

Jochen Hahne, Brunswick

Actual Development of Waste Air Treatment in Animal Husbandry

To determine the level of waste gas treatment systems in animal husbandry in Germany, eight manufacturers of these systems were interviewed in 2006 and 2007. These companies have built 494 waste gas treatment systems since 1997, 128 alone in 2006. Waste air treatment systems are applied in pig keeping for all numbers of livestock, but in poultry keeping only for more than 30000 heads. The market share of tested and approved producers of waste air treatment systems increased from 57 % (2002) to 94 % (2006) in pig keeping. Waste air treatment will continue to grow in importance for the livestock development in coming years.

The waste air treatment is not state of the art in animal husbandry. This also means that it cannot be demanded generally for new livestock buildings. But the importance of waste gas cleaning may increase significantly for animal husbandries. This is essentially caused by the tightening of the Technical Instructions on Air Quality in 2002 [1, 2]. Many farms intend to enlarge their livestock on existing farm locations to improve their profitability. Several local authorising bodies also want to enable farm extensions on the existing location to avoid splinter development and to improve landscape protection [3]. But this proceeding often requires the use of waste gas treatment systems, whose suitability can be verified by extensive investigations according to the "Cloppenburg Leitfaden" or the German Agricultural Society (DLG) approval procedure [4, 5].

Facing these basic conditions some the questions come up. What is the actual meaning of waste gas cleaning? What is the future development? For what units of livestock will waste air treatment systems be used? Eight German producers of waste air treatment systems have been consulted in 2006 and 2007 to get answers on these and other questions. Four of the consulted producers offer approved waste air treatment systems. Seven respondents have given full and analysable particulars.

Results of inquiries

Based on evaluated data of eight respondents the number of installed waste air treatment systems has significantly increased since 2002 (Fig. 1). While only 52 installations were made in the time period between 1997 and 2002, 442 waste air treatment systems

were installed between 2001 and 2006, 128 in 2006 only. 68 % of the all in all 494 installations made until the end of the year 2006 were constructed for pig keeping, 25 % for poultry keeping and 7 % for other applications (faeces drying, slaughterhouses, waste acceptance hall of biogas plants).

Manufacturers of approved systems increased their market share from 64 % (2002) to 79 % (2006). Related to installations in pig keepings the market share of approved producers rose from 57 % (2002) to 94 % (2006), as the evaluation of delivered data showed.

It can be noticed for the poultry sector that there is no approved system, while five different and approved systems are marketable for pig keeping.

In response to the question on the future number of waste air treatment systems, related to animal kind and size of livestock, assessments as summarised in Table 1 were made by the majority of respondents.

The assessments in view of the development of waste gas treatment systems for broilers and turkeys didn't give clear results. There will be no application potential in cattle and calve keeping.

Requests on the number of waste gas treatment systems built in 2006 and related to animal kind and livestock size showed for fattening pigs that most of the waste gas treatment systems were built for animal units between 400 and 1000 heads (Fig. 2). All in all 12 waste gas treatment systems were constructed for a livestock size below 400 and further 33 installations for farms with more than 1000 heads. At piglet producing farms, 11 waste gas treatment installations were made in 2006, four at farms with less than 1000 heads, two for farms between 1000 and 2000 heads, three for 2000 to 4000 heads and

Dr. rer. nat. Jochen Hahne is a scientist at the Institute of Technology and Biosystems Engineering which is part of the Federal Agricultural Research Centre (FAL), Bundesallee 50, 38116 Braunschweig, e-mail: jochen.hahne@fal.de

Keywords

Waste air treatment, animal husbandry, market development

Table 1: Assessment of the future application of waste-air treatment systems depending on kind of animal and livestock size (acc. to manufacturer's specifications, status: 2006)

Kind of animal	Increase for a livestock size of	Sharp increase for a animals
Fattening pig	400	1500
Piglet production	1000	6000
Sows including piglets	300	560
Laying hens	15000	30000
Pullets	30000	-

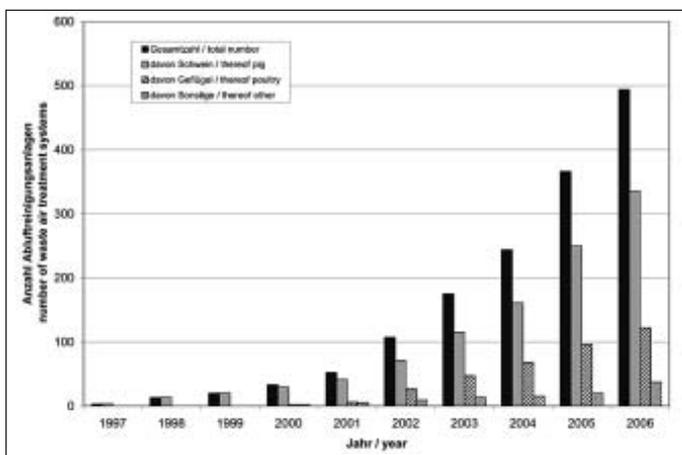


Fig. 1: Numeral development of waste-air treatment systems built in Germany since 1997 (acc. to producer's specifications, status: Dec. 2006)

