

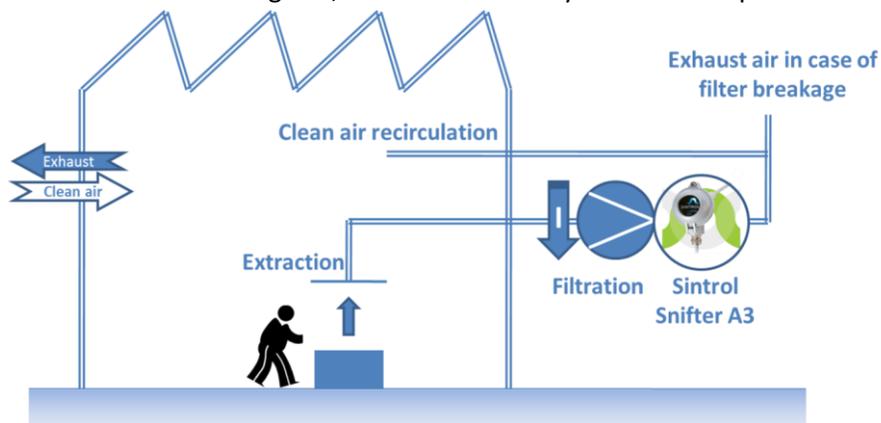
Application Notes – EN12779 for Wood Industry

Regulations and backgrounds

- Wood dust with an aerodynamic diameter of less than 100 microns is considered respirable dust according to EN 4811
- Furthermore, beech and oak wood dust are classified as carcinogenic (cancer nasal mucosa). According to the German TRGS 553, a concentration of wood dust in the workplace air (TWA) of 2 mg/m³ or less must be maintained.

According to EN 12779 when return air is used:

- “The residual content in return air shall be lower than 0,2 mg/m³ as weighted average, and all individual outlets shall have a dust content lower than 0,3mg/m³”
- “When the cleaned air is returned to the working area the dust content in extraction systems with an air flow larger than 10.000m³/h shall be monitored continuously.”
- “When the residual dust content exceeds 0,3 mg/m³ the return air shall be diverted to the outdoor atmosphere and an alarm shall be given, or the extraction system shall stop.”



Potential savings in the air recirculation

Through an air recirculation significant savings can be achieved in a short time. According to the Ministry of Environment, climate and energy in Baden-Württemberg, Germany about 40,000 kWh/year energy savings are realistic per 10,000 m³/h. This corresponds to a heating power of 80 kW.

For this application Sintrol developed a special, pre calibrated version of the Snifter, the Snifter A3.

This instrument is calibrated to hard wood dust (45%-75µm, 30%-100µm, 4%-180µm) and switches automatically at 0,2 mg/m³ and at 0,3 mg/m³. The instrument is also available with a calibrated mA output. The calibration point was set at 8 m/s. In order to prevent false alarms due to cumulated dust in the duct and still keep fast reaction times the Averaging Time is preset to be 100s and the Signal Delay UP time is preset to be 60s. This means that the instrument will calculate the running average value over 100s and if this value is for more than 60s over 0,2mg/m³ or 0,3mg/m³, the instrument will give the equivalent alarm signal.



ProDetec Pty. Ltd.

P. +61 (02) 9620 8700

E. info@prodetec.com.au

A. 17/38 Powers Rd, Seven Hills NSW 2147

PO. PO Box 3184,

North Parramatta BC, NSW 1750

www.prodetec.com.au



Est 2003



PRECALIBRATION CERTIFICATE ACC. EN12779

Equipment Under Test: **Snifter A3 mA+**
 Validity: **Snifter A3 (mA+, EX, RF)**
 Manufacturer: **Sintrol Oy**
 Finland
www.sintrol.com



