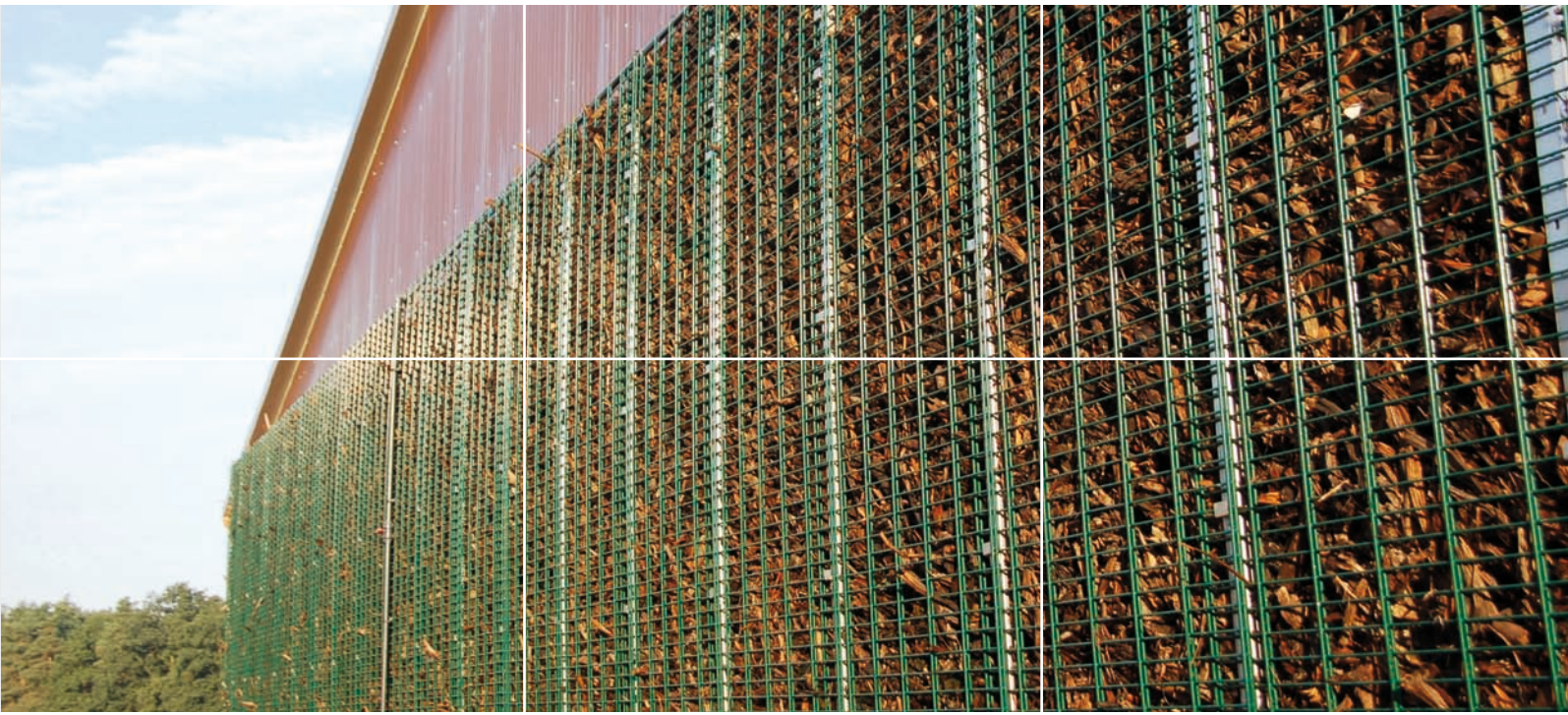
SCHULZ
SYSTEMTECHNIK



Industrial Automation
Automotive
Special Machines and Robotics
Drive Technology
Explosion-Proof Systems and Value Technology
Switchgear Construction
Building-Services Technology
New Energies
Agricultural Technology

EMMI
Exhaust Air Scrubber System

We build solutions.

