

AIR-EFFICIENT-C: Internal ventilation of the Inogam body

The internal ventilation of the body is an all too rarely-mentioned safety, performance and economy factor. It is, however, one of the essential performance criteria in the design of a refrigerated vehicle.

CHEREAU has invested massively to measure and analyse the conditions of this ventilation. With the calculations and tests carried out, we guarantee almost perfect transmission of refrigeration unit performance. And this means greater efficiency and therefore greater operating savings (and the use of less diesel).

The special feature of the Inogam internal ventilation system consists of **putting as**

much emphasis on ventilating the vehicle's sides as on the

ambient air: on the one hand because the temperature of the side can be compared to that of the load and on the other, because the walls themselves have a **real cold accumulator effect** which is transmitted by radiation to the cargo.

When the doors open or when loaded with cargo which expels ambient air, the interior of the body is no longer at the desired temperature. In this graphic we can see the reason for cooling the sides to reach the temperature targeted during loading.

Also, the colder the sides between each loading/unloading operation, the more the temperature fall will occur quickly and provide better transport conditions for foodstuffs.



the outlet

the duct

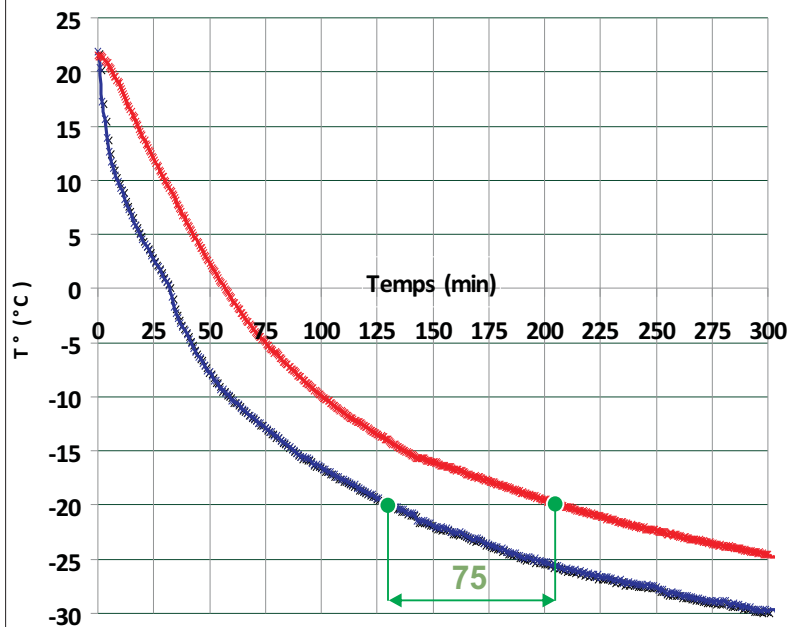
the benefits

video

Readings of the falls in temperature within a body:

Air temperature measured
by the refrigeration unit's sensor

Temperature of the sides
measured by 20 sensors in the body



e.g. 75' of additional cooling to reach the desired temperature of the cargo or in the sides.

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Our cooling system uses an exclusive outlet/duct assembly design, the results of which surpass any other solution currently available on the market.

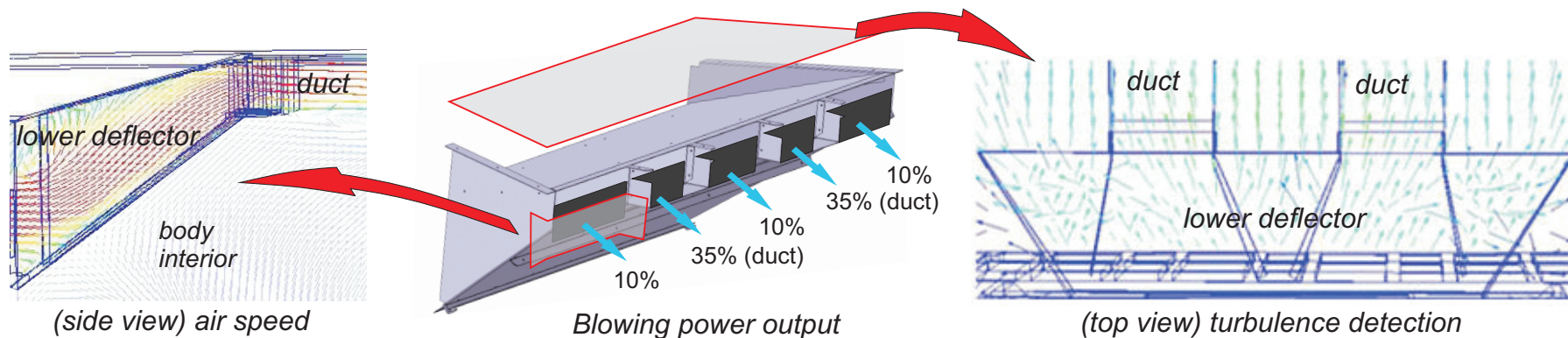
A new outlet design:

The ventilation outlet at the exit from the refrigeration unit is an essential accessory. Its design allows a targeted ducting and optimum level of air in the body, both vertically and horizontally. Our aerodynamic studies have shown that the least inattention in design could considerably reduce the flow of air, from the very moment it enters the body. With this in mind, the positioning and angling of the deflectors in the outlet were calculated, using aerodynamic models, to **eliminate all turbulence**: loss of power.

Based on our conclusions, the CHEREAU ventilation outlet has been completely redesigned, giving access to and **transmitting the unit's full power**.

