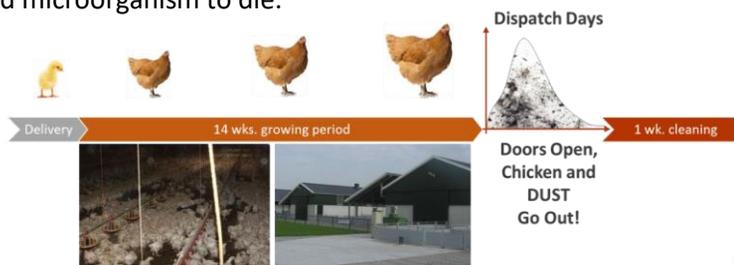


## Application Notes – New Livestock Farm Regulations in the Netherlands

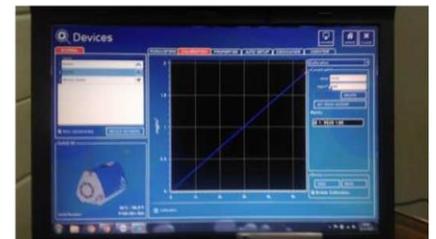
Local governments have nowadays tight restrictions before they issue or renew business licenses especially to Livestock farms like chicken- and pig farms. One of the obligations and challenges today is to monitor and possibly reduce the emission of dust. Farmers are obliged to measure and report PM10 values. This application is located on a chicken stable close to Eindhoven in Nederland with a capacity of 30.000 chickens. The operation model of the stable is so that the brooded chicks will grow for there for 14 weeks and then being shipped. During these dispatch days the dust challenge is at its highest. After delivery the stable will be cleaned, followed by a one week waiting period for the bacterial and microorganism to die.



The measurement of PM10 values can be done by a gravimetric measurement where dust is collected over a relatively long period of time on a filter material which will be weighted. In practice this proves not to be that simple and rather time consuming. Therefore, this farmer chose as an alternative a calibrated optical instrument. These instruments measure real-time PM10, PM4 (Health & Safety standard) and PM2.5. Whilst being very handy and reliable for spot measurements these instruments turned out to be fairly high on maintenance when being used in continuous operation and being exposed to higher dust levels. A robust solution turns out to be the use of the wireless Sintrol DUMO-RF. During installation the DUMO was initially aligned with the reference instrument to match the exact type of dust at the measurement location by using in Sintrol Dust Log software. The calibrated optical instrument monitored for about 10 minutes the present dust situation and then the average value was used to enter in the DUMO to convert the total suspended dust reading of the DUMO into a PM10 value. After aligning those two instruments the sensitive reference instrument was put aside and stored safely while the robust DUMOs took over.



Reference instrument in bottom box and DUMGRF on top.



Alignment of the DUMO to the reference instrument.

Due to the success of the installation a follow up order has been placed and an additional system of dust measurement instruments in the exhaust pipe of the ventilation system is discussed.

## Principle of Operation

Sintrol dust monitors are based on a unique Inductive Electrification technology. The measurement is based on particles interacting with an isolated probe mounted into the duct or stack. When moving particles pass nearby or hit the probe a signal is induced. This signal is then processed through a series of Sintrol's advanced algorithms to filter out the noise and provide the most accurate dust measurement output.

Classic triboelectric technology is based on the DC signal, which is caused by particles making contact with the sensor to transfer charges. Compared to DC based measurements, the Inductive Electrification technology is more sensitive and minimizes the influence of sensor contamination, temperature drift and velocity changes. By using the Inductive Electrification technology, it is possible to reach dust concentration measurement thresholds as low as 0.01 mg/m<sup>3</sup>.

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