort at all times.

Thanks to our calculation program, it is possible, for each project, to define the optimal phorometry (number size and arrangement of the holes on the diffuser) to guarantee high system efficiency. At the same time, this ensures compliance with air velocities in accordance with UNI 10339 and EN 13182.

It is possible through the use of software to determine air throws, graphically displaying their trend, for both summer and winter air conditioning. With this program, it is also possible to assess the thermal pressure drop suffered by the air flowing through the duct. This in fact exchanges heat with the external environment and, in the case of particularly long diffusers and/or with considerable temperature deltas between the ambient air and the air in the diffuser, can lead to considerable variations in the temperature inside the diffuser.

## DIAGRAM OF A DIFFUSER DESIGNED WITH CONSTANT ENERGY DISTRIBUTION

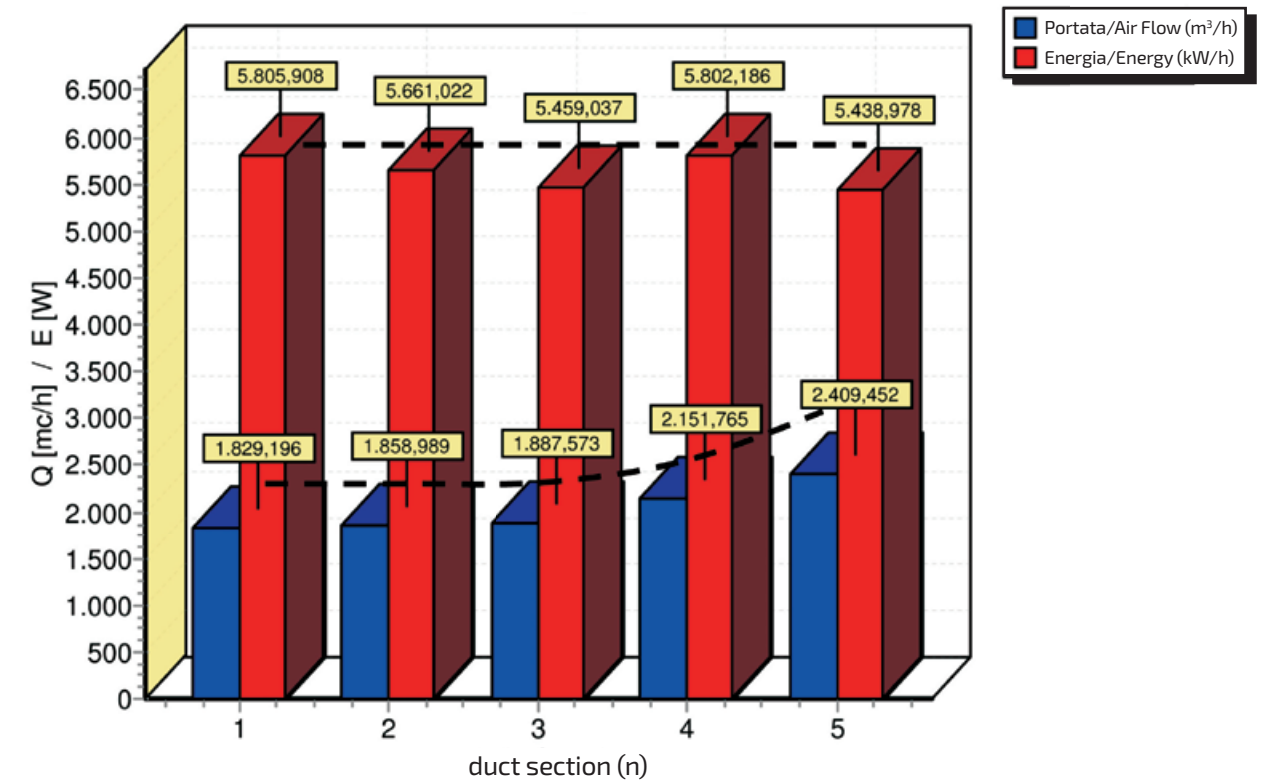


Fig. 4

Another peculiarity of our JET-IN diffusion system, which is particularly useful in the case of JET-IN METAL metal diffusers, consists in the possibility of exploiting the inductive phenomena that are created around the dif-

fuser to greatly **limit the phenomenon of condensation** that would be created on the external surface of the diffuser in the case of summer air conditioning, when the temperature of the supplied air is below the dew point.