Exhaust air purification for agriculture and industry

When it comes to clean exhaust air, we have the experts you need.
Our long-standing experience and our own research and development work on multiphase exhaust air scrubber systems make us a qualified partner in this field.
We offer you everything from a single source:

- ***> Support for approval procedures***
- ***> System planning***
- ***> System installation***
- ***> Commissioning***
- ***> Training***
- ***> Maintenance***

Our EMMI exhaust air scrubber system

Exhaust air purification plays a key role in the approval of animal house systems. Investing in an exhaust air scrubber system can make approval procedures much easier. In fact, it is not only an extremely effective means of reducing ammonia, dust and odours but it also increases acceptance in the surrounding area and protects the environment.

For many years, SCHULZ Systemtechnik has been dealing with this subject matter and has specialised in highly energy-efficient purification systems. At the same time, we are constantly further developing our systems, thus offering our customers future-proof technology.

With our exhaust air scrubber **EMMI (Emission Minimiser)**, we offer purification systems for poultry and pig farming and for different sectors in the industry (including slaughterhouses, digestate drying plants and biogas plants).

DLG SIGNUM TEST 08/14 passed

As the first company on the market, we have passed the DLG Signum Test for poultry fattening, therefore, today we already meet future requirements. Exhaust air purification is protected by the 10 2012 021 protection of utility models.

System construction and control technology

> *Customised system construction*

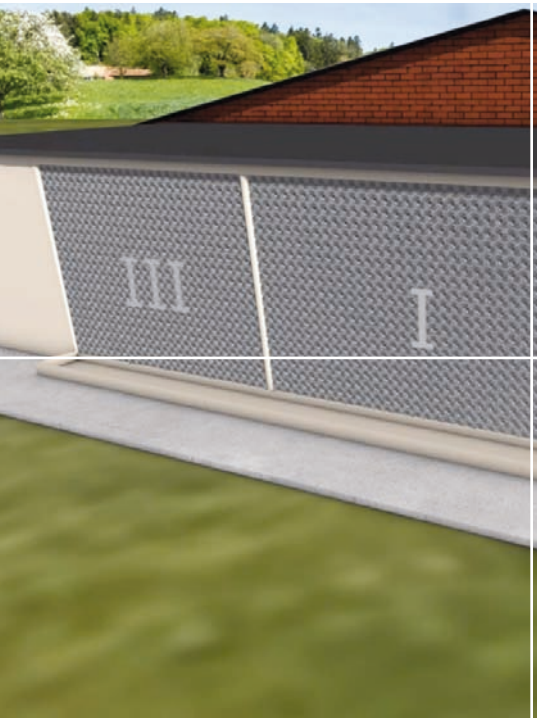
> *Container design (waterproof, chemical-resistant, no intermediate consumption on-site)*

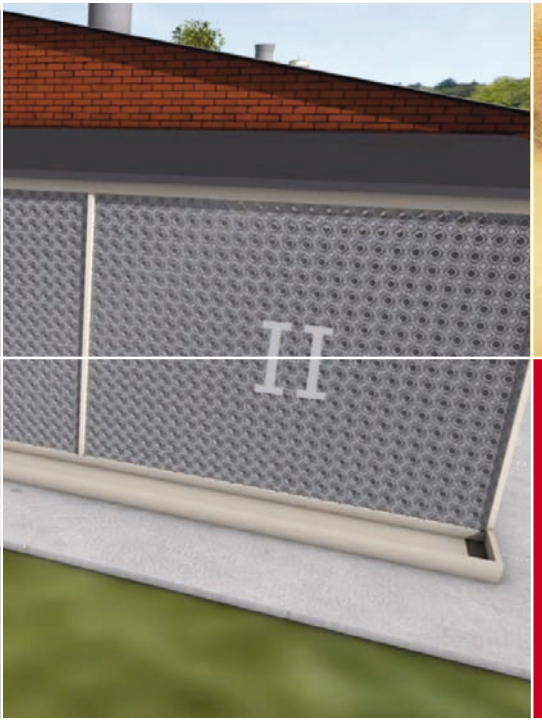
When is it useful to build a multi-phase system?
The exhaust air from most emission sources contains not only odour but also other exhaust air substances, such as ammonia and hydrogen sulphide, which must be removed from exhaust air. Multi-phase systems ensure effective and cost-efficient exhaust air purification. In each individual phase, a selective purification process takes place, which always leads to a considerably improved reduction, thus ensuring that legal requirements are safely complied with.

