

# Unique technology for transportation of day old chicks

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For hatcheries, transportation of day-old chicks is the last, but very important link in a chain.

There are no doubts that a vehicle with insufficient technology can harm chick quality. All precise work in the hatchery is then lost.

Fortunately, major hatcheries all around the world already recognise this fact and use professional transport vehicles. If this is true, why should we need to improve a vehicle that already delivers chicks in good quality?

Even in professional vehicles there are huge differences in fuel consumption, maintenance costs and reliability. These facts are hidden, so it takes years of use to figure out that a vehicle that looks professional on first sight consumes a lot of fuel and needs expensive maintenance far too often. Such vehicles are built using obsolete parts and technology from 20 years ago.

It is interesting that when buying a personal car, fuel consumption and maintenance costs are the main features to take into account. With vehicles for day-old chick transport, this is often overlooked.

As today's competition between hatcheries and transport companies is higher than ever, costs saved on consumption and maintenance can determine whether the business is still profitable or not.

Veit has addressed this issue and developed a unique technology called EcoTransport, which ensures significant reduction in fuel consumption, higher reliability and lower maintenance costs.

International Hatchery Practice recently

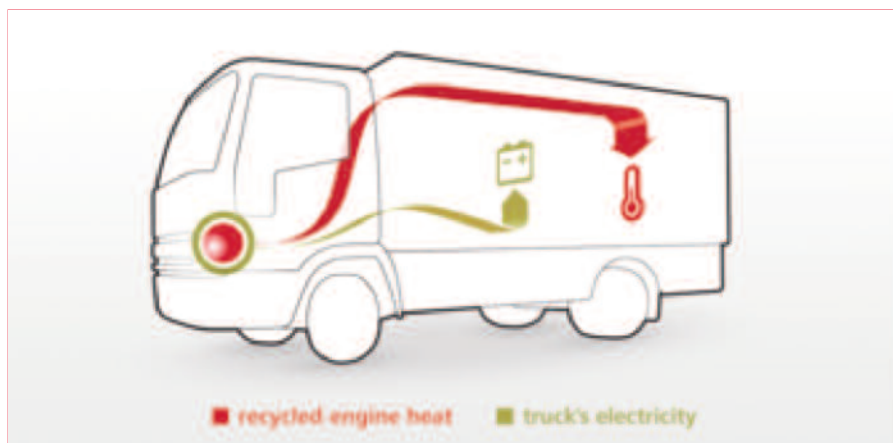


Fig. 1. Recycling energy from the truck's engine.

visited Best Hatchery in the Czech Republic to ask about their long term experience with EcoTransport.

## Best Hatchery

The Best Hatchery was established in 1992 in the Eastern part of the Czech Republic. Its main activity is chicken hatching, egg laying production and sales. The capacity of the hatch facility is 30 million day-old broiler chicks per year with a maximum production of 170,000 chicks per day. An integral part of the company is their own reproduction breeds with a production of 30 million hatching eggs.

"We supply chicks to domestic and foreign markets, including Slovakia, Poland, and Hungary. We use professional vehicles for transportation, so our customers get our

chicks in perfect quality," Mr Kristian, director of Best Hatchery told International Hatchery Practice. "But since the transport distances increase every year, we also need the most economical way of transport. We have found that the EcoTransport technology from Veit gives us a major advantage over our competitors."

## EcoTransport basics

EcoTransport is based on two principles (Fig. 1):

- Recycling of waste heat from the truck's engine.
- Use of electricity generated by the truck's engine.

During operation, every engine in a vehicle generates a lot of waste heat and electricity.

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Fig. 2. Conventional solution of heating.



Fig. 3. Heating at no additional cost.

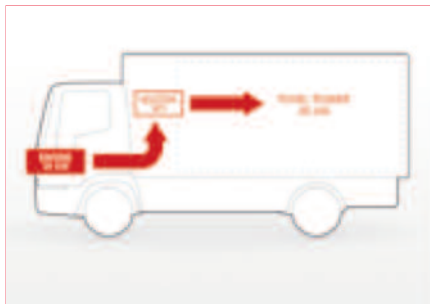
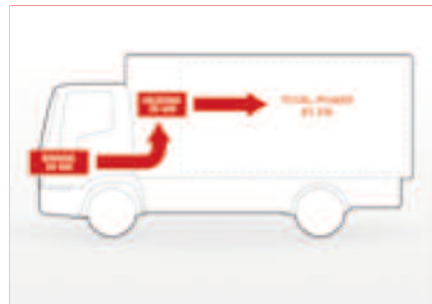


Fig. 4. Increased heating power.



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While this energy is available for use, it is usually wasted. EcoTransport recycles this energy for transporting day-old chicks.

The key advantages are:

- Lower fuel consumption.
- Lower maintenance costs.
- Better reliability.
- Lower environmental pollution.