## CIRCULAR DIFFUSER DIAMETER SELECTION TABLE

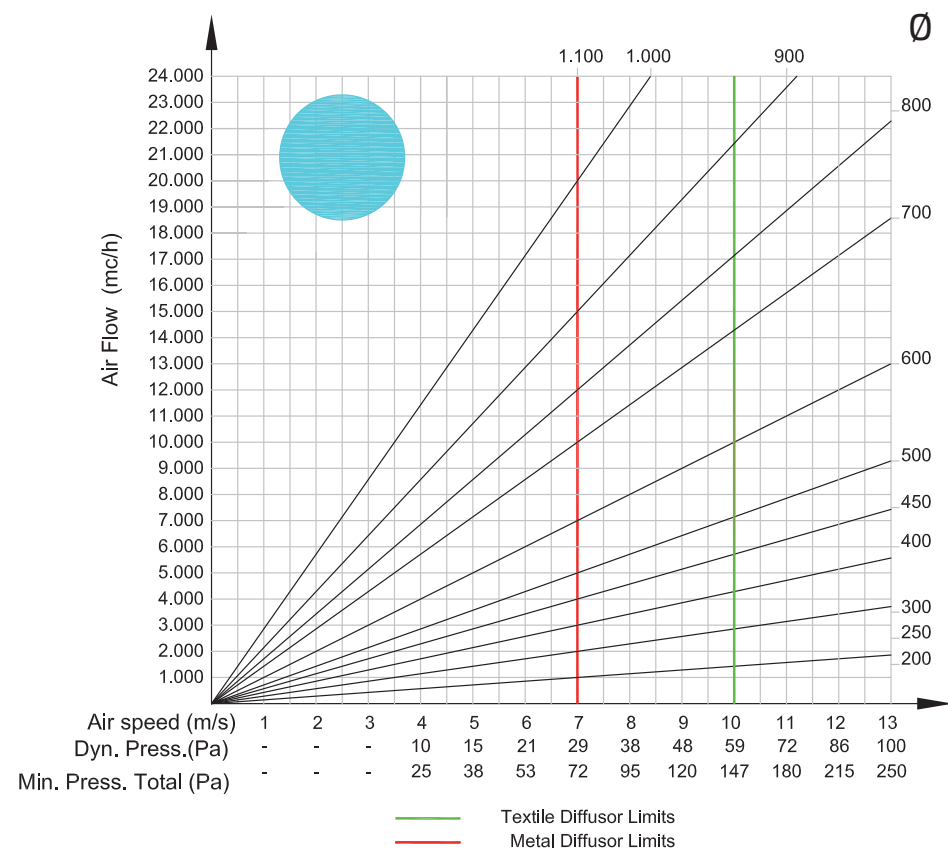


Fig. 5

## QUARTER CIRCLE DIFFUSER DIAMETER SELECTION TABLE

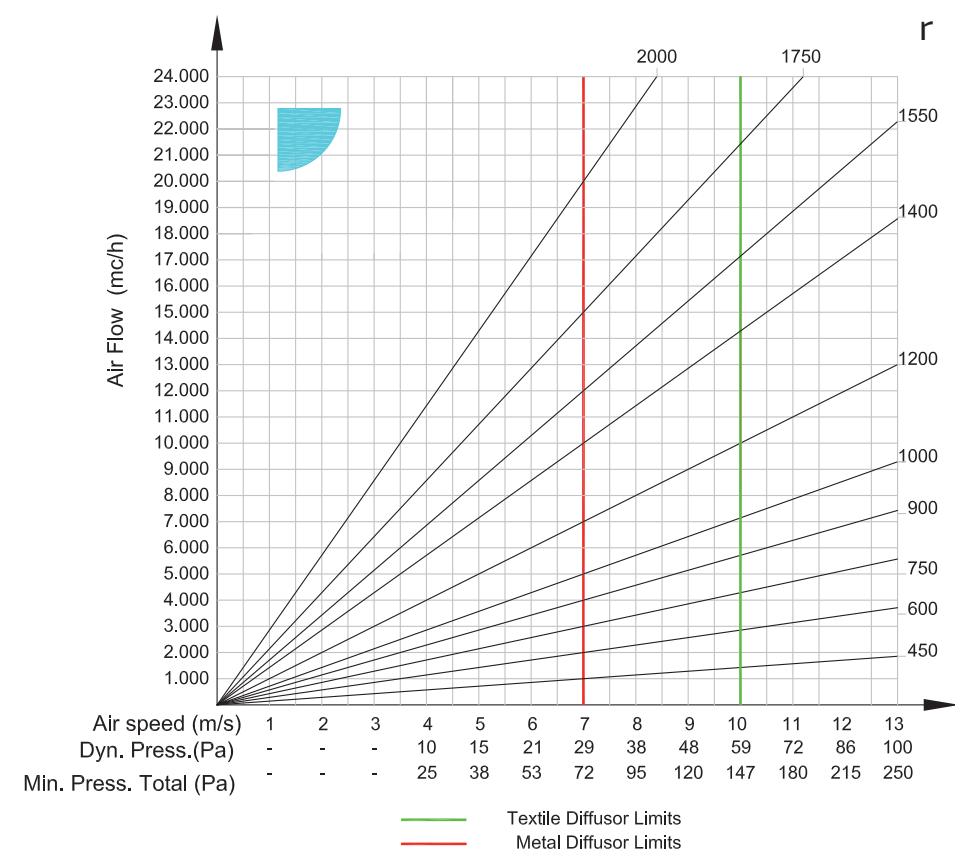


Fig. 7

## SEMICIRCULAR DIFFUSER DIAMETER SELECTION TABLE

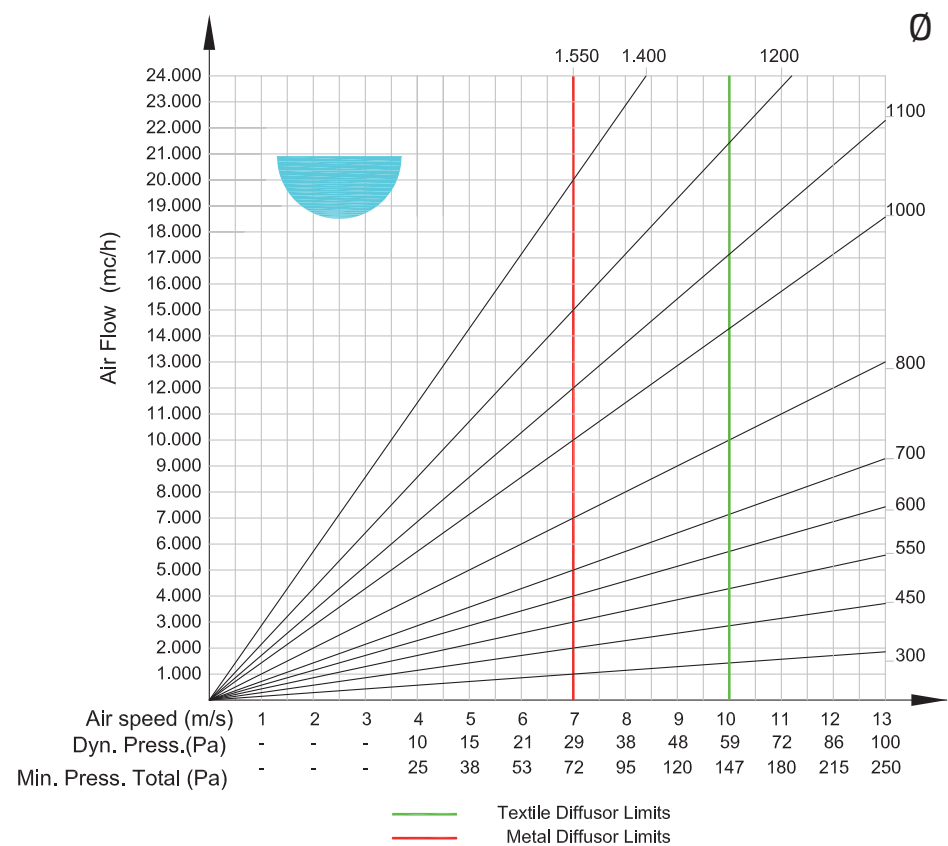


Fig. 6

## OVAL DIFFUSER DIAMETER SELECTION TABLE

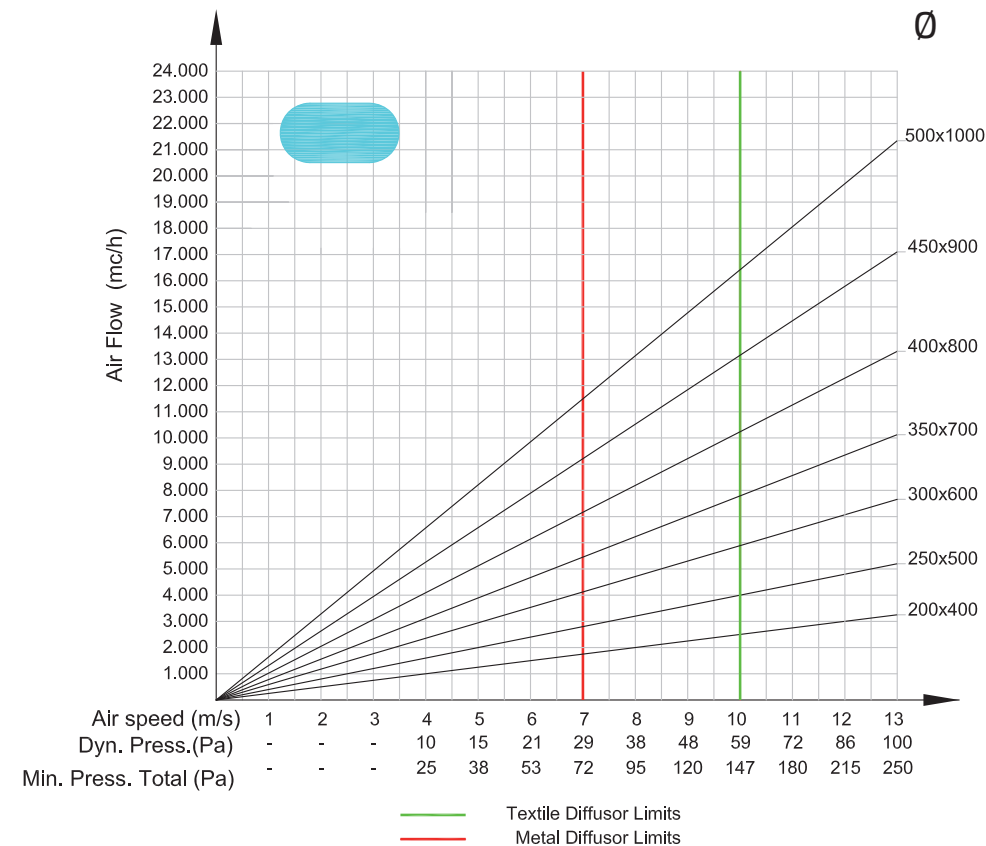


Fig. 8



## GRAPH OF CORRESPONDENCE BETWEEN INSTALLATION HEIGHT AND SUITABLE PRESSURE

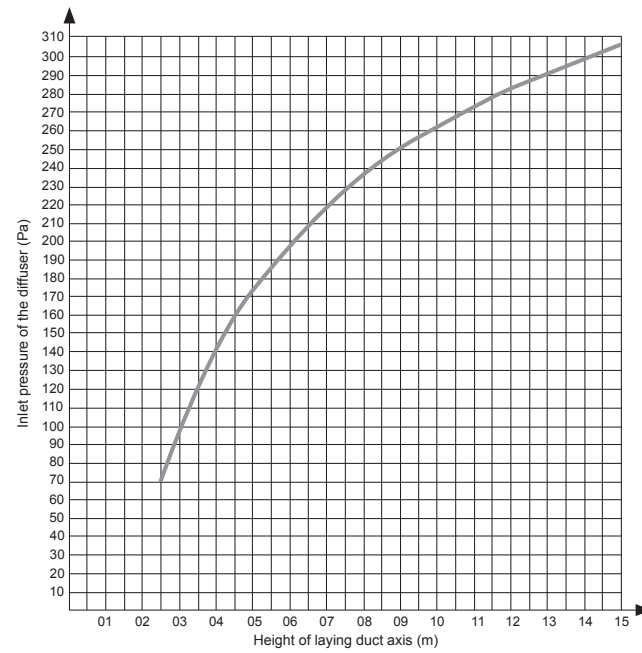


Fig. 9

KLIMAGIEL has recently updated a new CFD (Computational Fluid Dynamics) calculation program (Fig. 10) that allows the simulation of air flow in a realistic environment by considering its interaction with walls, vents, endogenous heat sources (lights, machinery, etc.) with any occasional or extensive obstacles (barriers), etc., thus being able to obtain a rather realistic simulation,

which allows the **temperatures** and air **velocities** in each point of the environment to be assessed. For a profitable use of this software, it is necessary to know precisely the thermodynamic and geometric parameters of both the room and the air conditioning system for the summer and winter seasons, data which must be provided by the Customer.

### EXAMPLE OF SIMULATION AT CFD SPEED

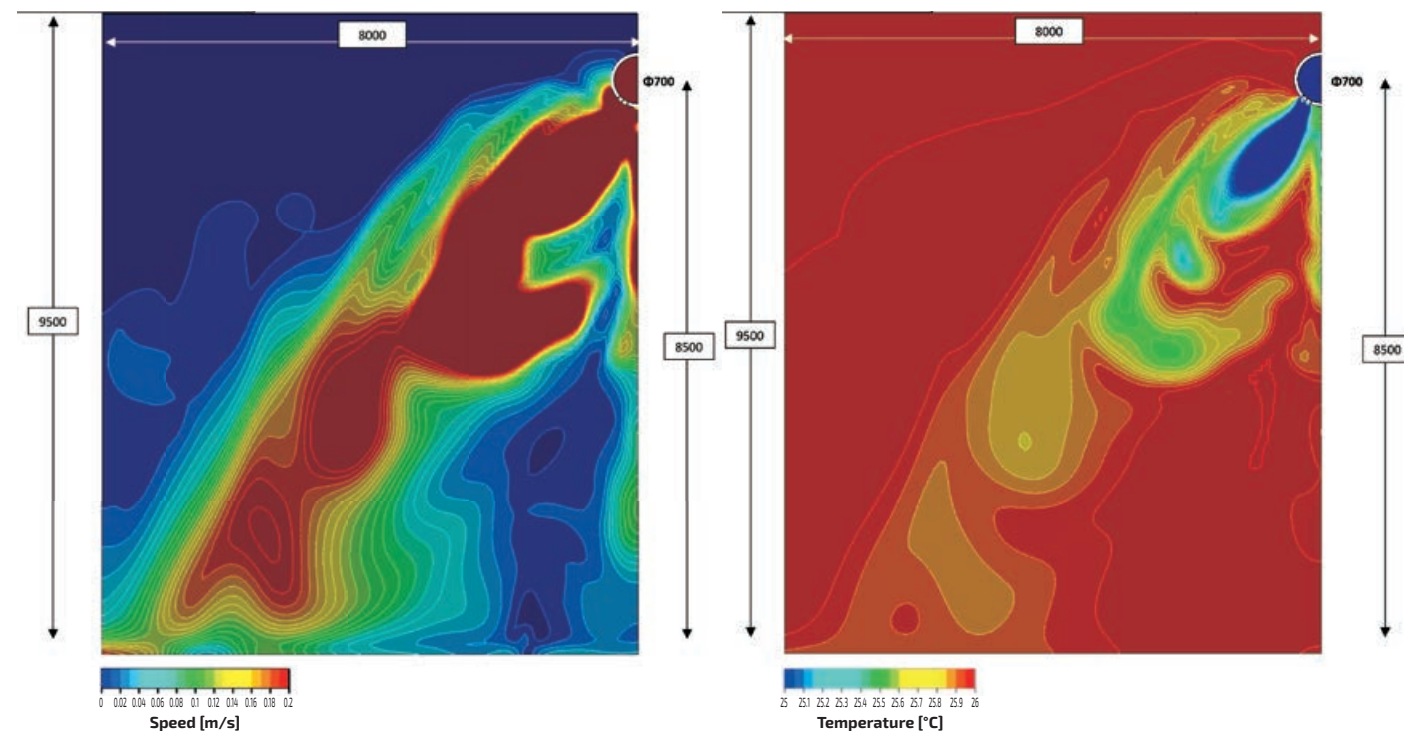


Fig. 10

### APPLICATION EXAMPLE OF SIMULATION CFD TEMPERATURE

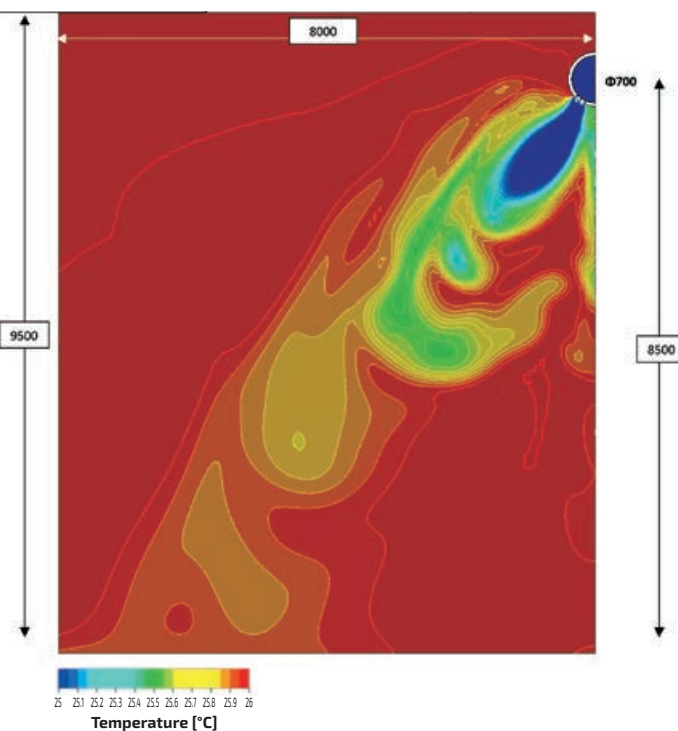


Fig. 11

An example of a CFD (computational fluid dynamics simulation software) simulation is shown above, which allows the airflow in the room to be simulated by checking both velocities (fig. 10) and temperatures (fig. 11). In this case, the diffuser is installed at a high height (8.5 m) and the aim of the simulation is to verify that the injected air can reach the floor while ensuring that the velocity of 0.2 m/s at head height is met.

With regard to velocity, fig. 10, the different isokinetic zones are represented with a colour scale ranging from red (velocities greater than 0.2 m/s) to blue (zero velocity). As far as temperature is concerned, fig. 11, the different isothermal zones are represented with a colour scale ranging from red (temperature above 26°C) to blue (temperature below 26°C).

## COMPUTATIONAL FLUID DYNAMICS (CFD)

CFD is a fluid dynamic simulation tool used to analyse complex thermal and fluid dynamic phenomena using dedicated software. The timing of CFD varies according to the complexity of the project to be analysed.

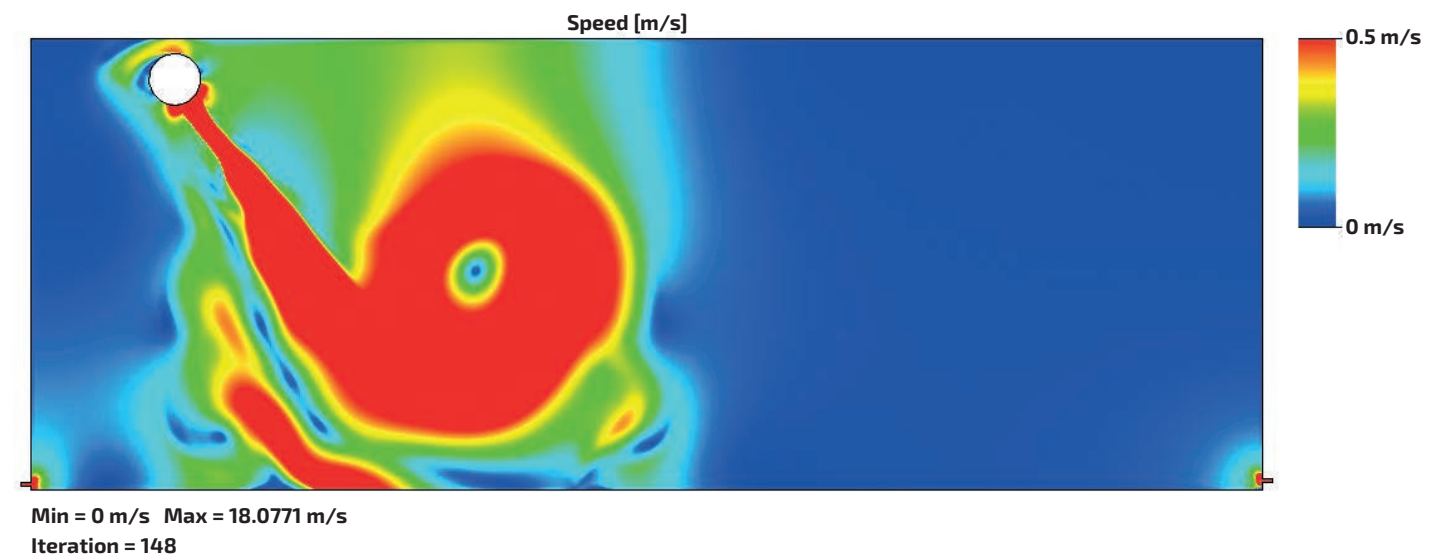


Fig. 12

## SUMMARY OF STRENGTHS COMPARED TO TRADITIONAL SYSTEMS



High degree of comfort and homogeneity of the thermodynamic characteristics of ambient air.



Maximum energy efficiency.



Elimination of the phenomenon of stratification of warm air in winter.



Exploiting the inductive phenomenon by eliminating the formation of condensation.



Speed of assembly and ease of maintenance.



Aesthetically pleasing and adaptable to the context.



## TEXTILE DIFFUSERS

### Induction **TEX jet** THE CHARACTERISTICS

The polyester fabrics processed in KLIMAGIEL are **certified according to STANDARD 100 OEKO-TEX®**.

This is one of the world's best known fabric brands that tests and certifies that the fabrics used have not been treated in a way that is harmful to people's health and that the dyes used for dyeing are non-toxic.

Synonymous with trust and high product safety.

The polyester fabrics were also tested by sample in the laboratory to determine their suitability for use in the food industry.

Designed with inorganic fibre fabrics, they guarantee maximum hygiene and offer the great advantage of **lightness**, weighing less on the load-bearing structures of buildings than any other distribution system.



The exploitation of the high induction principle to generate optimal air distribution and diffusion is ensured by the careful design that allows the mixing of primary air with ambient air to achieve the highest level of **comfort**. KLIMAGIEL **laser technology** allows the optimal phorometry to be defined for each solution. The KLIMAGIEL method allows the hole cut to heal, prolonging the life of the duct and reducing the dispersion of tissue fibres in the air-conditioned environment.

Constant research and development on fabrics and their technical characteristics have led to microperforated textile diffusers becoming an ideal solution in many applications. The fastening systems have been designed in detail, offering great ease of assembly, reliability and flexibility.

On request, KLIMAGIEL applies an **antibacterial and/or antistatic treatment** to the fabric in class B, s1 - d0 for installations in clean rooms or agro-food industry establishments.

