NEW RESULTS AND FEATURES OF THE CONTINUOUS DIOXIN-/FURAN MONITORING SYSTEM AMESA

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Introduction

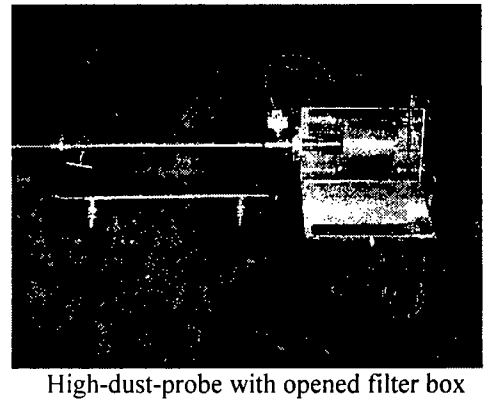
In the last three years the continuous dioxin and furan monitoring system AMESA® came to a standard for the continuous control of the dioxin emissions in waste incinerators in Belgium.
Due to these results and the operators feedback, some new features were developed and results showed that the continuous emission control of dioxins and furans is necessary.
At first a new high dust probe with heated filter was developed so that AMESA® is now suitable for dust concentrations up to 150 mg/m^3. Secondary a remote control software was developed so that a world-wide remote control via phone line is now available. This can help the authorities to get online information's about the actual operating status and helps for possible necessary technical services.
Actual results of the Walloon region of Belgium, where the continuous control of the dioxin emission is obliged since the 1st January of 2001 shows once again, that plants which were still controlled by short time dioxin measurements can have to high dioxin emission when they were controlled continuously.

Material and Methods

1. High Dust probe

In several publications[1,2] the function of the TÜV approved[3] AMESA® was explained in detail. AMESA® extracts a part of the flue gas isokinetically and adsorbs the dioxin and furans which are combined in the gas, the dust and the liquid of the flue gas in a cartridge filled with XAD-II material.

Installation drawing of the high-dust-probe

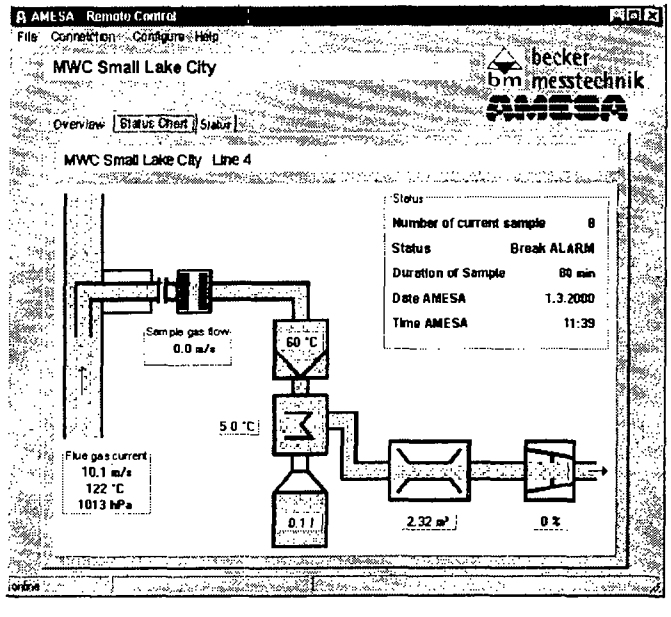


High-dust-probe with opened filter box

This cartridge has to be send to a dioxin laboratory which is familiar with the analysis of dioxin and furans. Contrary to the usual three single measurements every year, by means of continuous sampling over a period between 6 hours and 30 days, the AMESA® ensures continuous documentation of dioxin/furan emission for each single sample. This ensures that fluctuations in system operation and in the composition of fuels etc. are also recorded with the AMESA®.
In the standard version no plane filter for the dust collection is implemented. In the top of the cartridge quartz wool is implemented for the dust collection. With this solution AMESA® is approved for a dust concentration of up to 20 mg/m^3. This is a suitable range for house waste and hazardous waste incineration plants in Europe. Other plants like steel or cement plants have higher dust emissions. To be able to have a continuous control of the dioxin emissions in such plants, a new probe with internal heated hollow filter was constructed. With this special probe AMESA® is suitable up to 150 mg/m^3 dust concentration. After the sampling period the filter, the XAD-II cartridge and the inner glass tube have to be sent to the dioxin laboratory for analysing.

