



Big Dutchman®



Earny 2 heat exchanger

saves heating costs, improves the climate and
reduces emissions in poultry houses

Earny 2

The innovative heat exchanger: good for the birds and the environment

With Earny 2, Big Dutchman can offer you a heat exchanger with optimised technical features. Its predecessor has proven its worth since 2011.

The heat exchanger recovers the thermal energy in the exhaust air of poultry houses.

This means:

- heating cost savings of up to 60 per cent;
- an improved house climate;
- reduced emissions.

Earny 2 is available in four sizes, depending on

the number of birds in the house.

Let the Big Dutchman experts advise you in detail which heat exchanger best fits your poultry house.

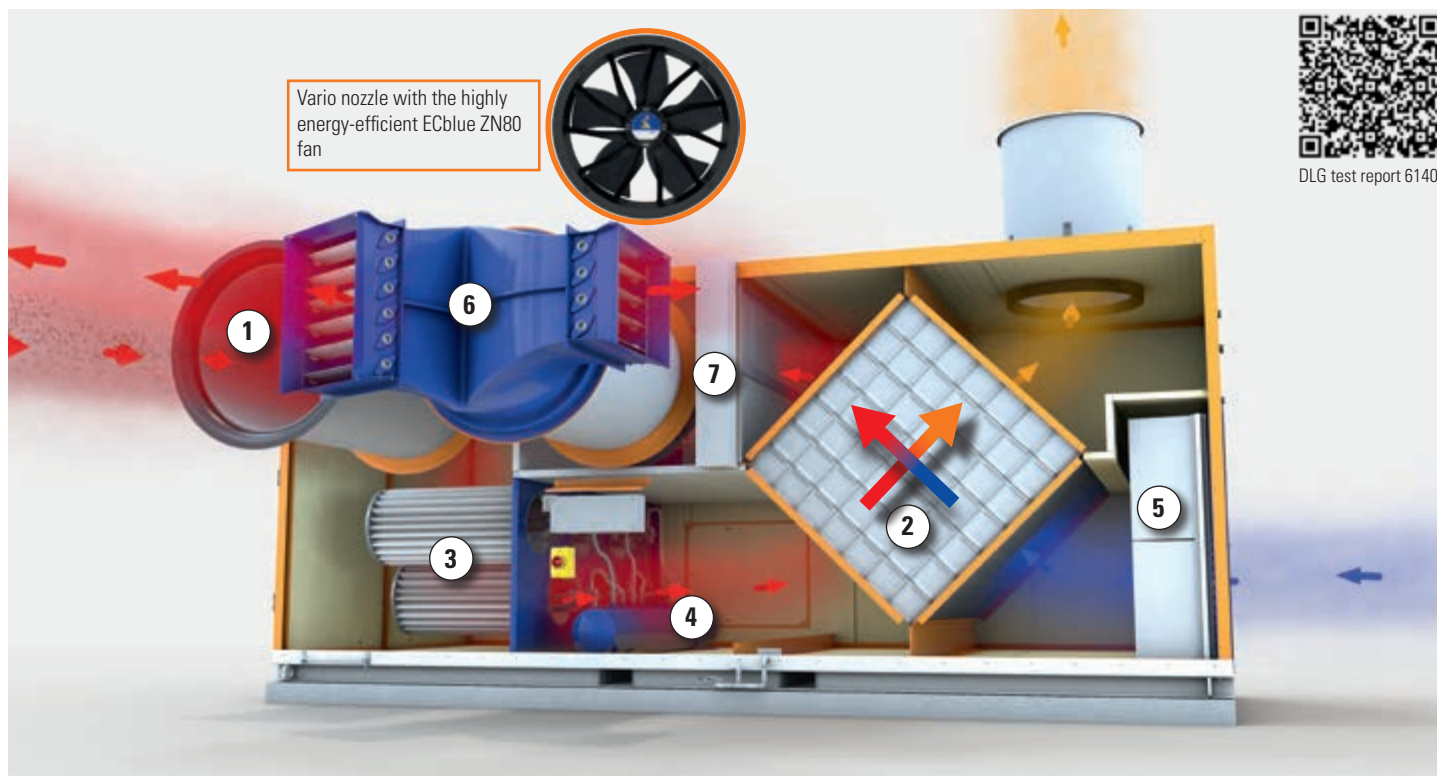


How Earny 2 works

Earny 2 is a cross-flow heat exchanger. This means that warm house air ① and cold fresh air simultaneously pass through an exchanger element ②, but **do not** mix. The filter unit ③ ensures that the exhaust air is clean before it enters the heat exchanger. The filter cartridges

are cleaned ④ by means of compressed air, preventing loss of performance by the heat exchanger during the batch. The fresh air is also filtered ⑤ to stop dust and leaves from entering the heat exchanger. The warmed fresh air flows from the exchanger element directly

into the house via the shortest route ⑥. Big Dutchman offers an additional hot-water heating element ⑦. This element heats the fresh air even further as an option.



Filter unit and cleaning

Up to six large filter cartridges (max. 64.8 m²) clean the exhaust air before it flows through the exchanger element. These filters remove up to 99 percent of dust!

The filter cartridges are cleaned fully automatically at set intervals. This means:

- clean exhaust air from the house
- constant heat recovery



Filter unit



Filter cleaning with compressed air

Exchanger element

The exchanger element is made of aluminium and has a ruffled structure to ensure a high thermal conductivity. A special coating protects against corrosion and guarantees a long service life.



Exchanger element

Heater battery and compressor

To improve bird welfare, especially on cold days, a heater battery to warm fresh air even further can be provided as an optional extra.