## MATERIALS

TYPE	MATERIAL	SPALMING	SPECIFIC WEIGHT	REACTION TO FIRE
FEATHER	100% polyester	Acrylic P.U.	70 g/m <sup>2</sup> ± 5%	Euroclass B s1, d0
PREMIUM	100% polyester	Acrylic P.U.	160 g/m <sup>2</sup> ± 5%	Euroclass B s1, d0
FIBRE	100% glass fibre	Fire-retardant P.U	450 g/m <sup>2</sup> ± 5%	Euroclass A1

## COLOURS

A choice of colours from the RAL classic scale is available (RAL for information only) depending on the type required:

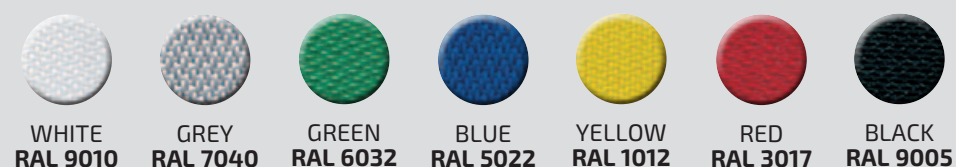
### FEATHER



### PREMIUM



### FIBRE



## THE ADVANTAGES OF FABRIC DIFFUSERS AT A GLANCE



Extremely lightweight solution that does not burden load-bearing structures of buildings.



Quick installation and easy maintenance.



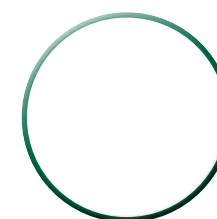
The most economic solution for homogeneous air conditioning of environments.

## THE AVAILABLE CROSS-SECTIONS

Strongly focused on customer satisfaction, KLIMAGIEL researches and offers its partners the best possible solution, carefully evaluating every technical, functional, economic and architectural aspect.

Fabric diffusers are available in circular, semicircular, ¼ turn or even lenticular cross-sections.

On request, we also design and supply customised solutions with special cross-sections.



CIRCULAR



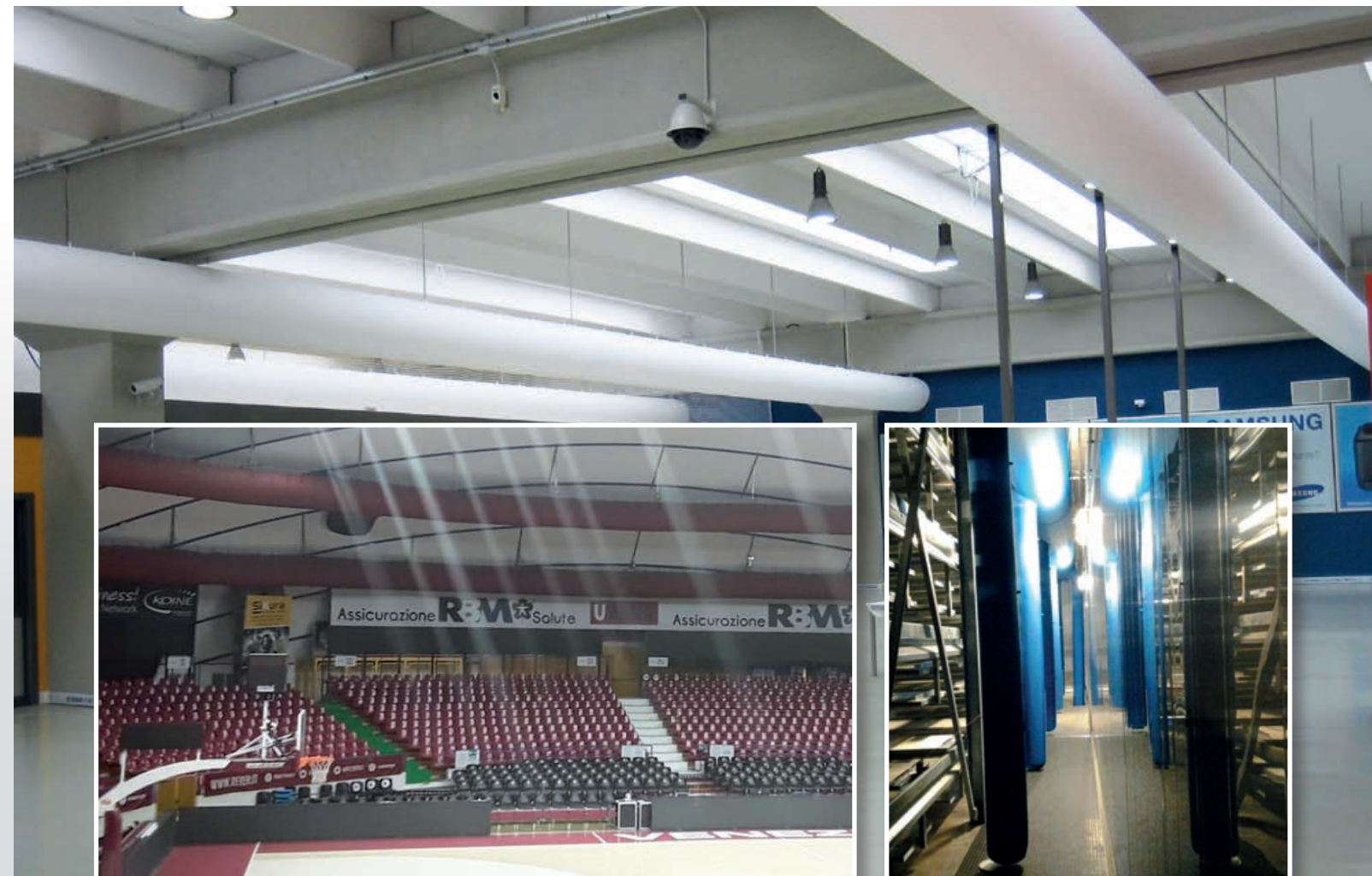
SEMICIRCULAR



QUARTER



LENTICULAR





## TEXTILE DIFFUSERS

### AirBox **TEX jet**

#### FABRIC INTAKE

For applications where **lightweight elements** are also required in the air intake, or where **easy sanitisation of all ducting** is required, KLIMAGIEL offers the option of opting for a fabric solution for air intake as well. Intake ducting consists of a textile duct with Velcro top closure. The internal stiffening structure should be prepared by the installer.

### Screen-printed **TEX jet**

To respond to aesthetic market trends, KLIMAGIEL offers the service of **fully customised fabric ducts**. On request, KLIMAGIEL produces TEX jet designs with the company logo, colour of your choice, images, graphic motifs or lettering.

A graphic file with the layout of the duct in high-resolution pdf format is required for implementation.



## TEXTILE DIFFUSERS

### Light **TEX jet**

KLIMAGIEL offers an elegant solution for projects where it is necessary to integrate an aesthetic solution with a functional one: Light TEX jet.

We make fabric ducts with the possibility of inserting an LED strip/bar inside to provide diffuse ambient light.



### Duct stiffening rings **TEX jet**

#### AESTHETIC SOLUTION FOR STIFFENING FABRIC DUCTS

KLIMAGIEL stiffening rings serve to keep the circular fabric duct in shape when not in use. During the fabrication phase, special pockets are sewn inside the duct that will accommodate the stiffening rods made of **fibreglass-reinforced plastic**. The profile, therefore, is made of a light and particularly strong material, making a high quality final product. Since the machining is done on the inside of the duct, it will have a completely smooth aesthetic appearance once it is straightened. The final product is a **lightweight, safe and ready-to-install** KLIMAGIEL air duct that will keep its round shape even when air conditioning machinery is switched off.



#### STRENGTHS



Maintains the shape of the fabric duct even when it is not in use.



More lightweight structure compared to traditional skeletons.



Thanks to the integrated system, installation is faster than with traditional skeletons.



Logistics of the final product faster and less expensive.



The final product is safer compared to traditional skeletons in case of accidental falls.



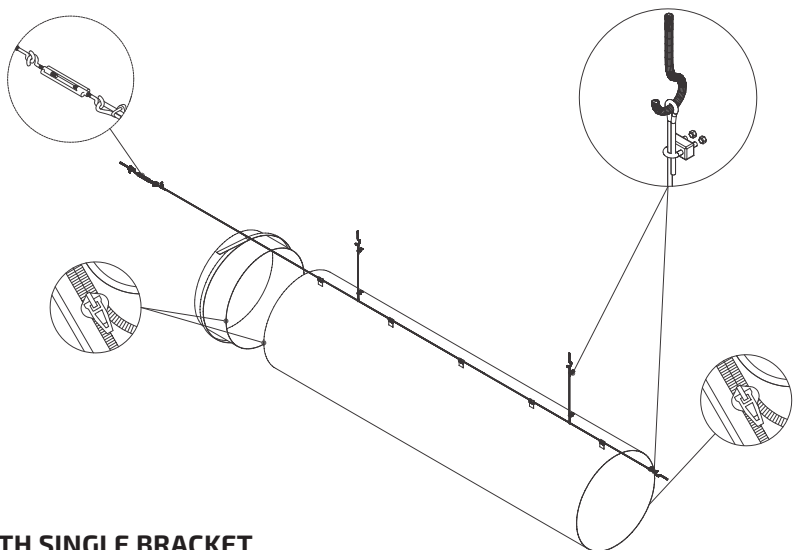
Easily washable and sanitised.



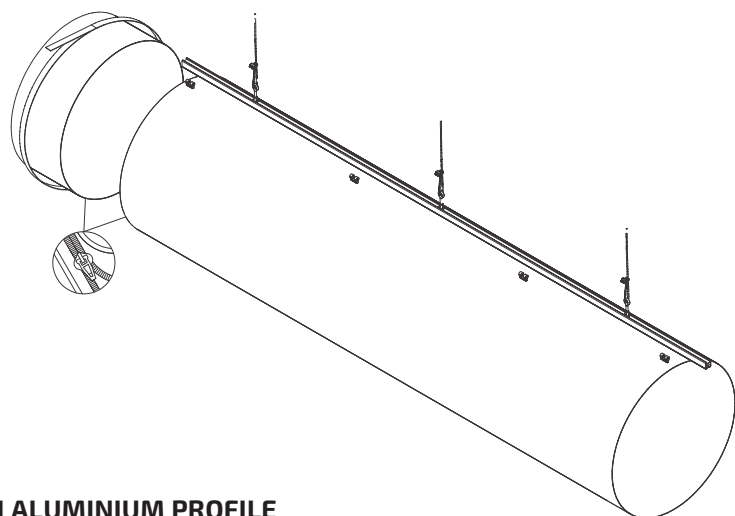
## TEXTILE DIFFUSER FIXING SYSTEMS

All textile diffusers are supplied complete with installation accessories. The fixing system can include cables or aluminium profiles, depending on the type of cross-section or the customer's choice. Strips with clips, tie-rods and cable glands are calculated for each individual job and made available for quick and easy installation. Fabric diffusers can be supplied with single or double suspension cable (depending on diameter or design requirements).

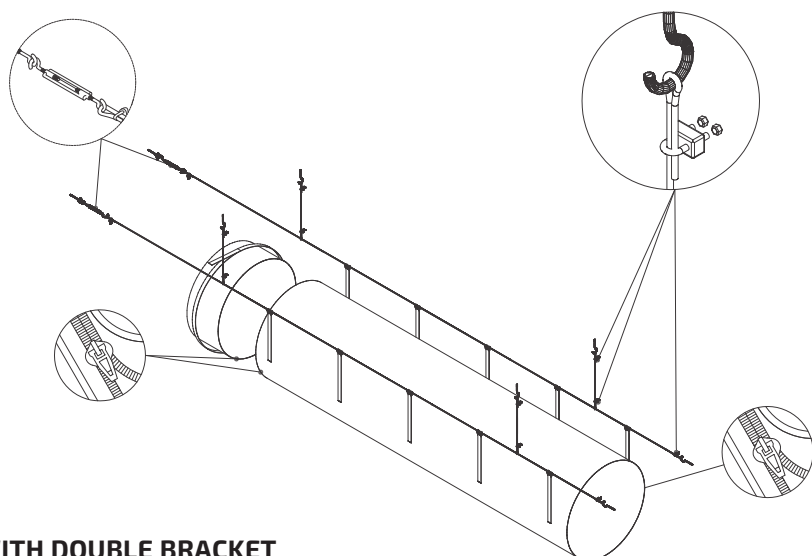
The semicircular duct, which is ideally suited for rooms with flat ceilings and low heights, is supplied as standard with aluminium profiles for ceiling installation (see all KLIMAGIEL accessories on page 33).



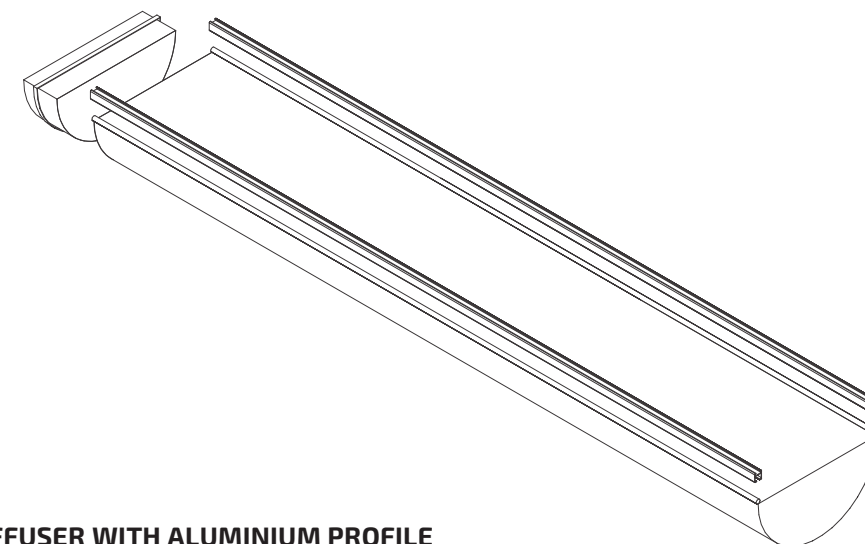
CIRCULAR DIFFUSER WITH SINGLE BRACKET



CIRCULAR DIFFUSER WITH ALUMINIUM PROFILE



CIRCULAR DIFFUSER WITH DOUBLE BRACKET



SEMI-CIRCULAR DIFFUSER WITH ALUMINIUM PROFILE

## MAINTENANCE INSTRUCTIONS

The following PPE **MUST** be used when servicing the machine:



Maintenance includes general cleaning of the duct, to be carried out as **needed**.