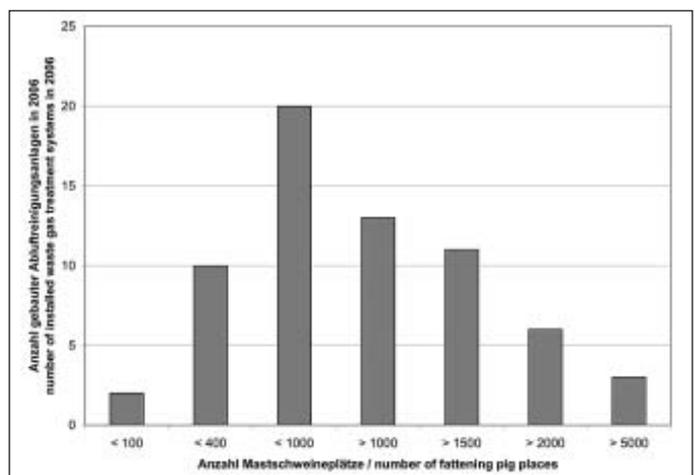


Fig. 2: Number of waste-air treatment systems built for pig fattening facilities in 2006 for different livestock sizes

two for farms with more than 6000 heads. For sow keeping farms all in all nine installations were made in 2006, thereof four with a livestock of less than 300 sows, one installation for a farm with 560 heads and further four installations for farms over 750 heads.

Five waste air treatment systems were installed at farms with laying hens, two for a livestock of less than 15 000 heads and three for a livestock of more than 15 000 heads. 24 waste air treatment systems were built for broiler keepings with a livestock of more than 30 000 heads, while the number of waste gas treatment systems in the sectors of pullet and turkey keeping was marginal.

Clear replies were given on the question about the development of the order situation since introduction of the "Cloppenburger Leitfaden" and the DLG approval procedure respectively. All producers of approved systems found an improvement of the order situation. There was a differentiation between pig and poultry keeping to some extent, whereas one contractor attributed the improvement of new orders to the pig keeping, while he found no change in poultry keeping. Producers of non-approved systems, however, did not observe in agreement any change of their order situation. In one case even a declining order situation was stated. These specifications fit to the sales figures of producers of approved systems, which had a market share of 94 % in the range of pig keeping in 2006.

Diverse answers were given on the question whether demands on waste air treatment systems by the authorising bodies have been tightened since introduction of the "Cloppenburger Leitfaden". 50 % of the producers and all producers of approved systems, respectively, found a general increase of demands. 75 % of the respondents and among these all producers of approved systems stated that authorising bodies require maintenance contracts. Half the respondents found that an electronic operation journal is required and that the systems have to be built ac-

ording to the "Cloppenburger Leitfaden" and the DLG approval procedure, respectively. Three of the respondents observed an increase of official inspection, while one of the producers negated that. Four producers didn't give specifications on that question.

Two producers of non-approved systems answered on the question about future demands on cleaning efficiency that they don't expect changes, one of them even believes in declining demands. Five of eight respondents look forward to increasing demands on odour reduction. Two respondents expect more obligations according to ammonia removal, while the others made no specifications on that question. Two producers expect a tightening of demands on dust removal. Three producers consider obligations according to bio aerosols for possible, the other respondents didn't give specifications on this.

Three producers replied on the question according the business development on waste air treatment within the company that they don't expect changes. Five of the respondents intend to enlarge that business. Three producers see options for business expansion in Germany, two of them see also options in the EU and worldwide.

Conclusion and outlook

The increasing number of waste gas treatment systems in Germany shows clearly that this technique becomes more and more important for the future development of animal keeping farms. Waste air treatment systems are currently built for all ranges in pig keeping, in poultry keeping installations for livestock sizes over 30 000 heads are predominant. It may be expected that the number of waste air treatment systems will increase in the next years. For farms with a large livestock size, waste air treatment may become state of the art in the medium term. In the future, parameters as ammonia and dust removal or even the separation of bio aerosols will

become more important for the waste gas cleaning, while in former times it was predominantly used for odour reduction.

Producers with an approval according to the "Cloppenburger Leitfaden" or the DLG approval procedure have increased their market share in pig keeping to 94 % in the meantime. It can be estimated that this market development will even recur in medium term in poultry keeping, for which no producer has an approval up to now.

Literature

- [1] TA Luft 2002: Erste Allgemeine Verwaltungsvorschrift zum Bundes-Immissionsschutzgesetz (Technische Anleitung zur Reinhaltung der Luft – TA Luft) vom 24. Juli 2002. GMBL 2002, H. 25 – 29, S. 511 – 605
- [2] Grimm, E.: Neue Hürden, höhere Kosten. DLG-Mitteilungen 117 (2002), H. 3, S. 86 – 89
- [3] Raue, G.: Leitfaden des Landkreises Cloppenburg zur Feststellung der Eignung von Abluftreinigungsanlagen in der Tierhaltung zur Anwendung in der Genehmigungspraxis. VDI-Berichte 1777 (2003), S. 281-286
- [4] www.lkclp.de/2_kreisverwaltung/kv_bauen_bio-filter.shtml
- [5] www.dlg.org/de/landwirtschaft/testzentrum/hersteller/produkte/abluftreinigung.html