Our exhaust air purification is equipped with a **Programmable Logic Controller (PLC)** and the related hardware. In addition to electrical controls, it also contains measurement technology evaluation systems and documentation modules. Hence, on the one hand, the system is operated automatically, whereas, on the other hand, operators can read all company-specific data and any malfunction messages on the integrated display at any time and, if necessary, react timely.

Advantages

> No manual documentation is required, since an electronic operating manual and protocol is created automatically
> Interfaces are available (BUS and LAN)
> Remote inquiries and remote maintenance are available
> Connection to the AgriFarmControl management system



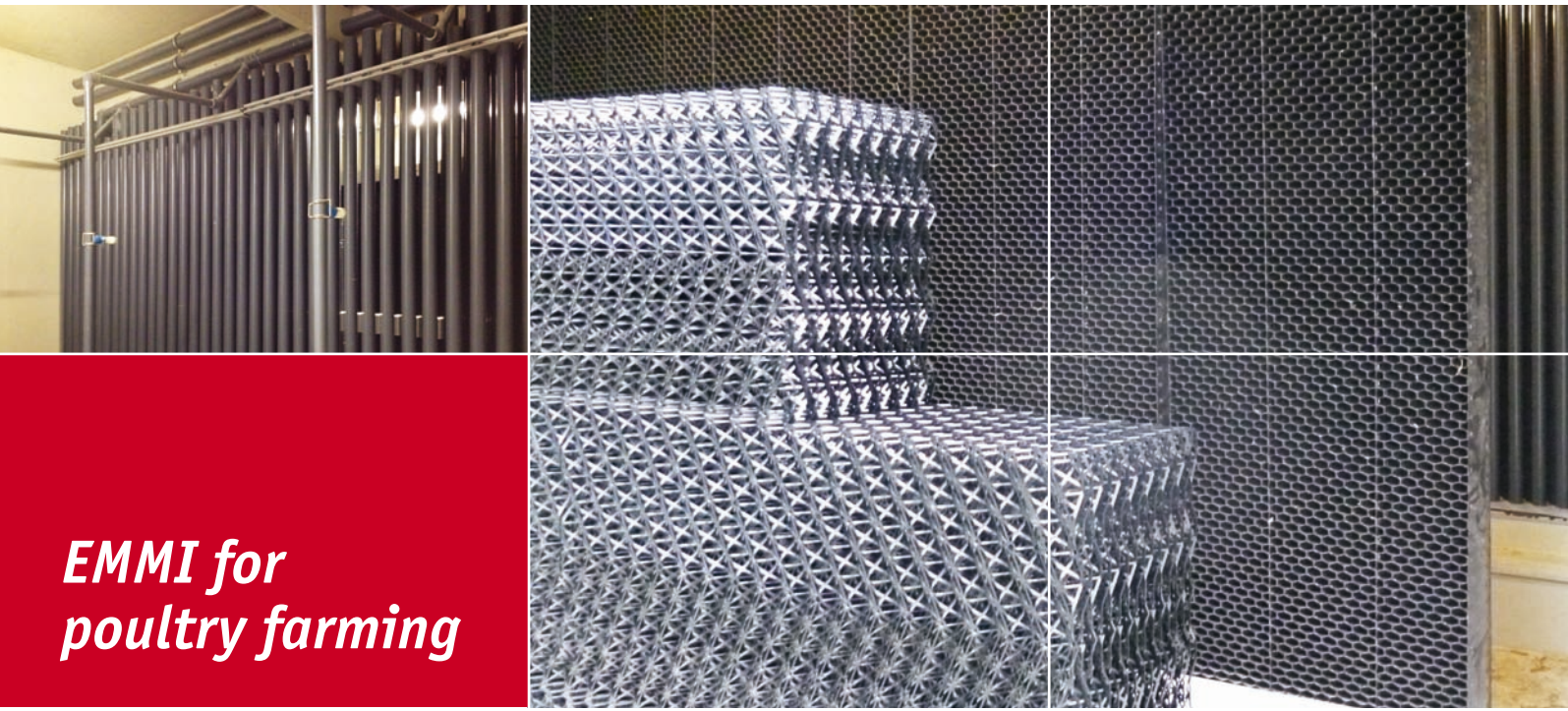


EMMI for poultry farming

Our EMMI exhaust air scrubber system is divided into three purification areas (I to III), so that, in each case, only the necessary surface of the filter must be operated. The required purification phases are switched on or off only when emissions and exhaust air volume flows rise. This occurs, for example, on particularly hot days or when the animals have reached the end of the fattening process simultaneously. The fan units used are controlled through frequency converters. In this way, power peaks can be avoided and operating costs significantly reduced.