### EUROCLASS B, S1-D0 FABRIC DUCT CLEANING

The following requirements **MUST** be observed when cleaning the duct:



To clean the duct, perform the following steps in this order:

1. Disassemble the duct.
2. Carry out a washing cycle, either by hand or by machine, in accordance with the following requirements:
  - Use of neutral detergent

- Temperature of 40°C
- Maximum duration of 15 min
- 3. If necessary, rinse the duct.
- 4. If necessary, run another wash cycle.
- 5. Let the duct to dry at room temperature.
- 6. Reassemble the duct.

If you wish to request washing service, please contact the Manufacturer.

### EUROCLASS A1 GLASS FIBRE DUCT CLEANING

The following requirements **MUST** be observed when cleaning the duct:



To clean the duct, perform the following steps in this order:

1. Disassemble the duct.
2. Carry out a hand-wash cycle at a maximum temperature of 40°C.

3. If necessary, rinse the duct.
4. If necessary, run another wash cycle.
5. Let the duct to dry at room temperature.
6. Reassemble the duct.



## METAL DIFFUSERS

### Induction **METAL jet**

#### THE CHARACTERISTICS

Induction METAL jet diffusers offer a wide range of solutions.

They can be produced from different materials, depending on application and environmental characteristics, guaranteeing long life and reliability.

By exploiting the high induction principle, they generate optimal distribution and diffusion of the treated air.

The flow generated by the air coming out of the calibrated holes, the distribution of which over the duct is carefully studied, generates an optimal mixing of the primary and ambient air, achieving maximum room comfort.

The perfect calibration and distribution of the holes, together with the correct sizing for controlling the internal speeds, will allow for ambient **noiselessness** suitable for all applications.

The wide range of available fittings allows the design of routes that can be adapted to any environment. The diffusers are designed for quick and safe assembly using only a few tools.

KLIMAGIEL can offer its microperforated metal diffusers in the following materials:

MATERIAL	REGULATION	STRUCTURE	SURFACE APPEARANCE
GALVANISED STEEL	EN 10346	Carbon steel + galvanisation 200 g/m <sup>2</sup>	MICRO-HOLED
PRE-PAINTED STEEL	EN 10346	Carbon steel + galvanisation 150 g/m <sup>2</sup>	Anticorrosive PRIMER base-coat + polyester paint
PAINTED STEEL	EN 10346	Carbon steel + galvanisation 200 g/m <sup>2</sup>	Hot-dip galvanised with powders
AISI 304 STAINLESS STEEL	EN 10088 ALLOY 1.4301	Austenitic	2B, 2D, BA, satin or scotch brite
AISI 316 L STAINLESS STEEL	EN 10088 ALLOY 1.4404	Austenitic	2B, 2D, BA, satin or scotch brite
AISI 430 STAINLESS STEEL	EN 10088 ALLOY 1.4016	Ferritic	2B, 2D, BA, satin or scotch brite

A special COPPER EFFECT coating with a percentage of copper powder is also available, with great advantages in cost and invariability in colour and appearance over time compared to solutions in this material.

#### COLOURS

5 colours are available for pre-painted steel:



WHITE  
RAL 9010



ALUMINIUM GREY  
RAL 9006



ANTHRACITE GREY  
RAL 7016



BLACK  
RAL 9005



BLUE  
RAL 5010

Design and architectural firms will have all the colours of the RAL CLASSIC scale available when powder-coated steel is chosen. A special COPPER EFFECT coating is also available in which a percentage of copper powder is present inside, with great cost advantage and invariability over time compared to solutions in this material. The wide range of available fittings allows the design of routes that can be adapted to any environment. The diffusers are designed for quick and safe assembly using only a few tools (see all KLIMAGIEL accessories on page 33).



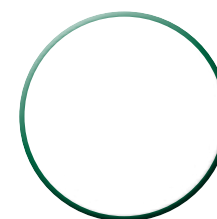
#### AVAILABLE CROSS-SECTIONS

**METAL jet** metal diffusers are available in **circular** cross-section with diameters from 200 to 1700 mm, **semicircular** with diameters from 200 to 1000 mm and **oval** with height from 400 to 1000 mm.

Each size and shape is available in all material and colour variants provided.

KLIMAGIEL researches and offers its partners the best possible solution by carefully evaluating every technical, functional, economic and architectural aspect.

The fixing systems are based on criteria of absolute **reliability** and **speed** of assembly.



CIRCULAR



SEMICIRCULAR



QUARTER



OVAL

#### THE ADVANTAGES OF METAL DIFFUSERS AT A GLANCE



High degree of environmental comfort thanks to the homogeneity of air treatment in the room.



Easy installation thanks to plug-in bayonet and connecting clamps.



Anti-condensation effect on the duct surfaces.



Ambient quietness suitable for all applications through calibration and the distribution of holes and the strict control of speeds.





## METAL DIFFUSERS

### Induction **OVAL jet**

An elegant solution for metal applications where a lower overall height is required than the classic circular ducts is the **OVAL jet** metal duct.

#### STRENGTHS



##### HEIGHT SAVINGS

The unique oval shape makes it possible to recover up to 50% more space than the circular duct.



##### EASE OF INSTALLATION

Use of the new **KLIMA-PLUG®** interlocking system allows very easy, quick installation.



##### AESTHETIC SOLUTION

The diffuser is attractive, modern and can be easily integrated into any structure.



As far as air distribution is concerned, the diffusion will always be determined by an appropriate number of rows of holes calculated in relation to the air flow of the ventilating unit and the pressure available at the diffuser inlet.

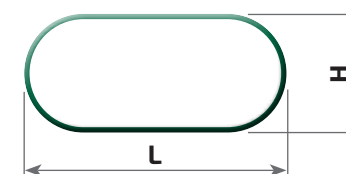
The oval ducts are supplied in 1 metre long modules, with a male/female connection to be riveted.

The flaps are suitably shaped to facilitate engagement and ensure stress relief of the material.

For each module, a ceiling clamp is supplied as standard, complete with M8 female nuts for screwing in threaded rods or other attachment systems.



#### AVAILABLE SIZES



H	200	250	300	350	400	450	500
L	400	500	600	700	800	900	1000

Air distribution in the room will be in full compliance with UNI 10339 - EN 13182 (air velocity at head height).

Naturally, we also find the advantages present in high induction circular ducts and mainly:



##### ANTI-CONDENSATION EFFECT

The micrometric control of the exit air velocity (which generates the "high induction" effect) makes it possible to maintain a flow of air over the entire surface of the duct, preventing air stagnation and the formation of condensation.



##### QUIET ENVIRONMENT

The calibration and distribution of the holes and the strict control of the speeds allow for a quiet ambient noise level suitable for all applications.



The new OVAL cross-section is available for steel solutions:

- galvanised
- painted (in any colour of the RAL classic scale)
- stainless, in stainless steel AISI 430, AISI 304, AISI 316





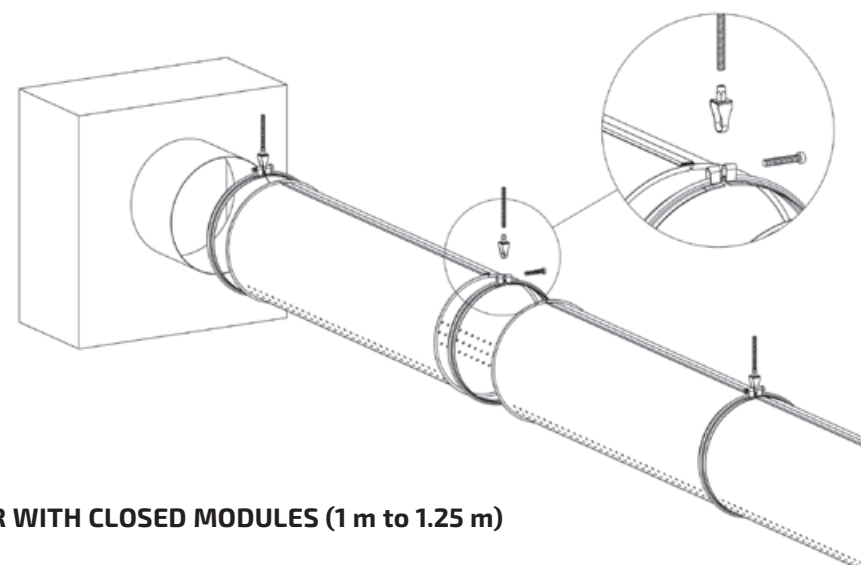
## INSTALLATION SOLUTIONS

With a focus on ease of installation and quality of the end result, KLIMAGIEL's experience has led to the design and implementation of unique solutions for the benefit of its partners.

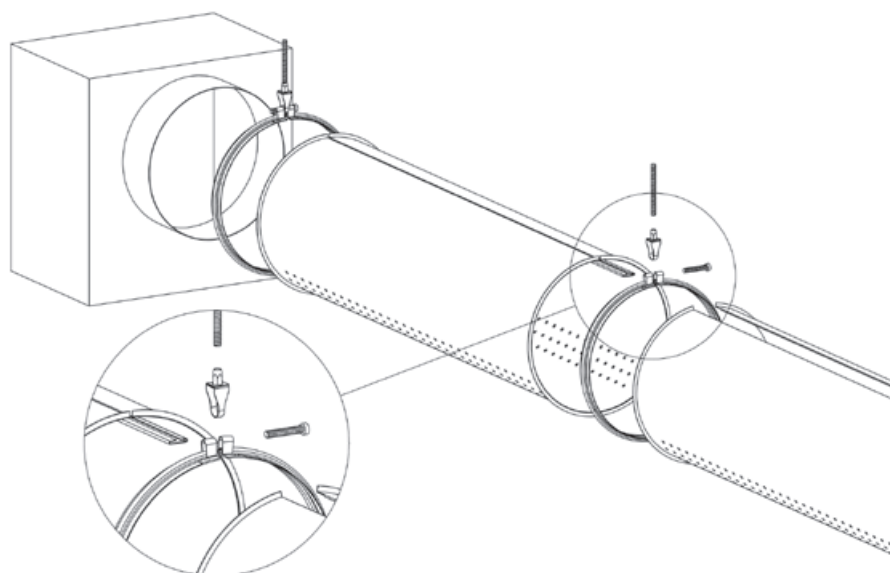
**FAST-FIX** circular ducts, with a length of 1250 mm, are normally supplied with a longitudinal bayonet joint for on-site fixing (thus reducing transport costs), without the need for riveting.

The flaps are suitably shaped with a **patented folding system** to relieve material tension. For diffusers with a diameter of 1,050 mm or more, the **internal stabilising frame** (patent application filed, see "ACCESSORIES" section) is supplied, which facilitates assembly and maintenance of the circular shape.

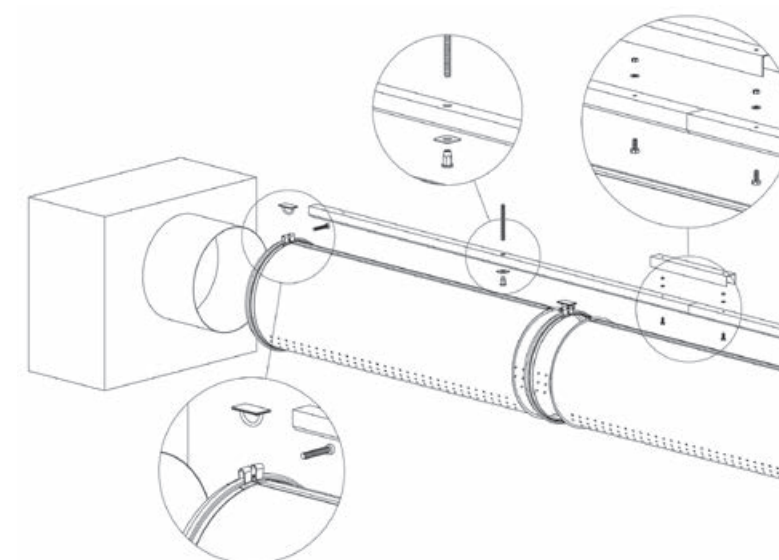
This is particularly useful during assembly, in order to avoid ovalisation and difficulties in coupling between duct sections, in often already complex working conditions.



