

# Innovative tailor-made climate solutions



by NewQuip/Big Dutchman



Big Dutchman.

## Feature Product: Highly efficient exhaust air cleaning system – MagixX-B

The application of MagixX-B is always the right decision in order to significantly reduce dust and ammonia emissions from exhaust air



## High standard certification measurements successfully concluded

Newquip/Big Dutchman – whenever it is a question of getting approval for broiler houses in the vicinity of built-up areas or woodland, authorities all over the world are frequently imposing requirements for a thorough cleaning of exhaust air. MagixX-B, an exhaust air treatment system which has been newly developed by Big Dutchman, meets this requirement in an exemplary way. Experts confirm that MagixX-B is the first exhaust air treatment system for poultry management which fulfils the demanding criteria of the DLG (German Agricultural Society) Signum test for ammonia and total dust with a filtration efficiency of at least 70%.

As the certification measurements prove, the reduction in emissions can be up to 85% in the case of ammonia and up to 89% in the case of total dust. A positive side effect of

the dust separation is that germ and odour emissions can be reduced significantly. There are, however, good reasons for these positive results. Although MagixX-B is brand new on the market, the working principle is based on extensive know how and technology which have already proved their worth very successfully in other Big Dutchman business divisions.

The single-stage exhaust air treatment system has been optimised with regard to operating costs. This is due to the modular

design. Only the required number of modules operates in accordance with the ventilation requirement. This helps to reduce operating costs. It is possible to make energy savings of up to 40% compared with non-modular exhaust air treatment systems.



Schematic diagram of the MagixX-B exhaust air treatment system from the rear side

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## An innovative concept that also saves money

Markus Röwer doesn't do things by halves. "Sustainable thinking in connection with housing and equipment for livestock is something which pays handsome dividends," says the third-generation farmer. This is why, two years ago, he planned and built his two poultry sheds in such a way that he can always start work with a good feeling in the morning. It is important for him that his animals feel at home in the new buildings and that they have optimum conditions for healthy growth.

In addition to feed and water, it is particularly important to be able to guarantee optimum temperatures in the poultry houses. "The ground temperature (32°C) is of prime importance as the chicks cannot produce any warmth for themselves during the first days," explains Röwer. "This is why, particularly in the winter, we have the heating system running at full power."

## Hot water heating system utilising renewable heat sources

Against the background of constantly increasing gas prices, the 34-year-old farmer decided to look for alternative ways of heating his livestock buildings. He soon found a solution: a heating system which functions with hot water. Markus had previous experience of similar systems using wood chip as a fuel source to heat a sow house and pig fattening unit at his parents' farm. He decided to adopt a similar approach.

"This system means you can be very flexible as far as fuel is concerned," the farmer reports. Pellets, wood shavings, sunflower seed shells etc. can be used as fuel. He now operates the new heating system with a neighbour, who also rears broilers. In total, six buildings are supplied with hot water.

## Energy-saving poultry sheds

As it was no longer possible to extend the existing premises, the two new poultry houses – 21.50m wide and 100m long – were built at a new location. Markus Röwer placed great emphasis on an energy-saving form of construction. Particularly worthy of mention here are the insulated floor slabs, concrete walls and the insulation of the ceiling with 8cm thick Selthaan panels with overlap. Floor heating was installed as the heating system in all the poultry houses.

This has a number of advantages in poultry growing, according to Röwer: "When they move in to the new housing, the chicks are very sensitive; they first have to adjust to the new surroundings and look for feed and water. This is why it is so important for the floor to be warm. It

# Case Study: Climate solution for Markus Röwer – Germany



Wall inlets and fresh air chimneys – house equipment systems by Big Dutchman for combi-ventilation. For a cosy house environment in all weather conditions and in every phase of growth

also means there will not be any problem with damp litter later on and the balls of the feet remain healthy."

## Housing equipment for ideal temperatures

The three-way-heating regulation in connection with the Viper climate computer ensures that the floor temperature is always kept at the required level. In addition, a convector heating system was installed in order to cover any short-term heat requirements. This is required as floor heating systems react rather sluggishly and also to extract excess moisture from the air in the poultry shed.

Here the housing systems supplier Big Dutchman made a decision in favour of HeatMaster 4 H. Only two appliances are required per poultry house as the ventilator which has been installed has a big enough working range to ensure a good distribution of warm air throughout the shed.

## Balanced house environment due to combi-ventilation

In the design of the fresh air supply, Markus decided in favour of a combi-ventilation system. This involves using two fresh air systems, consisting of wall inlets and fresh air chimneys. In the moving-in process and during the first days of breeding the chicks in broiler production require a lot of heat and very little movement of air. With wall ventilation only, it is difficult in this phase to produce

air circulation throughout the poultry shed and at the same time keep the heating costs low.