Made completely of aluminium, the lower deflector of the outlet has been designed to be removable to facilitate access to the refrigeration unit during maintenance: access to the various sensors and to the blower turbine, enabling the inside of the outlet to be cleaned.

Furthermore, Chéreau chose to ensure the protection of the front panel using a grille, rather than a screen. This decision is based on the results of measurements which demonstrate the clear superiority of the option, so far as the blowing power output is concerned (see front panel protective grille data sheet).



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A new duct design:

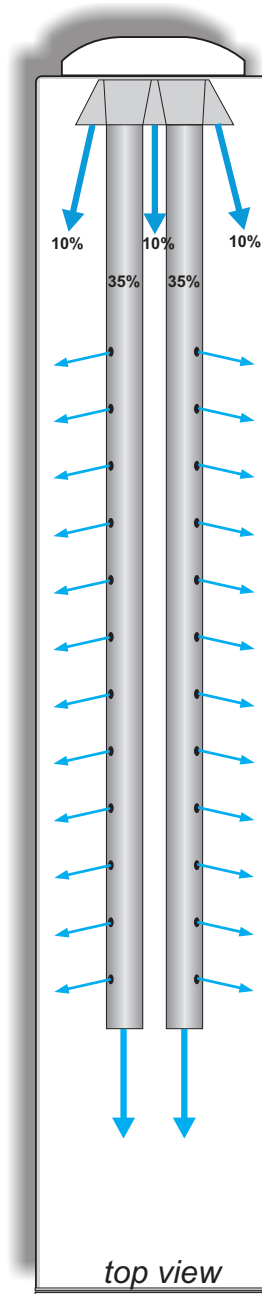
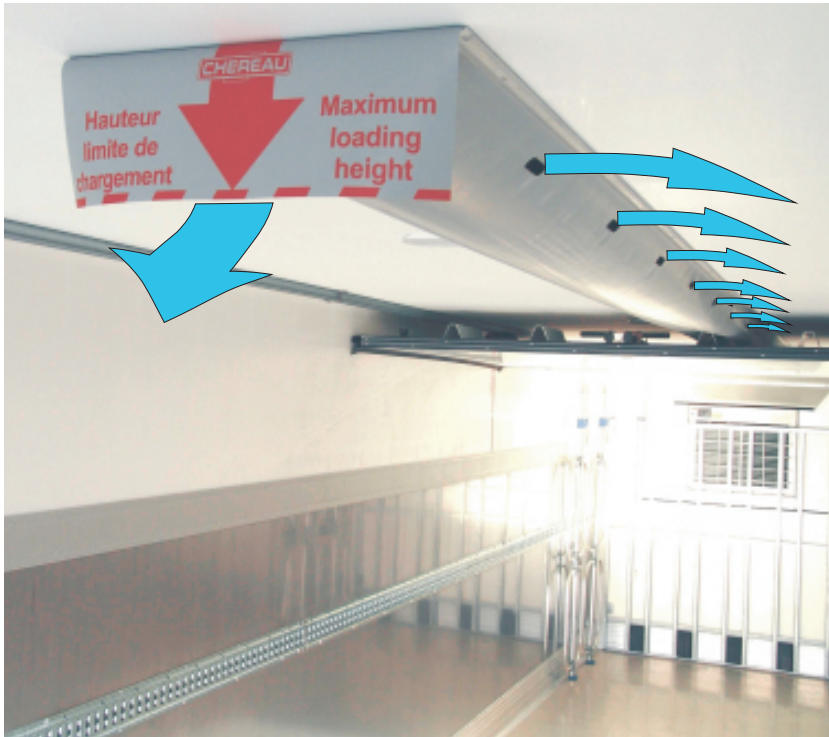
In order that the temperature is as even as possible over the 13 metres between the front and rear of the body, constructors use a single duct to cool the ambient air. For its part,

Chéreau has established that the most important thing is not to lower the ambient temperature (which will rise again the instant the doors are open) but to lower that of the body's sides.

The sides of the Inogam body have a much greater inertia to a change in temperature than the air does.

CHÉREAU has designed a duct which emits the air pulsed by the refrigeration unit uniformly. With a special pattern of holes, the ducts provide the cooling of the vertical walls

and the temperature of **the load is more uniformly maintained**. Depending on the equipment configuration, the system requires either two (mono-temp) ducts or one (multi-temp) duct. Manufactured in PES (flexible PVC) the Chéreau ventilation duct has been designed to take up less space (100 mm in height). It is finished with a protective cover to limit any risk of being torn off and so **extending its working life**. Our ducts remain functional, even with an Easy-C transverse partition in place.



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Nothing but advantages: **greater performance, greater safety, greater savings**

The time to lower the temperature is reduced by up to 9% depending on the model of refrigeration unit (facilitates renewal of the ATP).

The amount of time the refrigeration unit is required to run and its consumption are reduced up to 9% depending on the unit model.



The yield from the unit is improved by 10-30% depending on the model.

The temperature of the air and the cargo are more uniform throughout the body with a maximum range of $\pm 1^{\circ}\text{C}^*$.

**Readings taken in a body carrying no cargo.*

Inogam internal ventilation system	Compatible with evaporator protector	Compatible with meat hanging equipment	Compatible with multi-temperature set-up	Compatible with Easy-C partitioning	Improvement in lowering temperature	Saves the refrigeration unit	Not compatible with
	yes	yes	yes	yes	yes	yes	- units not in the catalogue - with special hanging set-ups (more than 5 rails)

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