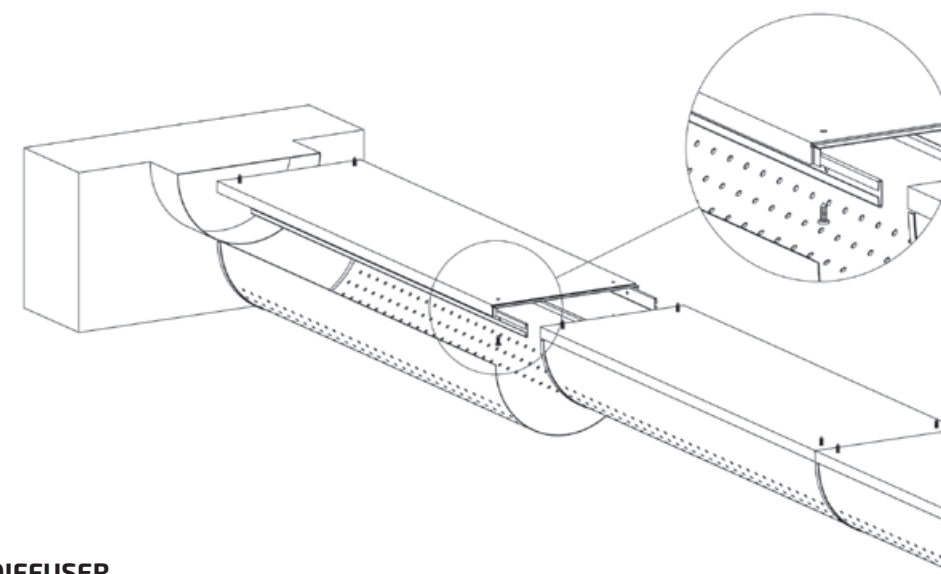
CIRCULAR DIFFUSER WITH CLOSED MODULES (1 m to 1.25 m)



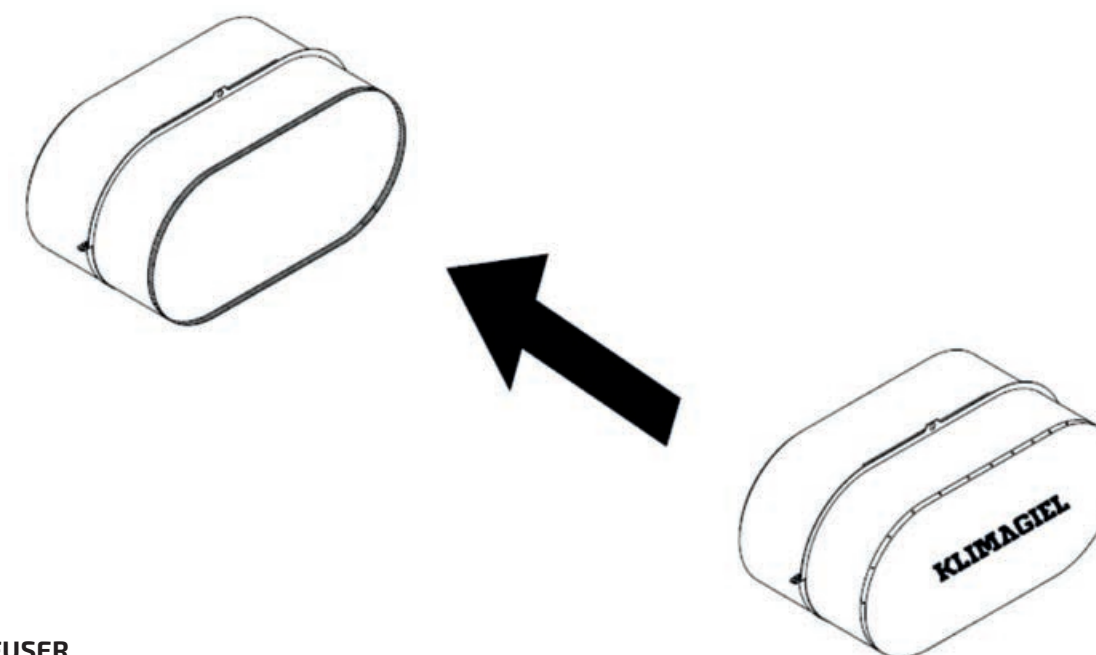
CIRCULAR DIFFUSER WITH OPEN MODULES (FAST-FIX 1.25 m)



CIRCULAR DIFFUSER WITH GALVANISED STEEL PROFILE



SEMICIRCULAR DIFFUSER



OVAL DIFFUSER



## MEMBRANE DIFFUSERS

### Induction **DOUBLE jet**

#### SEASONAL OPTIMISATION WITH SWITCHING KIT

KLIMAGIEL high induction diffusers are available with a membrane system for optimal summer/winter season management.

This system is strongly recommended in all applications where sufficient static pressure is not available at the duct inlet, also with reference to the installation height.

This is an **internal** polyester **membrane** which is placed longitudinally along the entire length of the diffuser.

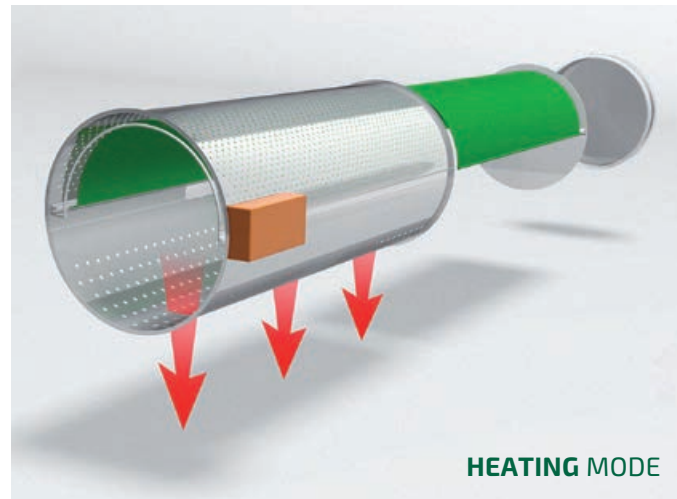
The movement is controlled by a servomotor and allows the selection of the lower or upper hole opening of the diffuser.

When cooling has been requested, the membrane adheres to the lower part of the duct, allowing air to flow over the upper part.

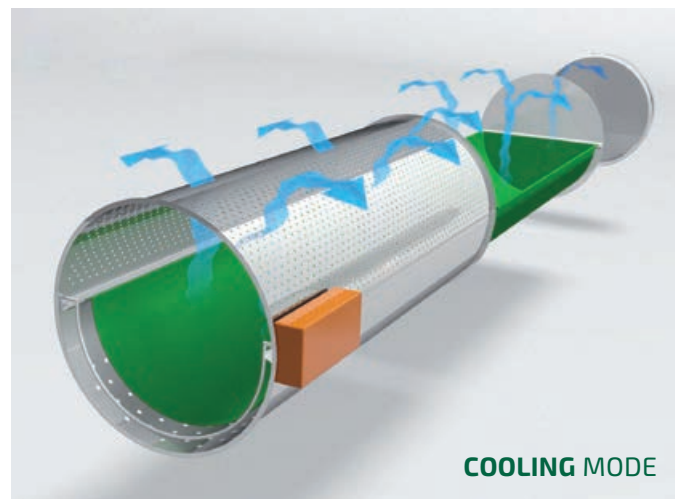
Conversely, when the system is set in heating mode, the system closes the upper holes and the flow is ducted directly downwards.

This optimises operation of the system, ensuring better temperature homogeneity and comfort in the room.

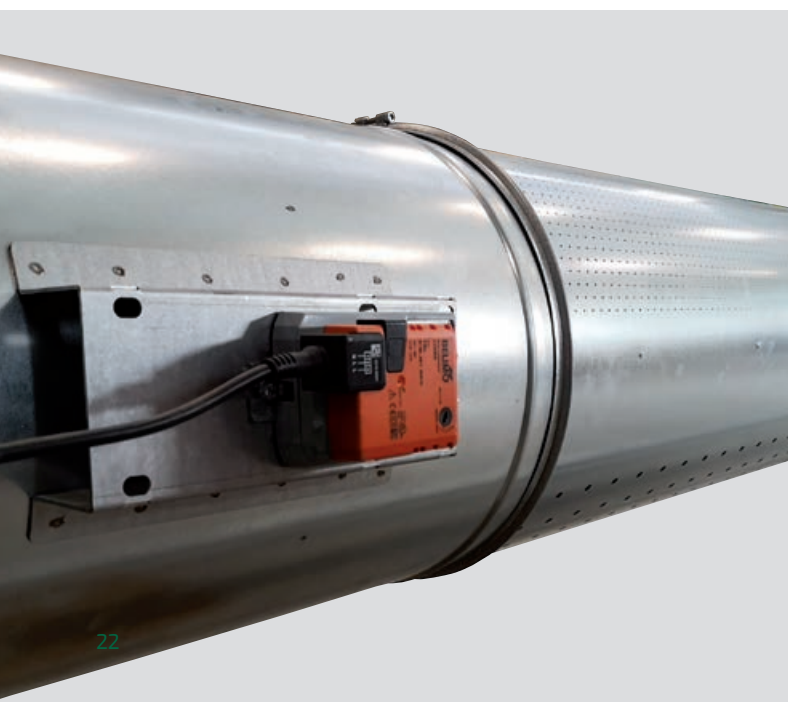
The membrane solution is available for both **fabric** and **metal** ducting (Patent Pending).



HEATING MODE



COOLING MODE



## STAINLESS STEEL DIFFUSERS

### Inspection **METAL jet**

**Inspection METAL jet** diffusers were created in response to the specific maintenance and maximum hygiene requirements of large food production chains. KLIMAGIEL has responded to the need to reduce maintenance, cleaning and sanitising time for air conditioning systems in high productivity industrial environments with a specific, innovative project.

The internal cleaning of air ducts is normally carried out by specialised companies that can only reach and properly clean the internal surfaces of the ducts using specific equipment and particular methodologies.

The metal diffusers with SEMICIRCULAR SECTION CAN BE INSPECTED at every metre and allow quick, effective intervention at every point of the system, greatly facilitating any checks.

The semicircular frame made entirely of STAINLESS STEEL can be opened on one side by means of a quick-release locking system.

The reduction of bacterial load on surfaces is up to 99%.



#### THE ADVANTAGES AT A GLANCE



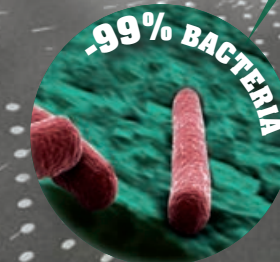
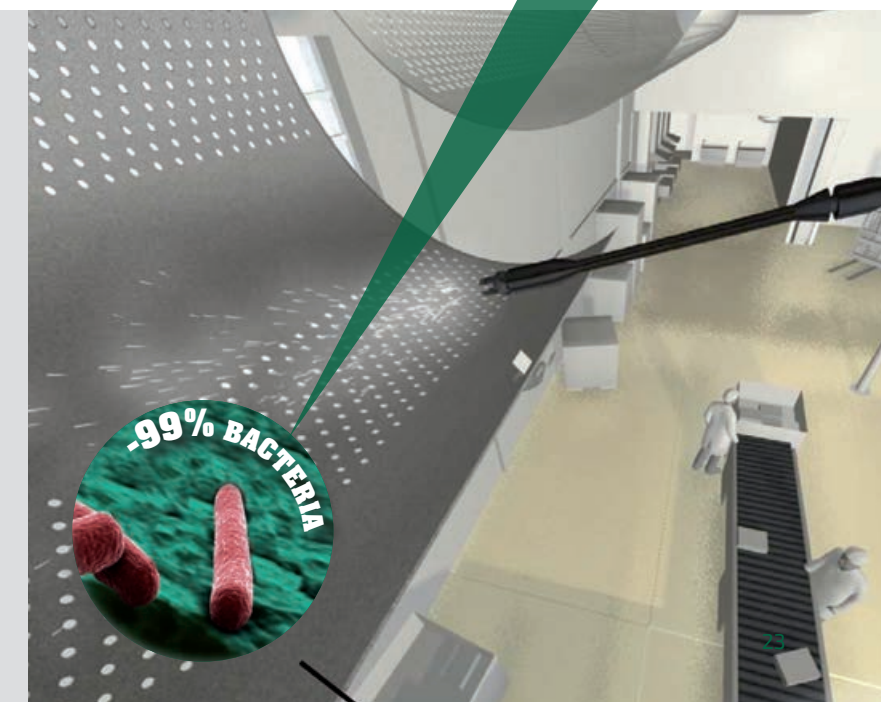
Cutting maintenance and cleaning costs and reducing production downtime.



Easy monitoring of technical and hygienic conditions of the aeraulic system.



Virtually eliminates the total presence of bacteria.





## VARIABLE FLOW SYSTEM

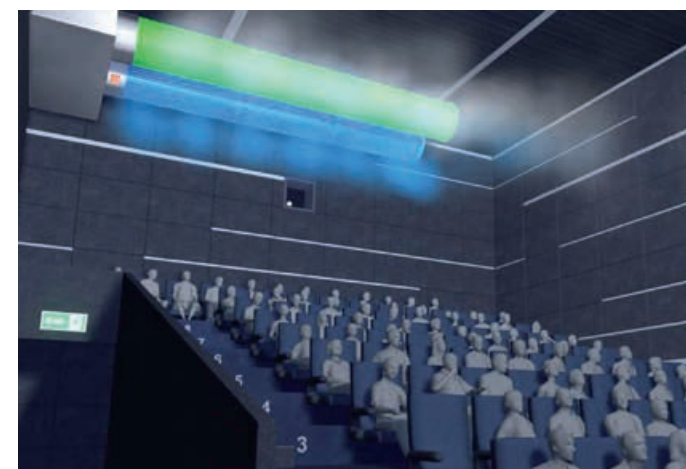
### DYNAMIC jet 2.0

The **DYNAMIC jet** diffusion **system** enables air treatment in environments where the possibility of varying the flow rate of the system is necessary.

This is the case in all those places where the **endogenous load**, given by crowding, the start-up of production processes or other causes, **is not constant** over time (trade fair centres, industries, meeting rooms, restaurants, etc.).

Normally, high induction diffuser technology (also called induced movement) is applied in situations that require stable flow and pressure conditions in order to function optimally.

**DYNAMIC jet** is a **variable flow system**, consisting of one or two primary diffusers with induced movement and a secondary diffuser (Displacer), installed on a plenum with a system of dampers, actuators and probes to control the flow and internal pressure values.

