Earny 2 heat exchanger
saves heating costs, improves the house climate and reduces emissions
Earny 2 – the innovative heat exchanger

With Earny 2, Big Dutchman can offer you a heat exchanger with optimised technical features. Its predecessor has been proving its worth on the market successfully since 2011. The heat exchanger recovers the thermal energy in the exhaust air of poultry houses.

How Earny 2 works

Earny 2 is a cross-flow heat exchanger. This means that warm house air and cold fresh air simultaneously pass through an exchanger element, but do not mix. The filter unit ensures that the exhaust air is cleaned before it enters the heat exchanger. A separation rate of dust of up to 99 percent can be achieved! The filter cartridges are cleaned fully automatically by means of compressed air, preventing performance losses of the heat exchanger during the batch. The fresh air is also filtered to stop dust and leaves from entering the heat exchanger. The exchanger element is made of aluminium and has a ruffled structure, which ensures a high thermal conductivity. A special coating protects against corrosion and guarantees a long service life. The warmed fresh air flows directly into the house via the shortest route. Optionally, Big Dutchman offers an additional hot-water heating element. This element heats the fresh air even further for increased animal welfare on cold days.

Technology and efficiency:
- energy savings of up to 60 percent depending on the location and application;
- heat recovery of up to 194 kW;
- supplied ready for installation for low assembly requirements;
- intelligent control with the ViperTouch climate computer or amacs;
- no unhygienic pipe system, no energy loss: extremely short distances between house and heat exchanger;
- fully automatic cleaning of the filter unit during the batch to avoid performance losses;
- easy wet cleaning of the filters after the batch; in case of freezing temperatures, the filters can be removed easily and quickly for cleaning inside the house;
- the height of the exhaust air pipe from the house into the heat exchanger can be selected flexibly on site; as an alternative, an opening can be made to connect the filter chambers directly with the house;

Animal and environment protection:
- improved house climate for healthier birds and better production results;
- dry litter for healthy feet;
- reduced use of medication;
- lower CO2 emissions thanks to heat energy savings*;
- reduced emissions from the house (ammonia, dust, odour);
- adjustment of the humidity;
- can be retrofitted in old and renovated houses;
- optionally available in the colour green.

* 37 t less CO₂ per year for a house with 42 000 birds and utilisation of natural gas
Filter unit
Up to six large filter cartridges (max. 64.8 m²) clean the exhaust air that comes from the house before it flows through the exchanger element. The filter cartridges clean themselves fully automatically at set intervals. This means:
– clean exhaust air from the house
– constant heat recovery

Multiple-flap inlet
If the warmed fresh air from Earny 2 is to be blown into the centre of the house (Centre-track), our proven multiple-flap inlet is the perfect solution. This inlet ensures that the fresh air flows along the ceiling all the way to the curtain, from where it slowly distributes throughout the house.

Exhaust air pipe installation
The opening for the exhaust air pipe is cut on site and at the correct height as required. Alternatively, the entire area marked below can be removed. Cleaning after the batch is then possible directly from the house.

Options for air distribution inside the house
Depending on the house’s ceiling height, there are two options to distribute the warm air coming from Earny 2 ideally in the house.

1. Racetrack
The warm fresh air flows in a circle and distributes throughout the entire house, supported by multiple circulation fans with guide vane (FC050). Our well-proven Vario air jet nozzle is used in this case. This is a very cost-efficient system with low service requirements.

2. Centretrack
For houses with a ceiling height of more than four metres, we recommend blowing the warm fresh air along the ceiling and into the centre of the house. This distributes the air very evenly, with few draughts. In the centre of the house, the air is collected by a curtain. Two energy-saving ECblue circulation fans (ZN063) then push the air longitudinally through the house in two circuits. Our proven multiple-flap inlet is used as air jet nozzle.
Significant emission reductions with Earny 2

Reducing emissions that come from livestock buildings and damage the environment is an important goal. Responsible authorities more often than not require measures that will ensure emission reduction. The focus is put on ammonia, odour and dust. Measurements carried out by the LUFA Nord-West (accredited German service laboratory) at a broiler farm with 41 100 birds per house (house 1 with heat exchanger (HE), house 2 without HE) over a period of 44 days showed excellent results.

Earny 2: Improved house climate and significantly lower emissions!

1. Ammonia – **29% less ammonia emissions**

![Ammonia Emissions Graph](image)

**Ammonia emissions**

The diagram shows the daily ammonia loads. During the test period, NH₃ emissions amounted to 308 kg without heat exchanger, while they were at 219 kg with heat exchanger. Nearly one third less ammonia!

2. Odour – **33% less odour emissions per year**

<table>
<thead>
<tr>
<th>Batch day</th>
<th>House 1 (with HE) [MOU/LU]*</th>
<th>House 2 (without HE) [MOU/LU]*</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>624</td>
<td>806</td>
</tr>
<tr>
<td>29</td>
<td>431</td>
<td>885</td>
</tr>
<tr>
<td>35</td>
<td>560</td>
<td>633</td>
</tr>
<tr>
<td>36</td>
<td>509</td>
<td>864</td>
</tr>
</tbody>
</table>

* Mega odour unit / Livestock unit

**Odour emissions (olfactometric measurements)**

Odour emissions from house 1 are clearly lower than those of house 2. The average mean values of all measurements show that odour emissions were reduced by one third!

3. Dust – **11 to 28% dust separation rate per year**

**Dust separation (measured at the outlet of the heat exchanger)**

The integrated filter unit completely separates the exhaust air that flows through the heat exchanger from dust. Measurements of total dust have shown a dust separation rate of up to 99 percent. Separation rates for fine dust (PM₁₀; PM₂.₅) are similarly high!

In terms of energy saving measures, the heat exchanger should be operated in stand-by mode after the end of the heating period. It then works at a reduced capacity. When the humidity in the house is higher than the target value, the heat exchanger automatically increases the ventilation level. Depending on the mode of operation of Earny 2, the fine dust separation rate is between 11 and 28 percent per year.