## Recycling of waste heat

In conventional vehicles for transporting day-old chicks, heating for the chicks is provided by a separate heating unit. Heat from the truck's engine is wasted, escaping to the atmosphere (Fig. 2).

The average power of the wasted heat is about 30kW, nearly equal to the power of a separate heating unit. Considering an average truck with an engine power of 220kW and thermal efficiency of 40%, the power of wasted heat can exceed in some situations up to 130 kW. All this power is wasted.

In Veit vehicles, the truck's engine is connected to the heating system and the waste heat from the engine is used to heat the chicks. In most cases the heat from the engine is enough, so the separate heating unit stays switched off (Fig. 3).

The chicks are being transported at no additional cost and without any environmental pollution.

The vehicle has two independent sources of heat, which increases both the power and reliability, whilst fuel consumption and wear of the separate heating unit is significantly lower. When the waste heat from the engine is insufficient, the separate heating unit will start automatically to increase the heating power (Fig. 4).

It will be then switched off as soon as the truck's engine is able to heat the chicks on its own. This ensures the lowest possible transport costs.

Fuel savings can reach up to five litres per hour of operation. This means up to 100 litres of fuel during a 20 hour long journey.

## Using the truck's electricity

Conventional vehicles use an auxiliary diesel engine with a generator for powering the ventilation system. There are two engines running in the truck: the truck's engine and the auxiliary engine (Fig. 5).

The auxiliary engine must be running all the time during transportation, which leads to higher fuel consumption, maintenance costs and environmental pollution. In case of its failure, the ventilation system cannot operate and the transported chicks are in danger.

Veit vehicles with the EcoTransport technology choose a different approach. When the truck's engine is running, it is always generating a 24-volt electricity supply for lights, radio and other electronic equipment installed in the truck.



**Fig. 5. Conventional solution of electricity system.**



**Fig. 6. Electricity generated by the truck's engine.**



**Fig. 7. Backup batteries.**

EcoTransport uses this electricity for powering the ventilation, so the auxiliary engine and generator can be stopped. Running of the truck's engine is sufficient for powering the ventilation system (Fig. 6).

This leads to lower consumption, lower wear of the auxiliary engine, higher reliability and lower environmental pollution. The separate generator needs to be running only when cooling or when the truck's engine is stopped.

Additionally, the ventilation system can be powered from backup batteries for up to four hours, which increases safety significantly (Fig. 7).

Fuel savings is about four litres per hour of operation. This means 80 litres of fuel during a 20 hour long journey.

There are also other aspects that are not based strictly on calculations. Everybody knows that starting an engine in cold winter harms it. It is obvious that the truck's engine must be running during transportation, but why should one start another diesel engine when it is -20°C outside?

With the EcoTransport technology, the auxiliary diesel engine stays stopped in winter.

Someone could ask whether the standard electricity system in a truck has enough power for ventilation? Yes, the electricity

from the truck's engine is strong enough and has no influence on the quality of transportation.

Thanks to a unique design and optimisation, the amount of airflow delivered to the chicks is 18,000m<sup>3</sup>/h, which is even higher than in conventional vehicles.

Together with high reliability and a sophisticated backup system, EcoTransport also offers the highest possible level of safety.

## Experience from real use

"Our hatchery has been running two trucks for day-old chicks, one Veit with the EcoTransport technology and another one with a conventional system. Both trucks are of the same type and age and both are used under the same conditions.

"Therefore we have a direct comparison with how the EcoTransport technology performs in the real world," Mr Kristian added.

"Long-term measurements lasting more than one year show that the total fuel consumption of the Veit truck is 28 litres/100km and consumption of the conventional truck is 35 litres/100km. In our case, the EcoTransport technology leads to 20% reduction in total consumption. This is a big difference."

Let's take these numbers and calculate the total savings during the whole lifetime of the truck. Considering that an average truck will last about one million kilometers, the total savings reach an amazing 70,000 litres of fuel, which means a total saving of €108,000 (fuel prices from April 2012).

These savings are related only to fuel, but imagine also the huge reduction in maintenance costs, such as oil, oil filters, air filters and labour during such a long period. High savings of fuel consumption also mean a great reduction in environmental pollution, which makes the EcoTransport environmentally friendly.

"Nobody can be surprised that we have been replacing all our fleet with Veit trucks equipped with the EcoTransport technology. The savings and advantages are simply too high to be overlooked," Mr Kristian concluded.

## Conclusion

The EcoTransport technology effectively cuts the use of the auxiliary diesel engine, generator and the heating unit by 50%. Twice a year, mostly in spring and autumn, chicks are being transported at no additional cost, with no environmental pollution. The ventilation is powered by the truck's engine and the chicks are heated using the waste heat.

Veit vehicles still include all the standard parts that are used in conventional vehicles for transportation, such as the diesel engine, generator and the separate heating unit.

Thanks to EcoTransport technology, these units can be stopped 50% of the time. ■