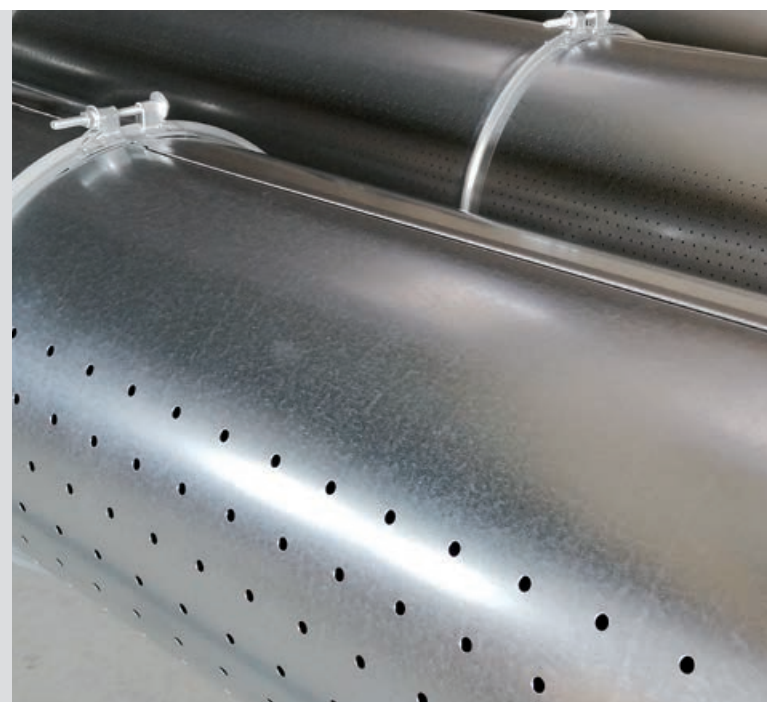
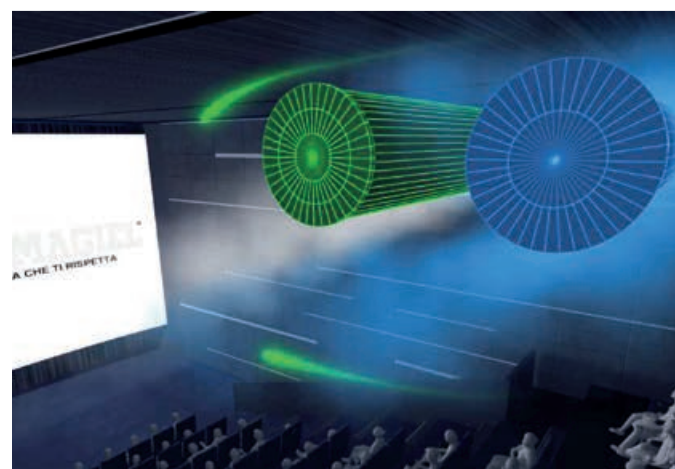


The system is designed to **maintain optimal conditions** in the primary diffuser to ideally treat the room by effectively mixing the air. From the secondary diffuser, on the other hand, additional air will come out more gently, which will also be drawn in by the inductive effect of the primary diffuser and fed into the area to be treated.

The revolution of the **DYNAMIC jet 2.0** system is to ensure constant pressure and flow in the primary diffuser by means of a retro-actuated damper system. This control is carried out by means of a special sensor. In this way, the air throw at the primary diffuser remains constant, allowing optimal air mixing.

In the event of a power increase, the primary diffuser is adjusted and the secondary diffuser opens the appropriate dampers to distribute the excess flow.

Each individual diffuser is regulated by dampers, which in turn are controlled by an electronic microprocessor.



#### THE ADVANTAGES AT A GLANCE



Possibility of system flow rate modulation from 30% to 100% for greater comfort.



Optimal heat distribution, homogeneity of ambient conditions and maximum system performance.



Energy saving, thanks to the elimination of stratification.

## SYSTEM COMPLEMENTS

### High induction destratifiers **ABS**

#### THE PHENOMENON

Air **heating** systems for **large volumes and heights** present the need to break down the thermal gradient between the occupied zone and the higher zone, close to roofs.

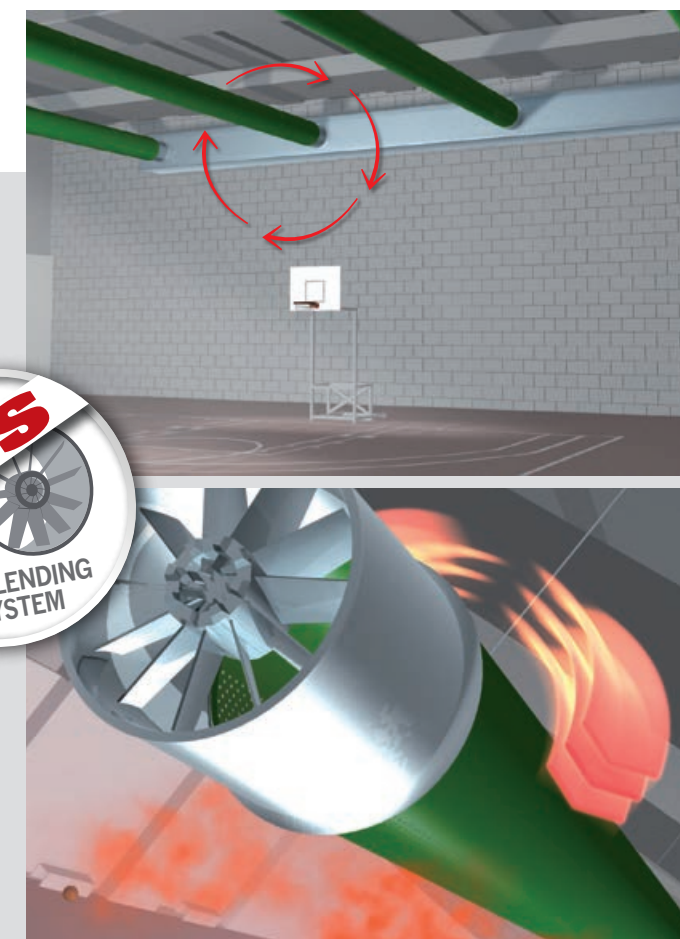
In cases where the system is designed for both winter and summer, the design air flow rate **allows** the **gradient between supply and room temperature** to be sufficiently **reduced**.

On the other hand, when the system is designed for heating with direct exchange hot air generators or unit heaters, the design  $\Delta T$  triggers the stratification phenomenon. Typically involved are industrial halls, trade fair exhibitions, sports centres, and all cases where air heating is still considered the most effective.

#### THE SOLUTION

The ideal solution is to install one or more systems consisting of an axial fan that feeds air into a micro-perforated duct, which will have the task of managing its speed and orientation so as to achieve **a high induction** of air into the room and allow for **homogeneous** temperatures.

Depending on the characteristics of the environment and the intended use, the installation can be completed with a staged speed regulator or inverter and appropriately sized silencers.



#### THE ADVANTAGES AT A GLANCE



Increased comfort thanks to temperature homogeneity anywhere in the environment.



Energy saving, thanks to the elimination of stratification.



Quick and inexpensive solution, without modification of existing installations.



Perfect aesthetic integration.

#### DIRECTIONS FOR OPERATION

Depending on the room volume involved, and remaining in the field of installations with average heights (approx. 5 to 10 metres) an initial assessment can be made by dividing the air flow rate (roughly set at 2 changes/hour) using the table showing the air flow rate for each system for the various diameters.

A wide range of diameters from 300 to 900 mm and air flow rates from 1850 to 16,000 m³/h are available.

Fan diameter		300	350	400	450	500	550	630	710	800	900
Polarity	Poles	2	2	2	2	2	4	4	4	4	4
Absorption	kW	0.35	0.35	0.55	0.75	1.1	1.1	1.5	2.2	3	4
m³/h with 250 Pa	m³/h	1850	2490	3250	3950	5070	6030	7230	9620	12800	16200



## SYSTEM COMPLEMENTS

# I-STOP for reducing defrosting times

## THE PHENOMENON

In food cold rooms, the **defrosting time** is a key element affecting the temperature rise in the stand-by phase and thus **energy consumption**.

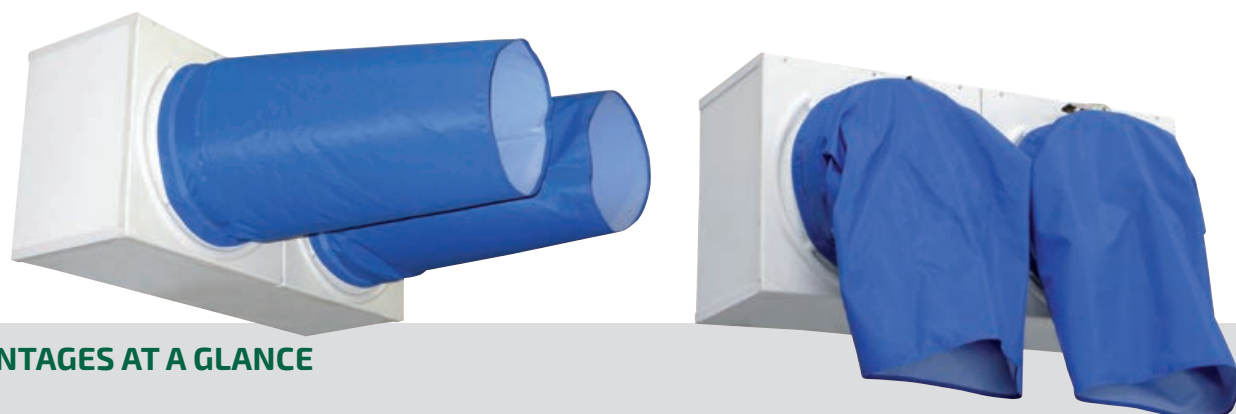
Inefficient defrosting can also cause water vapour to be emitted into the cold room, resulting in ice formation on the room surfaces.

## THE SOLUTION

The KLIMAGIEL **I-STOP** system consists of a **waterproof** fabric nozzle, specifically designed to be installed on the mouth of evaporators and thus accelerate the defrosting process.

The fabric part of **I-STOP** is made of 100% high tenacity polyester with a special **hygroscopic treatment**.

Available in different colours, easily **washed and sanitised**, it is the ideal and **economical** solution.



## THE ADVANTAGES AT A GLANCE



Energy saving thanks to reduced defrosting times.



Prevents the formation of ice on cold room surfaces.



Easily washed and sanitised.



## SYSTEM COMPLEMENTS

# Sanitisation system for KLIN-AIR air conditioning ducts

**KLIN-AIR** is the only **duct sanitisation** system that reduces the microbial load in the air using the tried and tested Bioxigen® technology.

The Bioxigen® technology used in the Klimagiel **KLIN-AIR** drastically **reduces** the **microbial load** in the air, reduces fine dust and maintains the correct ionic balance thanks to the special **quartz condenser**.

Klimagiel **KLIN-AIR** products are applicable in both **new and existing constructions** and must be sized according to the air flow rate of the ducts and the project purpose.

**KLIN-AIR** is available for all flow rate ranges from 200 m³/h to 20,000 m³/h and more for Klimagiel circular ducting.

The Bioxigen® technology used by **KLIN-AIR** consists of a glass cylinder with appropriate metal meshes that are electrically powered.

This allows an alternating electric field to be generated outside the cylinder whose lines of force change in intensity and direction continuously over time, increasing the vibration of the air molecules.



## MAIN STRENGTHS



Microbial abatement



Improved INDOOR air quality



Reduced periodic cleaning of air ducts



Easy installation in new or existing air ducts



Reduced electrical consumption



Equipped with sanitisation monitoring system



Equipped with an electronic system that alerts the user in case of malfunctions or reduced effectiveness of the product



Permitted for use in the presence of people, thanks to the bipolar ionisation principle



University research and certifications confirming the effectiveness and efficiency of KLIN-AIR





## SYSTEM COMPLEMENTS

## AIR SCENTING SYSTEM FOR K-EMOTION AERAULIC DUCTS

**K-EMOTION** is a fragrance diffuser with Venturi system designed for perfect diffusion in medium to large rooms.

With its compact, linear shape, it is an excellent room **scenting solution** for KLIMAGIEL aeraulic ducts.

### TECHNICAL FEATURES

	K-EMOTION	K-EMOTION PRO
COVER	800-1200 m³	2500-4000 m³
VOLTAGE	12 V	12 V
POWER	7.5 W	16 W
NOISE	<40 dB	<45 dB
WEIGHT	3.0 kg	4.2 kg
DIMENSIONS (LxDxH)	230x110x260 mm	280x120x279.5 mm
PERFUME CAPACITY	500 ml	800 ml
COLOUR	WHITE	



**K-EMOTION** is designed for large ducted environments, large public areas, hotel lobbies, common areas in offices or accommodation facilities, spas, fitness centres, bars and shops.

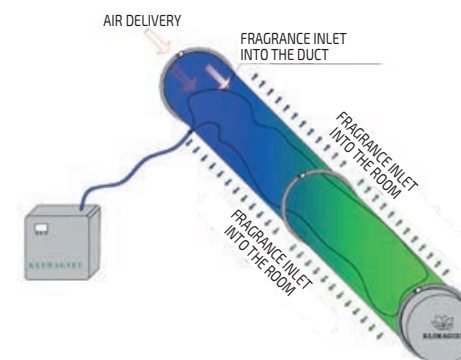
### K-EMOTION PERFUMES

SALT WATER	22266-11	WHITE MUSK	22266-19
CITRUS & SPICES	22266-7	FRESH BREAD	22266-20
COFFEE	22266-6	PEACH	22266-22
LAVENDER	22266-9	ROSE AND JASMINE	22266-13
WOODY SPICY	22266-14	GREEN TEA	22266-10
MAGNOLIA	22266-16	GRAPE	22266-17
APPLE CINNAMON	22266-18	VANILLA	22266-15
AQUATIC MINT	22266-21	NEROLI ORANGE BLOSSOM	22266-8

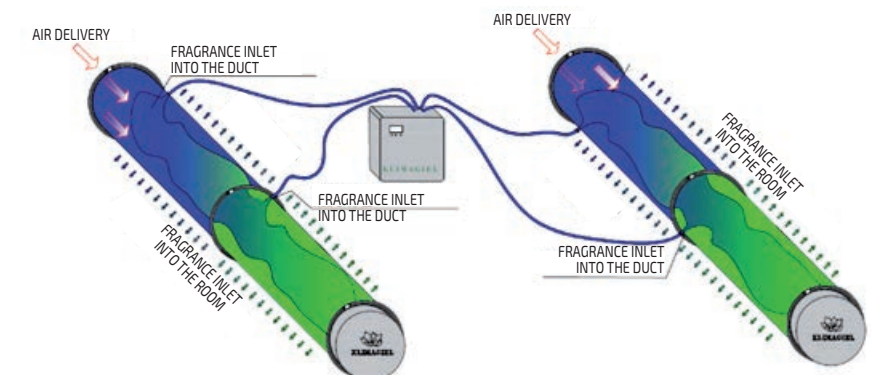


**K-EMOTION** is connected to the ventilation system via a kit:

single Ø 8mm pipe in the case of single aeraulic duct



4 Ø 4mm pipes in the case of multiple aeraulic ducts



**K-EMOTION** is programmable directly from the display and can be controlled from the app via Wi-Fi or Bluetooth, to ensure constant and efficient fragrance diffusion even in larger rooms.



