Vehicles for day-old poultry transport

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Have you ever seen the contrast between the incubators in hatcheries and the vehicles used to transport day-old poultry? You probably know that the situation in many hatcheries is not perfect.

While precise and very expensive incubators ensure that chicks have the best care before they are hatched, the day-old chicks are often then put into some home made vehicles in order to transport them to the poultry houses. These vehicles usually have insufficient ventilation with poor heating and cooling systems that cannot ensure suitable conditions during transport.

This situation leads to many compromises – transport is only possible to poultry houses that are close to the hatchery and, in addition, chicks can only be transported during the night when the ambient temperature is not so high.

With today's high competition in the poultry sector hatcheries cannot afford to only focus on a small area near their location, but they have to transport day-old chicks to poultry houses located far away from the hatchery.

With transportation to destinations over 1500km away and lasting nearly 40 hours, you cannot use amateur solutions with uncertain results. You need to be able to rely on a professional solution from a company that focuses on building vehicles for the transportation of day-old poultry, such as the Veit Electronics Company, located in the Czech Republic.

This article describes the main parts of Veit's vehicles for day-old poultry transport, together with the latest developments and experiences from the field.

Semi-trailers and trucks are the most common chassis for transport.

Design

The body can be built on any type of chassis, including small vans, trucks and big semi-trailers. The total capacity of chicks is given by the size of the body with a maximum capacity of 15,000 birds for vans, 72,000 for trucks and 114,000 for semi-trailers.

The body itself is made of thick styrofoam panels that ensure perfect thermal isolation, so the vehicle can operate in a wide temperature range from -20 to +40°C. Because of everyday use of pressure water for cleaning and disinfection, the body is built using only non-corrosive materials, for example stainless steel, aluminum and plastic.

The body is designed to allow transportation of both day-old poultry and eggs, which makes the vehicle more universal.

Inside the body.

Ventilation

Boxes with chicks are put into special trolleys, which are then loaded into the body. The trolleys are designed to allow optimum airflow along the boxes. The trolleys are fixed in the body to prevent them from moving during transport.

The air flowing along the boxes ensures proper thermal regulation of the chicks and also delivers enough oxygen to the body. The basic ventilation scheme is explained in Fig. 1 at the top of page 9.

Trolleys with boxes loaded into the body.

The air enters the body through two induction flaps, and then it is heated or cooled in the radiator/evaporator block. Powerful fans mounted on this block push the air into the roof channel, which serves as an air reservoir.

Proper design of the roof channel ensures that the air is distributed evenly along the whole body, which is the basic requirement when transporting poultry. The air leaves the body through the floor channel and floor flaps.

The air from the body can also be recirculated to lower the energy consumption during transport. The air is first filtered to remove any dust and then it flows through the recirculation flap back into the induction. The amount of fresh air in the body is regulated by the position of the induction, floor and recirculation flaps.

All flaps are controlled automatically via precise actuators, but the driver can also control them manually from the cabin.

Heating and cooling

Single air flowing along the boxes is not enough for proper thermal regulation of the chicks, so the air needs to be heated or cooled to reach the proper temperature in the body. The usual target temperature during transport is around 25-28°C, depending

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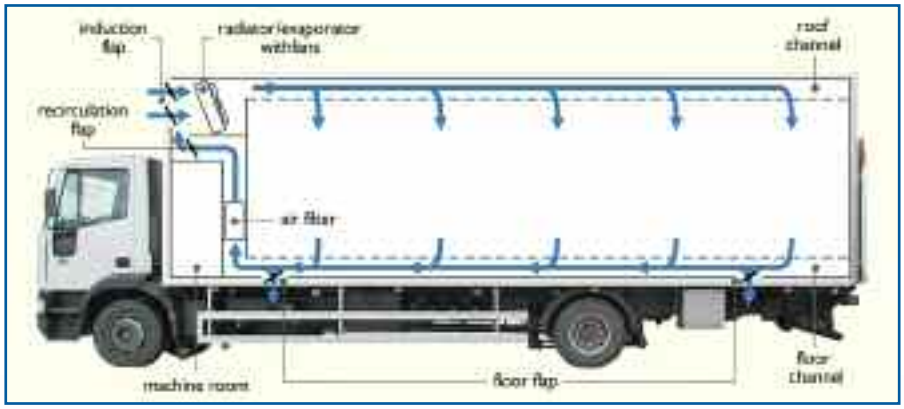

Fig. 1. Scheme of airflow in the body of the chick vehicle.

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on the type of poultry. The heating system consists of hot water heating and a radiator. When used on a truck chassis, the heating is coupled with the cooling system of the truck's engine, so the water in the engine heats the chicks instead of wasting the heat in an engine cooler. In most cases, heating from the engine is enough to heat up the body, so this system saves fuel and money.

During summer, but often even in spring or autumn, the air needs to be cooled to reach the proper temperature in the body.

As summers are slowly getting warmer and warmer every year, high power cooling is a must in modern vehicles for transport.

Cooling is ensured via a cooling compressor connected to an auxiliary diesel engine or electromotor.

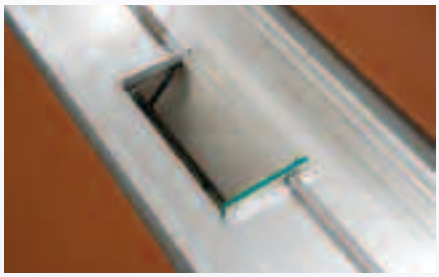
Precise control

All equipment in the vehicle can be controlled via a control unit, which is placed in the cabin and is easily accessible by the driver.

Thanks to a large graphic display and a touch panel, the control unit is easy to operate. The control unit displays all temperatures, statuses and faults, so the driver has a detailed overview of the whole vehicle and load directly from the cabin.

The control unit also ensures control of all aggregates, including the diesel engine, all flaps, ventilation, heating and cooling.

All aggregates are controlled automatically by default, but each can be switched to a manual mode and operated manually from the cabin.



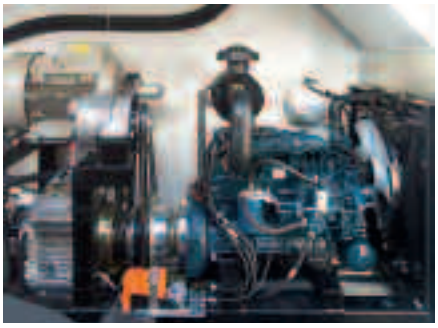
A flap in the floor channel.

If there are any major failures in the vehicle, every part of the vehicle can be operated directly by hand, without having to use the control unit.

Monitoring

The control unit also ensures storage of all parameters during transport in its internal memory, which is a unique feature of the Veit vehicles. After the chicks are delivered to the customer, the driver can print a transport protocol from an internal printer.

This protocol contains a time record of transport temperatures, so the customer can see that the transport did not affect the quality of supplied poultry in any way. When signed by both the driver and the customer, it can be used as an official protocol of the transport quality. Data from the memory can be transferred into a PC via a memory stick or GSM modem anywhere in the world. Data collected on the PC contains a complete history of the transport.



The diesel engine and electromotor with the compressor.

Summary

Day-old poultry needs the same care during transport as in the hatching period. Insufficient conditions during transport can radically affect the quality of the poultry for the rest of their life. ■

The control unit is located above the driver's eyes.

A transport protocol printed by the control unit.

Temperatures during transport are displayed on a PC.