2. Remote Control AMLEIT

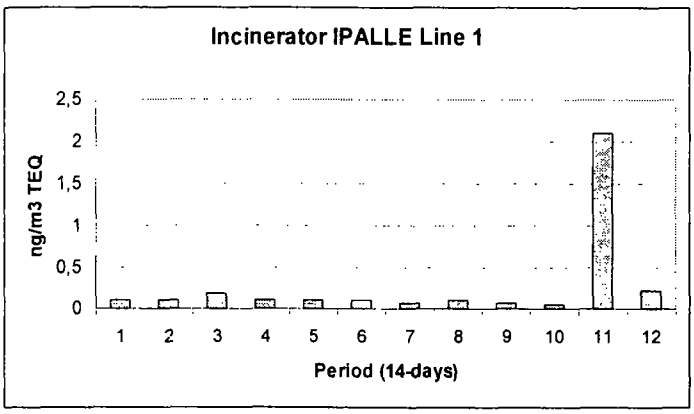
To fulfil the demands of customers and authorities the remote control software AMLEIT was developed. With this software it is possible to get information's about the actual operating status world-wide by phone line. After dialling the plant and selecting the AMESA® unit the full operating status chart will be shown and gives information's about duration of sampling, sampling number, flue gas temperature, stack pressure and so on.
With one hardware up to 4 AMESA® units can be connected. Thus reduces the cost of investment.
On additional windows it is possible to see all default values and alarms, which helps to get sufficient information's in case of BREAK or ALARM mode.



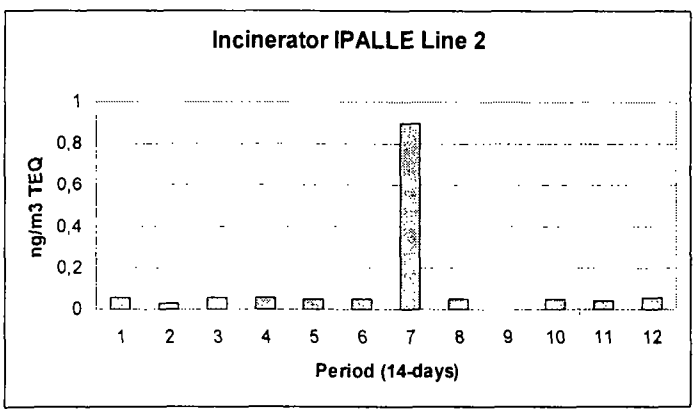
Status chart window of remote control software AMLEIT

Results and Discussion

After starting the continuous control of the dioxin emissions in the Flemish region of Belgium with the 1st January of 2000, the Walloon region started on the 1st January of 2001. First results, which are published in the internet[4] shows, that some plants fulfils the demands of low emission very well also by continuous control, but some plants have from time to time to high dioxin emissions. All these plants were controlled before by short time measurements and had good results. The actual results shows once again as published earlier, that only a continuous control gives the security to get constantly low dioxin emissions.

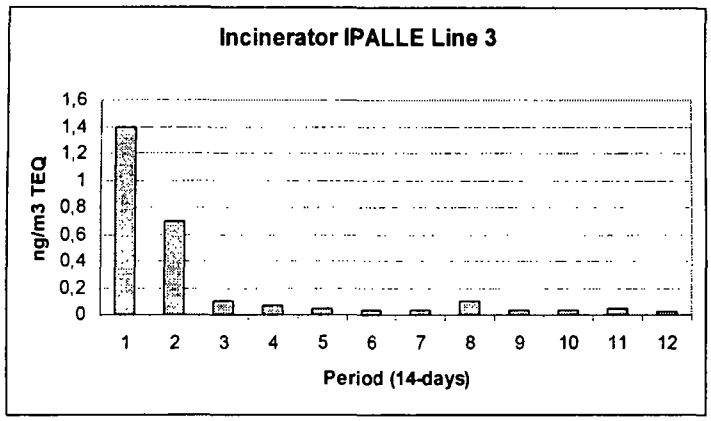


14-days emission values of incinerator 1 of IPALLE



14-days emission value of incinerator 2 of IPALLE

The periods of high emissions will be surely short in comparison with the total operating time, but special these high emissions leads to the stress of the environmental and human healthy and are normally not recorded.



14 days emission values of incinerator 3 of IPALLE

So still if it is not yet possible to get a real online dioxin measurement system on the market a continuous control of the dioxin emission by long term sampling helps to reduce the total dioxin emissions.

References

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