The olfactory process is very much influenced by emotional factors. Odours have an important signalling function between individuals and long-term memory, allowing a person to remember them even years later. university studies by the **Ludwig Boltzmann Institute for Functional Topography of the Brain in Vienna** verified that, thanks to specific fragrances, the increase in sales of shops which participated in the scientific research was up to 60% higher than those which did not use fragrances. In addition, the productivity of the staff increased by 25% compared to periods when the perfumes were not used.

**PEOPLE ARE 100 TIMES MORE LIKELY TO REMEMBER A SMELL IN RELATION TO SOMETHING THAT THEY HEAR, SEE OR TOUCH.**



**A STUDY SHOWED THAT CUSTOMERS WERE 84% MORE LIKELY TO BUY PRODUCTS IN A FRAGRANT ENVIRONMENT COMPARED TO AN ENVIRONMENT THAT IS NOT FRAGRANT. IN ADDITION, THEY WERE WILLING TO PAY 10% TO 20% MORE IN THE SCENTED ENVIRONMENTS FOR PRODUCTS THEY DESIRED.**

## KLIMAGIEL accessories

KLIMAGIEL offers a rich selection of accessories to help you find an ideal solution to complete every realisation. All KLIMAGIEL textile and metal diffusers are supplied complete with installation accessories.

### METAL DUCT ACCESSORIES



#### METAL INSTALLATION KIT

KLIMAGIEL bracket system supplied as standard with the ducts. Formed by a special slot and M8 nut that allows the vertical position of the duct to be adjusted by screwing or unscrewing the nut.



#### METAL COLLAR - CONNECTING CLAMPS

Supplied with metal ducts as standard. Needed to connect the metal modules that make up the duct.



#### INTERNAL STABILISATION FRAME (PATENT APPLICATION FILED)

Available for metal ducts from Ø 1050 mm. It facilitates assembly and increases duct rigidity with large diameters, avoiding ovalisation.



#### STEEL PROFILE WITH ITS SLIDE

(See duct installation instructions with its sliding steel profile).



#### METAL COLLAR FOR OVAL DUCTS

Supplied with oval metal ducts as standard. Needed to connect the metal modules that make up the oval duct.

### FABRIC DUCT ACCESSORIES



#### KLIMAGIEL BRACKET

Available in green, white and black. KLIMAGIEL standard solution for fixing to the Ø 3 mm cable. Can also be used for installation with H or C-profile.



#### SNAP HOOK

Available in black and white. Alternative solution for situations where a different diameter cable is required to the one supplied by KLIMAGIEL (up to 10 mm diameter).



#### SLIDING

Available in white. Alternative bracket for clamping with H or C-profile (also not supplied by KLIMAGIEL).



#### ADJUSTABLE BRACKET BUCKLE

Available in black and white. For use where variable adjustment of the bracket length is required.

### TYPES OF FABRIC DUCT PROFILE



#### PROFILE SUSPENSION SYSTEM

Made of aluminium. Solution to be used when there is a need to install the profile (H or C) in suspension and not directly on the ceiling.



#### H-PROFILE

Made of aluminium.



## TYPES OF FABRIC DUCT PROFILE



### C-PROFILE

Made of aluminium and AISI 304 stainless steel.



### P-PROFILE

Made of aluminium.  
Can be used both as a clamping system and for fixing the duct/machine connection. Prepared for Ø 6-8 mm rod.



### FASTENING SYSTEM FOR TEXTILE DUCTS

Made of stainless and galvanised steel.  
Consisting of cable, tensioner and cable clamps.

## VARIOUS ACCESSORIES



### EARTHQUAKE KIT

Can be installed on both fabric and metal ducts.  
Keeps the duct structure from oscillating in the event of seismic events and consequently reduces the possibility of the duct falling.

**KLIMAGIEL provides earthquake-proof system designs on request.**



### ADJUSTABLE LOCKING SYSTEM

This allows you to adjust and lock fabric and metal ducts at a desired length without tools.



## Extra services

### TOUCH-UP KIT

Solution for maintaining the aesthetic appearance of painted metal ducts.  
The kit consists of:

- Container with the required colour powder (RAL CLASSIC scale);
- Thinner with a handy brush, to be mixed with the powder to make it applicable.

The kit can be requested either when placing the order or at a later stage for already completed orders.



### LOGO BY MICROPERFORATION

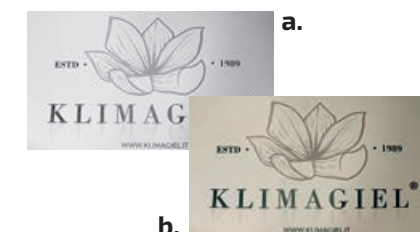
Implementation of customised logos on metal caps by microperforation (subject to feasibility assessment). The microperforation used for the logo does not affect operation of the duct.



### CUSTOMISED LABELS

Production of customised labels for textile ducts in two versions:

- Black or green with a max. height of 11 cm (construction costs included);
- Colour screen-printed labels with customisable sizes (extra service).



### ADJUSTABLE CONE

On request, KLIMAGIEL manufactures the cone with an adjustable closure in order to be able to create pressure drops within the diffusers and to be able to slightly correct the available pressure.





## Certifications

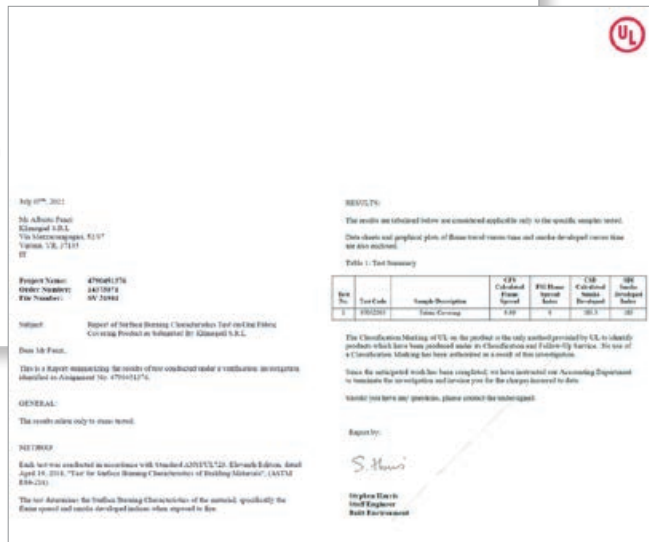


CAMPIONE	ppm IPBC	ppm BIT	ppm Py Zn
TEXTIL	145	Non rilevato	Non rilevato

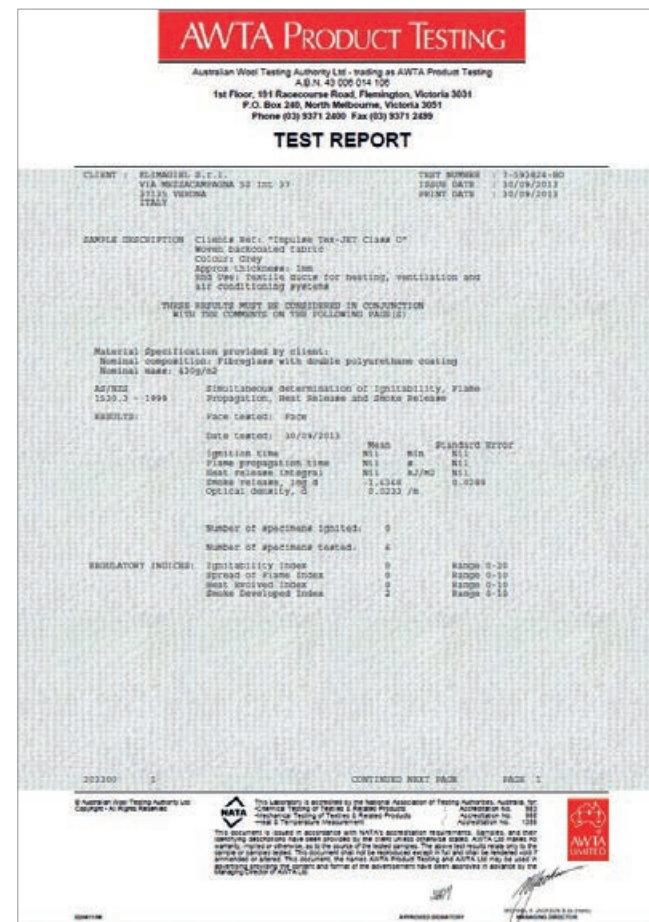
## CONCLUSIONI

La prova di laboratorio contro i funghi, secondo test SATRA ID-11-2022, indica che il tessuto ricevuto presenta buona protezione su entrambi i lati.

Per quanto riguarda la valutazione finale il test risulta quindi conforme e superato.



## Certifications





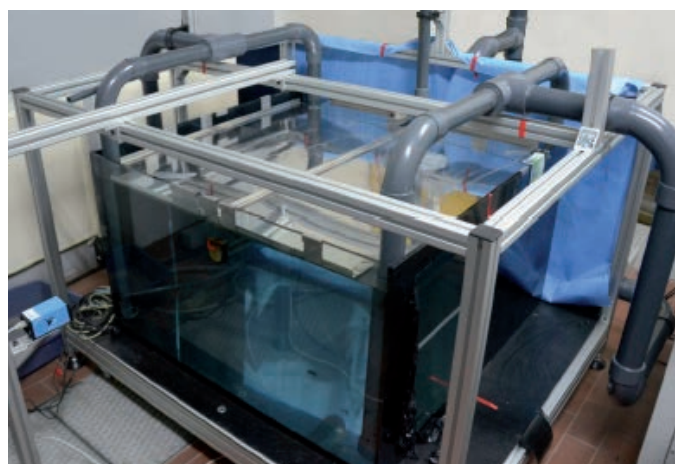
## Research and Development

### CONSTANTLY STRIVING TO IMPROVE PERFORMANCE

Collaboration with the POLITECNICO di MILANO and the use of two separate experimental apparatuses developed a process of analysis and verification of technical and production data that was able to profitably characterise KLIMAGIEL products.

With the BIG TUBE, it was possible to study the aerodynamics inside the ducts in detail, with a procedure that made it possible to refine the size and specific phorometry of each duct and its main operating characteristics, such as pressure drops, outflow coefficients and conducted and diffused flow rates.

With the AQUARIUM, a kinematically similar water circuit equipped with PIV - particle image velocimetry - visualisation techniques, the movement of water was characterised and velocity data collected at all points of a section illuminated by the laser blade. It was thus possible to study in detail the behaviour of the air released into the environment.



## Services and Plusvalue



Design  
consulting



Inspections



Qualified  
staff

Integrated consultancy is the professional service that KLIMAGIEL established know-how in ducted air distribution offers its customers, assisting and guiding them in finding and using the best solution for their specific objective.

The evaluation of performance in terms of time, adherence to budget, agreed quality and return on investment, sharing responsibility for results are therefore indispensable.

A further, no less important service is inspections where the work is to be carried out and the surveys where the system is to be installed.

KLIMAGIEL also provides a comprehensive organisation capable of responding to all service requests.

Professionalism, competence and closeness to the Customer have always been distinctive elements guaranteeing quality service that is renewed year after year.



## Our projects

KLIMAGIEL has a broad spectrum of experience in a wide variety of applications. The areas suitable for the exploitation of high induction technology are the most varied, both in the civil sector, particularly for commercial and service areas, and in the industrial, production and logistics sectors.

