



Big Dutchman®



Earny 2 heat exchanger

saves heating costs, improves the house climate
and reduces emissions

Earny2 – the innovative heat exchanger

With Earny2, 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.

This means:

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

Earny2 is available in three sizes, based on the

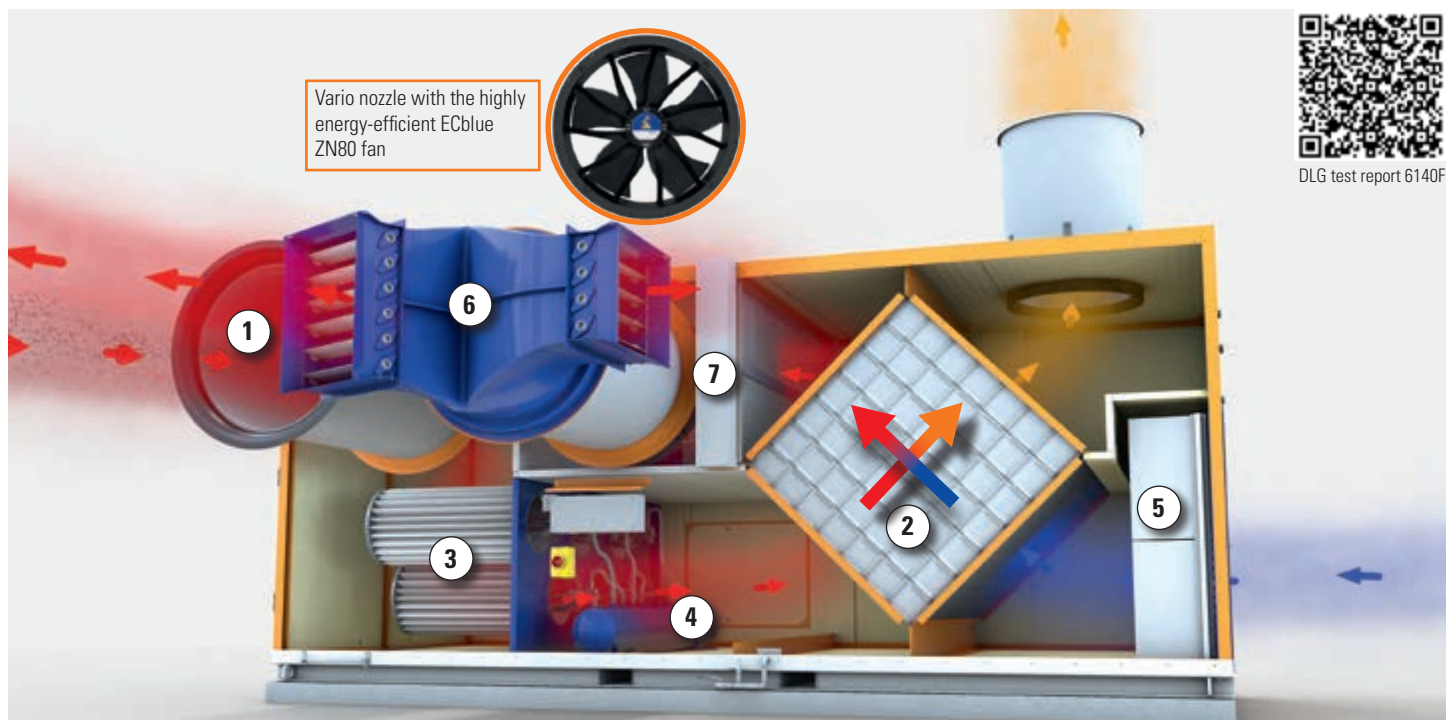
number of birds in the house. Let our experts advise you in detail which heat exchanger best fits your poultry house.

How Earny2 works

Earny2 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 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 auto-

matically ④ by means of compressed air, preventing performance losses of the heat exchanger during the batch. The fresh air is also filtered ⑤ 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 ⑥. Optionally, Big Dutchman offers an additional hot-water heating element ⑦. This element heats the fresh air even further for increased animal welfare on cold days.



Vario nozzle with the highly energy-efficient ECblue ZN80 fan



DLG test report 6140F

ADVANTAGES

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 42000 birds and utilisation of natural gas

Type		Earny 2 M	Earny 2 L	Earny 2 XL
Recommended number of birds		20 000–30 000	30 000–40 000	40 000–50 000
Effective air flow rate*	m ³ /h	12 000	18 000	22 000
Max. heat recovery	kW	173	182	194
Fresh air fan**	400 V, 50/60 Hz	FN063	FN063	ZN80
Exhaust air fan**	400 V, 50/60 Hz	FN063	FN063	FN063
Dimensions (length x width x height)	m	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

** all fans are innovative ECblue fans, which save up to 23 percent of energy

Filter unit

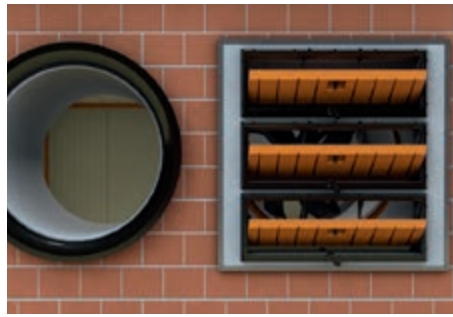
Up to six large filter cartridges (max. 64.8 m²) clean the exhaust air that comes from the house before it flows through the exchanger element. The filter cartridges clean themselves fully automatically at set intervals. This means:

- clean exhaust air from the house
- constant heat recovery



Multiple-flap inlet

If the warmed fresh air from Earny2 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.