Additional heater battery (optional) and compressor

ADVANTAGES

Technology and efficiency:

- ✓ energy savings of up to 60 per cent depending on the location and application;
- ✓ heat recovery of up to 194 kW;
- ✓ supplied ready for connection for easy assembly;
- ✓ 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 chamber directly to 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;
- ✓ retrofitting possible in older and renovated houses;
- ✓ available in the following colours: blue, green, brown.

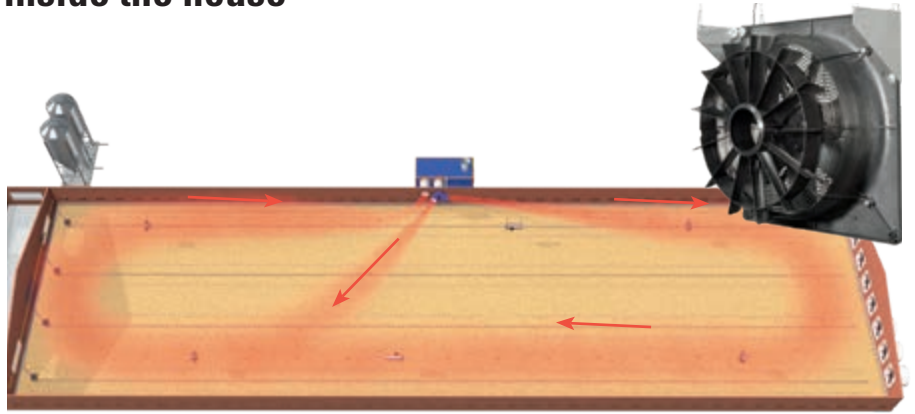
*** 37 t less CO₂ per year for a house with 42000 birds and utilisation of natural gas**

Options for air distribution inside the house

Depending on the house's ceiling height, there are two options for the ideal distribution of the warm air coming from Earny 2.

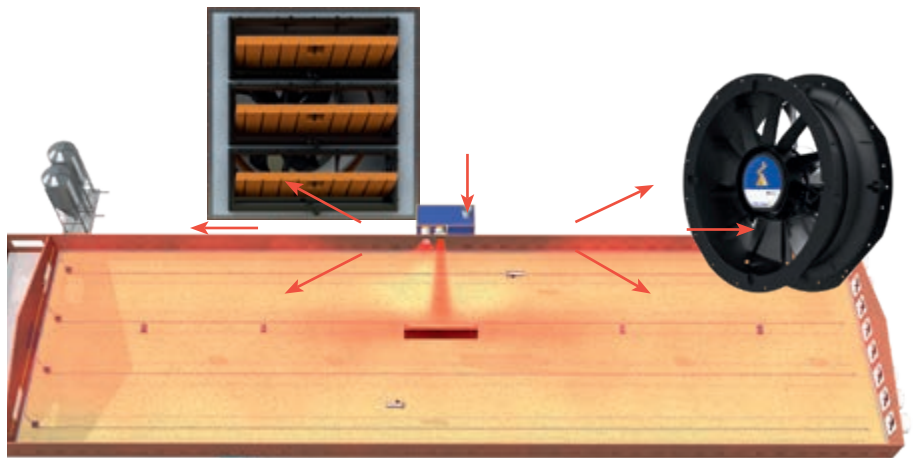
1. Racetrack

The warmed fresh air flows in a circle and is distributed throughout the entire house, supported by multiple circulation fans with guide vane (FC050). The 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, Big Dutchman recommends 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 warm fresh air is collected by a curtain. Energy-saving ECblue circulation fans (ZN063) then push the air longitudinally through the house in two circuits. The proven Big Dutchman multiple-flap inlet is used as air jet nozzle. This inlet ensures that the fresh air flows along the ceiling all the way to the curtain, from where it slowly circulates 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 opposite can be removed, allowing entry directly from the house for cleaning after the batch.



Type		Earny 2S	Earny 2M	Earny 2L	Earny 2XL
Recommended number of birds		5 000 – 10 000	20 000 – 30 000	30 000 – 40 000	40 000 – 50 000
Effective air flow rate*	m ³ /h	5 000	12 000	18 000	22 000
Maximum heat recovery	kW	53	173	182	194
Fresh air fan	400 V, 50/60 Hz	FC050**	H4D635	H4D820	H4D820
Exhaust air fan	400 V, 50/60 Hz	FC050**	H4D635	H4D820	H4D820
Dimensions (length x width x height)	m	1.20 x 2.00 x 1.55	5.20 x 1.45 x 2.49	5.20 x 2.07 x 2.49	5.20 x 2.37 x 2.49

* depending on structural conditions and the selected inlet opening

** 230 V/50 Hz



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.

Earny2: Improved house climate and significantly lower emissions!

1. Ammonia – 29% less ammonia emissions



Ammonia emissions

The graph 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

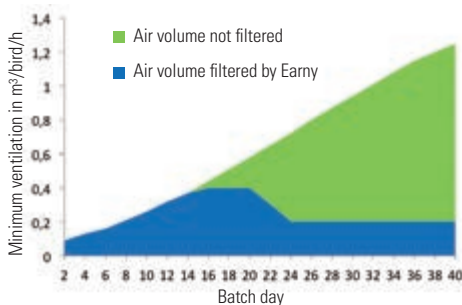
Batch day	House 1 (with HE) [MOU/LU]*	House 2 (without HE) [MOU/LU]*
28	624	806
29	431	885
35	560	633
36	509	864

* 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 per cent. Separation rates for fine dust (PM₁₀; PM_{2.5}) 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, Earny 2 automatically increases the ventilation level. Depending on the mode of operation of Earny, the fine dust separation rate is between 11 and 28 per cent per year.



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