### AIRPORTS





## Our projects

### WORK SITES



## Our projects

### CELLARS, MATURATION CELLS





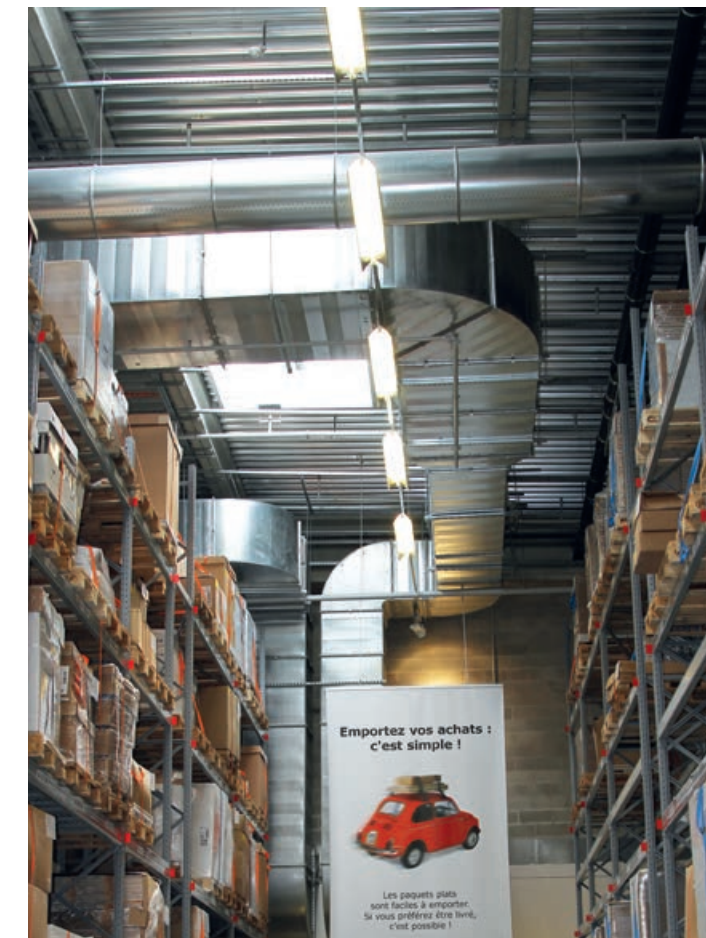
## Our projects

### FACTORIES



## Our projects

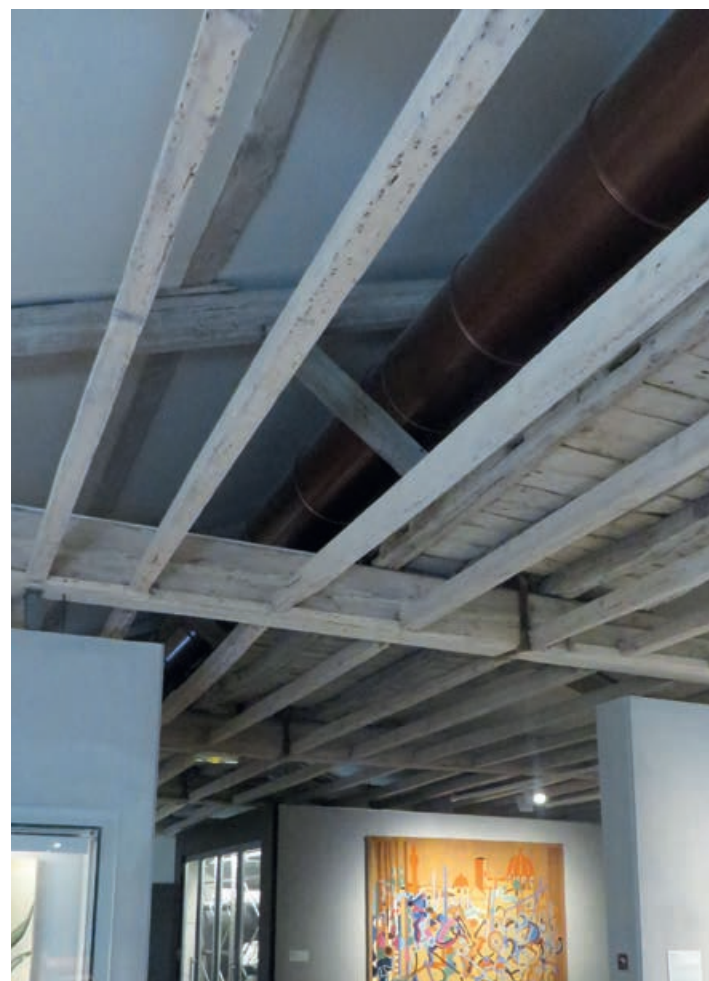
### WAREHOUSES





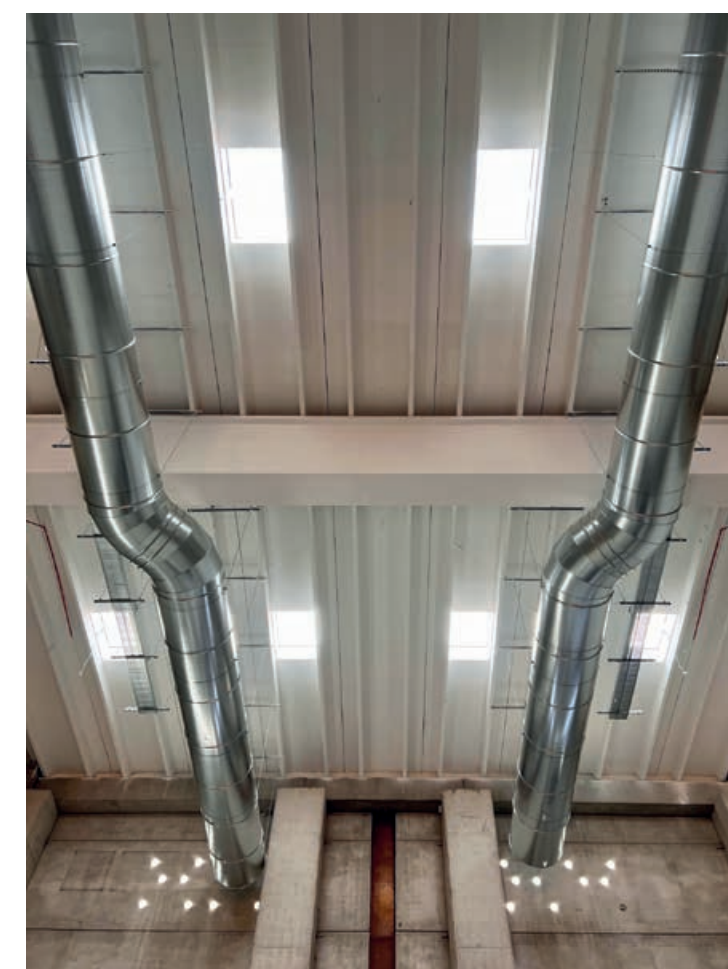
## Our projects

### MUSEUMS



## Our projects

### GYMS, SPORTS CENTRES





## Our projects

### HAIRDRESSERS AND SPAS



## Our projects

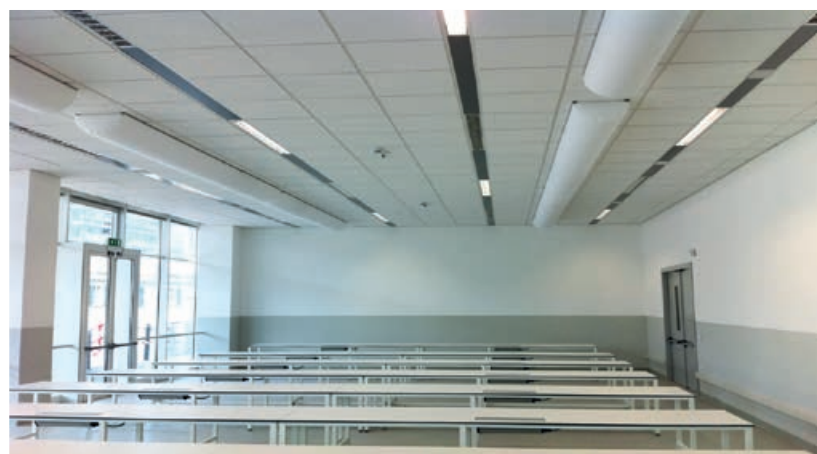
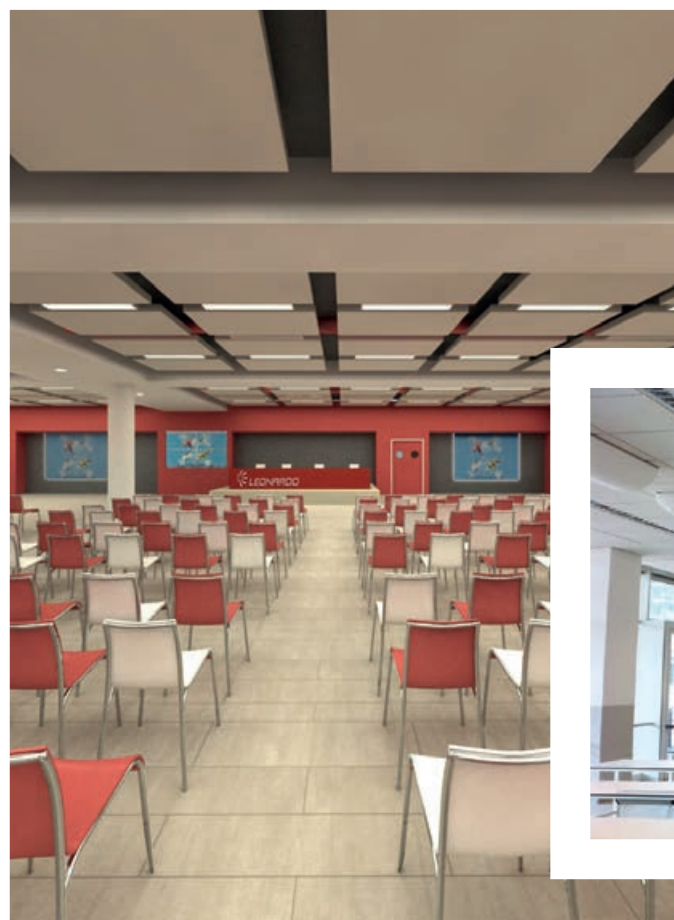
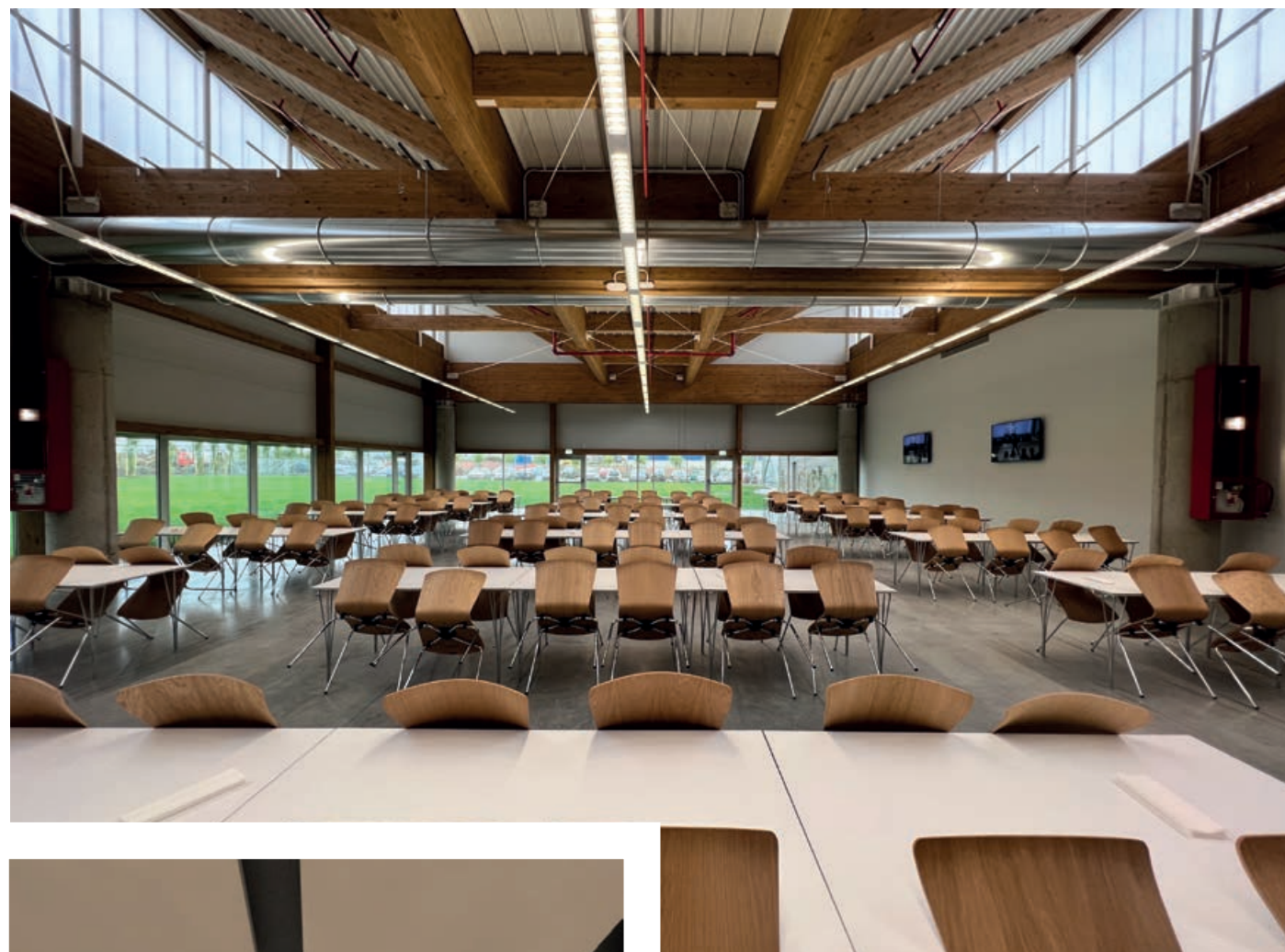
### RESTAURANTS





## Our projects

### MEETING ROOMS



## Our projects

### TERMAL BATHS, POOLS





## Our projects

### OFFICES



## Our projects

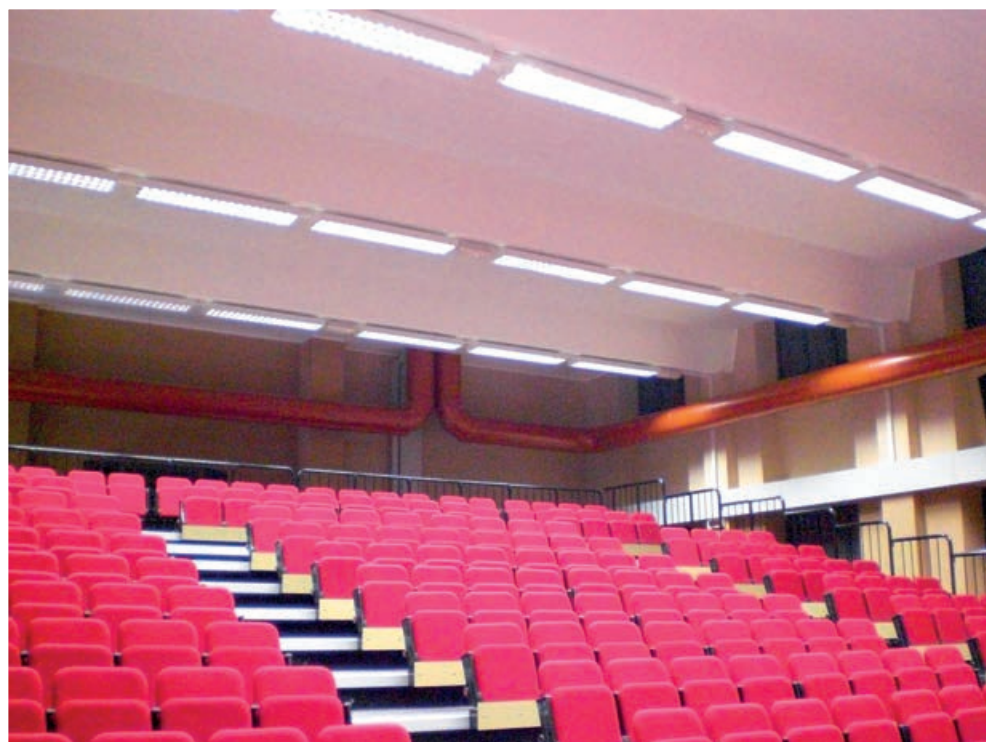
### UNIVERSITIES





## Our projects

### CINEMAS



## Our projects

### PRIVATE HOMES

