



IMPROVING AIR QUALITY IN THE COUNTRY SIDE

Ever had a dream of living in the countryside? Beautiful scenery, open spaces, birds singing, and the soft wind from the neighbouring large-scale pig or biogas production facility? ...Well, maybe not the last part. Not surprisingly, development of livestock and biogas production sites in rural areas will not only stir up a foul smell but also a lot of emotions from the local community. However, with the help of science and engineering farmers and rural residents may be able to live peacefully side-by-side in the future.

Though several hundreds of compounds have been identified in emissions from animal production activities, only a handful are believed to be the main contributors to the characteristic offensive odour most of us associate with the industry, among these several sulphur compounds. Biofiltration, where microorganisms in a liquid phase degrade environmentally harmful and odorous compounds, is a win-

ning technology already applied in many pig production facilities. However, due to their low solubility, sulphur compounds are not always easily trapped with this technology. The aim of the research project is to develop a process to eliminate these compounds by treatment with dissolved iron catalysts in air filtration systems. The main advantage of this process is that iron may be regenerated to its active form with oxygen from plain air, keeping the chemical expenses to a minimum, and the end product, elemental sulphur, is safe to handle and, perhaps more importantly, completely odourless.

When trying to reduce odour the fact that many odorous compounds will react with other compounds or stick to different surfaces, like the walls of a filter, or even people, clothes and any other thing they come next to, is an advantage that can be exploited. However, when trying to quantify odour, this represents a major challenge. Presently, to measure odour



it is common practice to collect samples of the polluted air in sampling bags and assess them with human panellists at an odour lab within 24 hours. With this method, however, maintaining the original chemical composition of the samples during sampling, transport and storage can be difficult. A part of the research project is dedicated to examine and improve this method, so that air-cleaning technologies may be assessed in a fair and credible manner.

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