Dust material: **Hard Wood Dust (45%-75µm, 30%-100µm, 4%-180µm)**

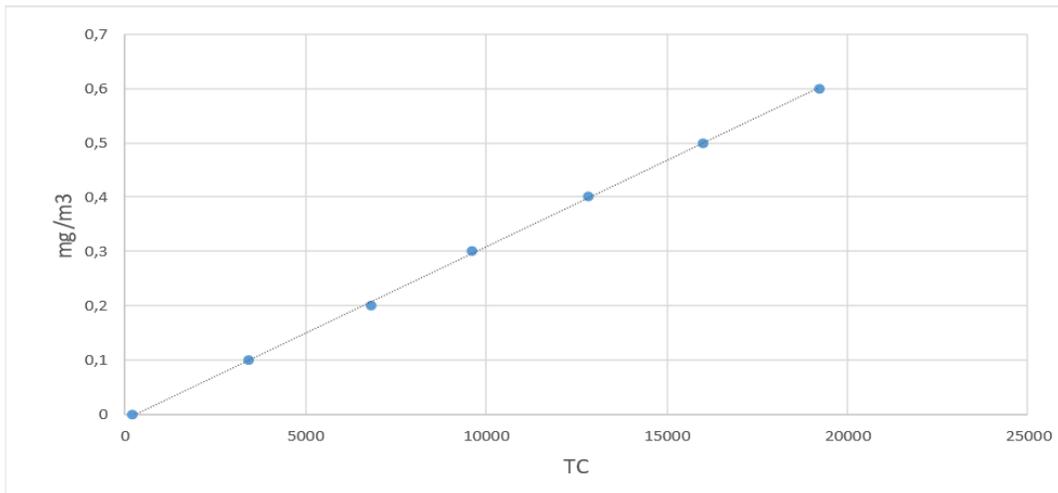
Calibration conditions

Gas Velocity: **8,0 m/s**
 Duct diameter: **500 mm**
 Average Temp.: **21,9 [°C]**
 Average RH: **37,6 [%]**

Test equipment

Particle feeder: **Palas RBG 1000**
 Power supply: **Mastech DC power supply HY3005D-2**
 Anemometer: **Prova AVM-03**
 Scale: **Sartorius CPA225D**
 Thermohygrometer: **Testo 608-H1**

Test results



Calibration points

mg/m ³	Raw TC value
0	203 (base noise)
0,1	3404
0,2	6807 (cali b. Point)
0,3	9605 (cali b. Point)
0,4	12807
0,5	16008
0,6	19210

Alarm Parameters

Averaging Time Coefficient: 100s
 Signal Delay Up/Down: 60s

Tested: Lauri Viitanen
 12-06-2014

Approved: Stefan Engardt
 16-06-2014



ProDetec Pty. Ltd.

P. +61 (02) 9620 8700
 E. info@prodetec.com.au
 A. 17/38 Powers Rd, Seven Hills NSW 2147
 PO. PO Box 3184,
 North Parramatta BC, NSW 1750

Country:	Germany, Baden-Württemberg
Industry:	Wood Industry, Carpenter
Application:	Broken Bag Detection
Application Title:	Residual dust monitoring after a wood dust filter in an air recirculation system
Why are they measuring dust?	In order to be EN12779 compliant
Where in the process to measure?	After bag filter before recirculation system
Law or Norm to be fulfilled?	EN 12779
Analogue signals:	Alarm signals are wired to the PLC which steers the ventilation system
Measuring Location:	Outside, vertical duct right after the filter
Inner diameter of stack or duct:	1.200mm x 700mm
Special technical challenges:	There are 3 frequency-controlled fans which adjust the air flow according to the number of used process machines. This may cause extremely low velocities (<0.5m/s) and dust concentrations. The OEM customer did the Auto Setup always in condition of such low values. The result was manly false alarms and unpredictable behavior. The solution was to Auto Setup when all 3 fans were working under full dust load. If only one fan was working on low speeds, the PLC which controls the ventilation system would ignore the signals from the dust monitor.
ATEX Requirements:	None
Condensating Conditions:	Occasionally (Monday morning)
Process Temperature (°C):	< 50
Pressure (kPa):	< 100
Air velocity (m/s):	0 – 16
Dust concentration range (mg/m ³):	Nominal < 0.1, maximum allowed 0.3
Ambient Temperature (°C):	-20 to + 45
Why has Sintrol been chosen?	Sintrol monitors work accurate and are adjusted to give no “false” due to nervous behavior
Who did the installation?	Local German OEM manufacturer for the filtration system
Did the customer achieve their goals?	Yes, installation works since may years trouble free



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/m³.

ProDetec Pty. Ltd.

P. +61 (02) 9620 8700

E. info@prodetec.com.au

A. 17/38 Powers Rd, Seven Hills NSW 2147

PO. PO Box 3184,

North Parramatta BC, NSW 1750

www.prodetec.com.au



Est 2003