The fact that these purification areas are distributed considerably reduces fan energy consumption and the pumps used. Moreover, pressure loss in the overall system is minimised (protection of utility models 20 2012 010 700.3).

Thanks to automation, exhaust air purification is self-sufficient to the extent that the operations to be carried out by operators are reduced to a minimum.



EMMI for poultry farming

Technology

> New, energy-optimised ventilation control through three frequency converter-controlled fan units (protection of utility models 20 2012 010 700.3)

> Avoids clogging due to the tube bundle filling material (protection of utility models 20 2012 010 700.3)

> Automated operation of the exhaust air scrubber system

> Low power consumption of the pumps by using purification areas I to III

Separation performance

≥ 90 % NH_3

≥ 70 % dust

≥ 90 % fine dust

≥ 50 % odour

Advantages

> Avoidance of power peaks thanks to frequency-controlled fans

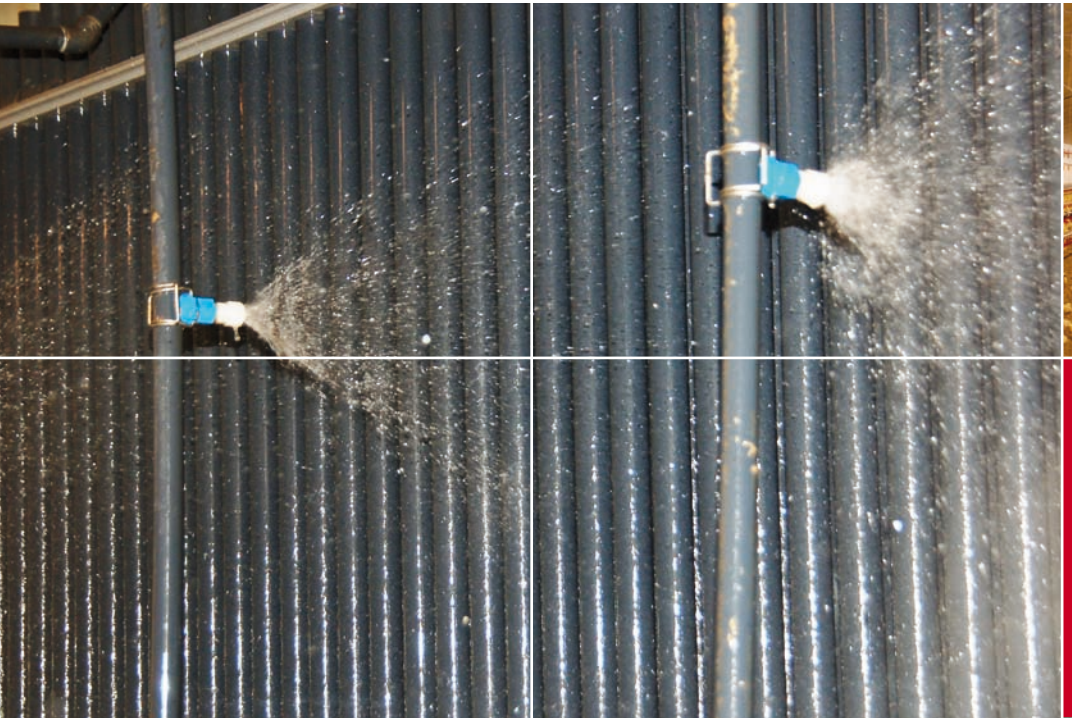
> Easy to clean thanks to vertical walls