For this reason Markus Röwer decided to use fresh air chimneys. "Big Dutchman are already very experienced with this kind of fresh air duct", explains product manager Jörg Bohnes.

The decisive advantage is that the Fumus fresh air chimney can also work with balanced pressure in the case of minimum ventilation as it is fitted with a ventilator in the lower section. Thus the fresh air which it absorbs, which actually comes from the ceiling area and is therefore already fairly warm, is released by the fresh air distributor into the poultry house. Depending on the position of the throttle valve, up to 100% fresh air or up to 100% circulating air gets into the bird



Something to suit every poultry shed: CL Flex is available in different widths for different air output requirements

area. Constant air circulation is produced in the poultry house and the warm circulating or mixed air ensures a very good circulation of heat.

### Save heating costs with housing systems by Big Dutchman

According to Markus Röwer, the wall ventilation is not used at all in winter months. The entire ventilation runs via the fresh air chimneys. In addition the DOL 17 sensor measures the CO<sub>2</sub> level in the house air so that the climate computer can adjust appropriately to the minimum ventilation. "This saves heating costs in broiler production," says Röwer, with some delight on viewing the evaluations of the last twelve crops.

From an airflow rate of 20% the climate computer switches over to the fresh air duct via the longitudinal house sides. Then 100% of the fresh air comes from the CL 3000 Flex-wall inlets, which are of relatively large dimensions and therefore produce a very stable air stream. A further advantage is that very little negative pressure is required, which naturally also saves energy. When the inlets are completely open, the fresh air is channelled directly onto the floor. Thus the birds in the poultry house receive an immediate supply of fresh air and the sultry-warm layer of air is taken away at bird level.

### Refreshing housing system technology

On hot days in the summer months Markus Röwer also switches on his Combi Cool Fogging Cooling system. In the area of poultry growing it is already a standard feature of housing systems as it is not only used for cooling but also in situations when it is necessary to increase the relative level of air moisture.

In order to fulfil the official regulations imposed by the authorities, Röwer has furthermore decided in favour of a central exhaust air duct with a tower 12.40 m above ground.

### Overview of results relating to Poultry House Thomas Röwer

Number of growing places: 89,000  
 Number of growing days: 35/42  
 Selling weight: 1820g/2600 g LG  
 Number of animals sold: approx. 670,000 animals/year  
 Mortality: 2.2 %  
 Crops per year: 7.7  
 Energy consumption: 553,000 kWh/year; 0.8 kWh per animal moved in on annual average

## Feature Product: Unique heat exchanger with automatic compressed-air cleaning



### NewQuip/Big Dutchman – cost-efficient poultry house heating with Earny

Big Dutchman recently introduced an innovative air to air heat exchanger that enables broiler growers to save up to 60% of their heating costs, especially in the cold winter months. A prominent feature is that the used air from the broiler house is completely pre-filtered before it flows through the heat exchanger. This keeps the exchanger element free of dirt and dust. The exchanger element totally separates fresh and exhaust air and this allows for an optimal heat transfer. The automatic compressed-air cleaning of the filters is absolutely unique. This prevents the filters from clogging – even with the system running at full capacity during a grow-out.

After the grow-out, the pre-filters are simply taken apart and can then easily be cleaned by means of a high-pressure cleaner directly inside the barn. A practical solution, not only in terms of labour saving but also due to the danger of the filter freezing up in cold weather. Due to the design it is not necessary to clean with water on cold winter days.

The Big Dutchman exchanger element is made from aluminium and therefore guarantees a very high heat transfer rate. The heat transfer rate is much higher than with traditional plastic-based exchanger elements. The corrugated structure of the aluminium element amplifies this positive

Making profitable use of house exhaust air with Big Dutchman's heat exchanger Earny. Thanks to the intelligent control system, the air is optimally preheated and enters the building directly via the side wall without having to pass through unhygienic pipelines on the roof

effect. Thanks to its special coating, the aluminium is ammonia and CO<sub>2</sub>-resistant.

The intelligent control concept allows the broiler producer to control the heat exchanger based on the outside temperature, the temperature inside the barn and the air humidity. This means the air is optimally preheated and can directly flow into the building via the side wall without having to pass through long, unhygienic pipelines on the roof.

The heat exchanger is delivered ready-mounted and can be installed without much time and effort. It can, of course, not only be installed in new buildings but can also be retrofitted in old or refurbished buildings with no problems. Depending on the price variation of gas supply, the Big Dutchman heat exchanger can pay for itself in approximately three to five years!

UK customer testimonials for the Big Dutchman Heat Exchanger highlight improved efficiency, less cleaning and easier management than other units available.