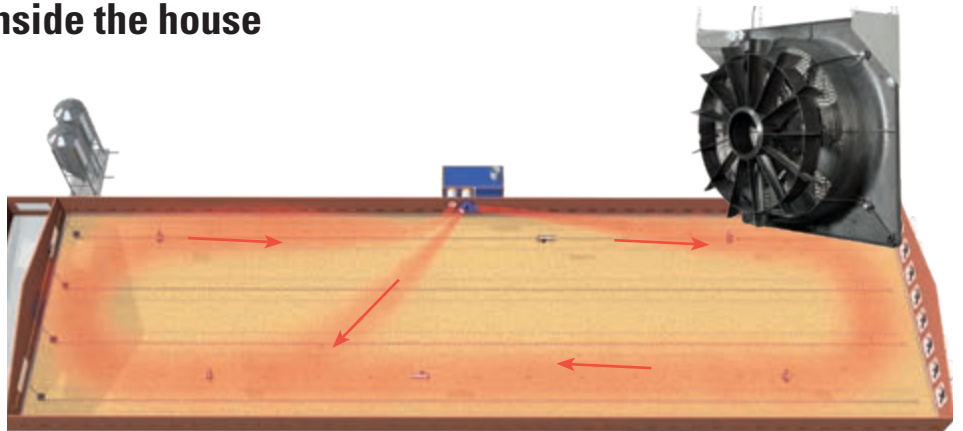


Options for air distribution inside the house

Depending on the house's ceiling height, there are two options to distribute the warm air coming from Earny2 ideally in the house.

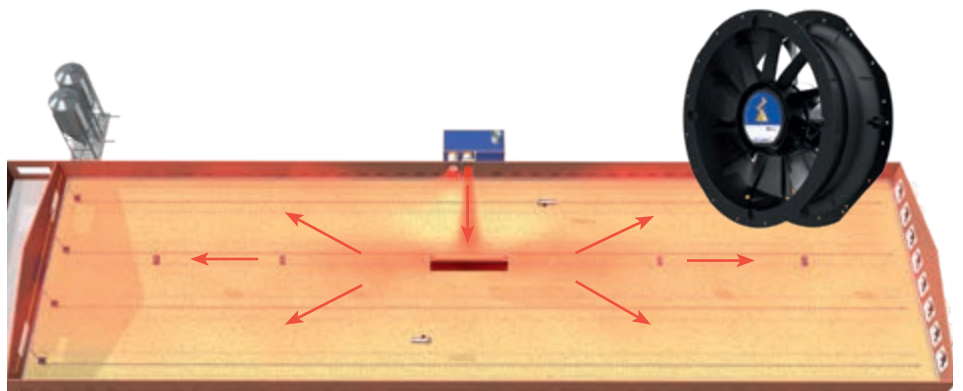
1. Racetrack

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

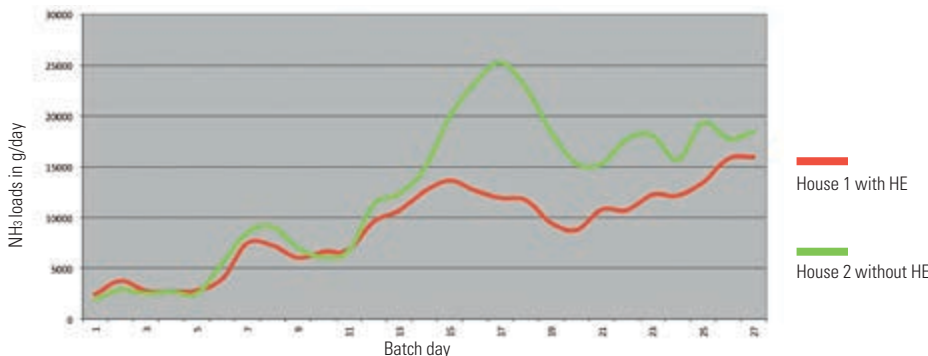
Reducing emissions that come from livestock buildings and damage the environment is an important goal. Responsible authorities more often than not require measures that will ensure emission reduction. The focus is put on

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.

Earny2: Improved house climate and significantly lower emissions!

1. Ammonia – 29% less ammonia emissions



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

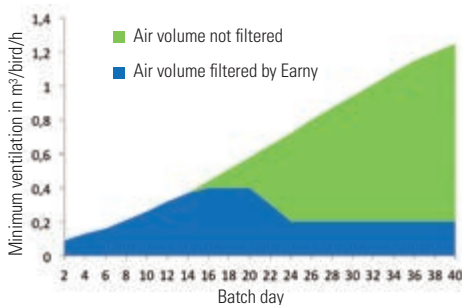
Batch day	House 1 (with HE) [MOU/LU]*	House 2 (without HE) [MOU/LU]*
28	624	806
29	431	885
35	560	633
36	509	864

* 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 percent. 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, 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.



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Technical details subject to change. en 5/2020