> Minimal maintenance costs, since the system is easily accessible

> Minimal staff costs

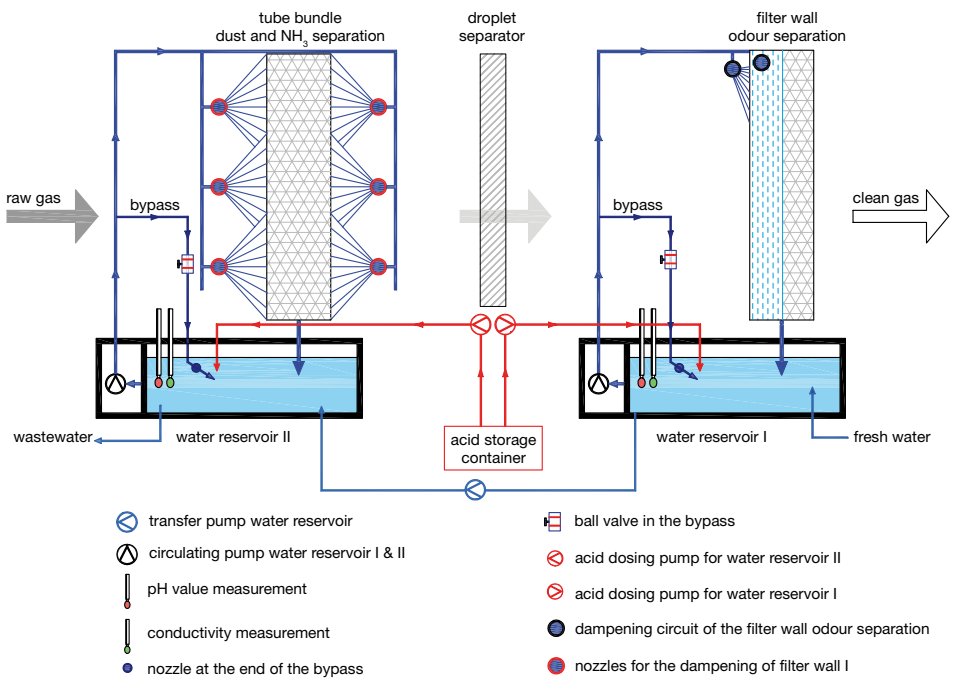
> Minimal pressure loss

> The use of pressure-stable fans is not required



EMMI for poultry farming

Schematic representation of an exhaust air scrubber system for broiler chicken



EMMI for pig farming

The exhaust air arising from pig farming must be free from dust, odour and ammonia, in accordance with current legal requirements.

Since the odour-eliminating microbiology is sensitive, we plan and construct exhaust air purification as a chemical/biological purification system. In fact, by using acids, ammonia can be highly effectively bound and thus removed from exhaust air. As a result, the subsequent biological phase can be carried out much more effectively. Furthermore, this configuration works immediately, with no need for long adaptation times.

In pig farming, our exhaust air scrubber systems are controlled with a PLC, so that extensive automation and documentation are made available. The tasks to be carried out by operators are therefore reduced to short visual inspections and cleaning as needed.

Technology

Chemical/biological exhaust air purification

Separation performance

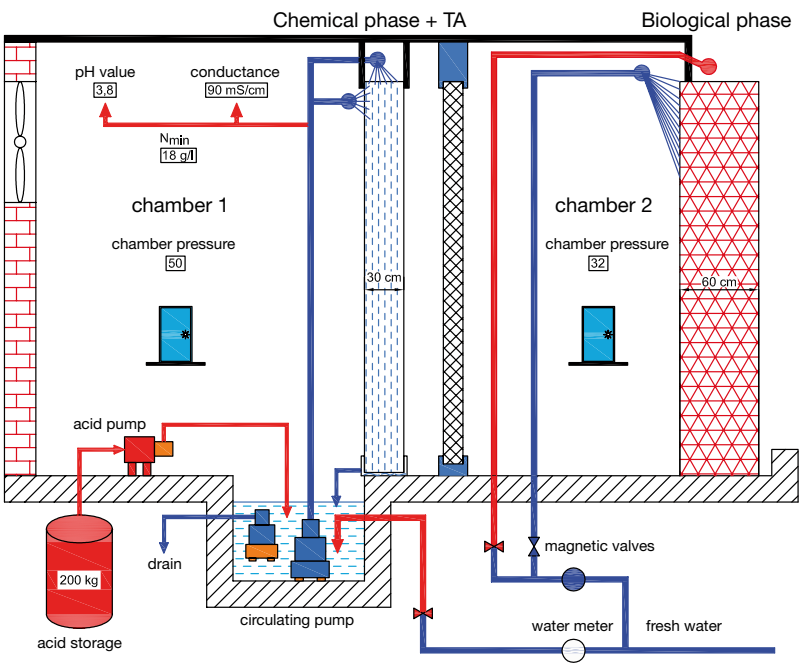
≥ 90 % NH_3
≥ 90 % dust
< 300 GE/m^3 (no raw gas odour is perceptible)

Advantages

> Easy and safe control technology
> Significantly less wastewater production than in purely biological processes
> High operational safety
> No long adaptation times of the nitrifying biology with limited reduction effort

EMMI for pig farming

Schematic representation of two-phase chemical exhaust air purification with a droplet separator for pigs



EMMI for the industry

Depending on individual requirements, in industrial application, a wide variety of substances must be removed from exhaust air, for example dust, odours or corrosive gases. In industrial plants, for example, a highly loaded process exhaust air flow must therefore be treated differently compared to that used for ambient air suction.

This is only possible with multi-phase systems, which are planned and tailored according to customer requirements and adjusted depending on the exhaust air substances to be removed. Hence, exhaust air purification can be designed for almost any application.

These systems operate highly reliably and are self-sufficient. Our specialised staff regularly carries out maintenance on ventilation control and the measurement technology used in order to ensure high operational safety for systems.



EMMI for the industry

Technology

> Sour, alkaline, oxidative and biologically combinable
> Purification of process and ambient air
> Exhaust air dust removal
> Implementation of exhaust air scrubber systems in plastic and GRP

Separation performance

According to requirements, for example:

≥ 95 % NH_3

≥ 95 % H_2S

< 500 GE/m^3 (no raw gas is perceptible) according to the “TA-Luft specification”

Advantages

> Safe and proven technology thanks to a long-standing experience in various sectors, such as agricultural technology, food technology, slaughter and recycling facilities, biogas plants and digestate drying
> Strong fluctuating volume flows and emission loads are proven to be safely controllable

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