

DUSTCOUNT APPLICATION NOTE: SILICA POURING DUST MONITORING

OVERVIEW

The DustCount combines the advantages of real-time dust monitoring with the ability to do the standard method all in a compact, lightweight package.

This application is using the DustCount unit to test worker exposure during a silica dust pouring operation. The operation stores its silica dust in a storage bin on the roof of the building and gravity feeds it into bags to be used in the manufacturing process.



The pouring area is contained with an enclosure and is kept at negative pressure by the building air conditioning system. Workers wear protective respirators during the pouring process. This test is to monitor conditions inside the enclosure and to check for leakage outside the enclosure where no protective equipment is worn.

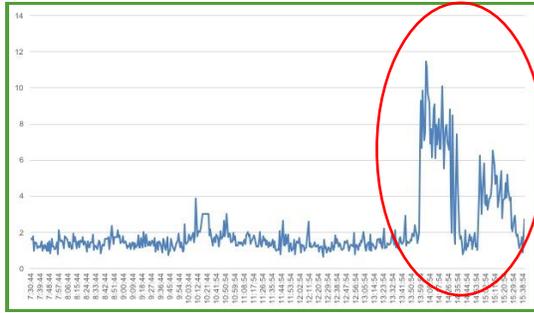
The unit is initially prepped by zero calibration of the device, followed by installing a new 25mm sampling filter into the DustCount cassette and setting up the test via Bluetooth on a PC running the DustCount User Interface software.

RESULTS

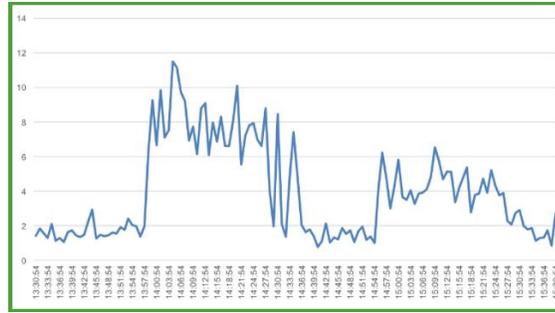
The Real-time readings from the DustCount are correlated with the events in the pouring room. 2 pouring events occurred during the day specifically, at the end of the day.

The measured ambient dust level is reasonably low due to the negative pressure and the containment system.

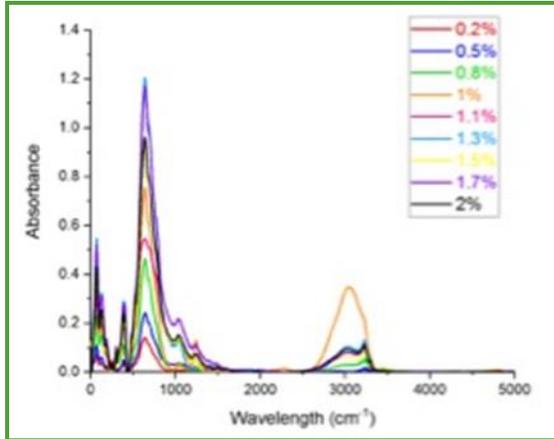
With the graph on the right, a review of the dust decay curves helps set up a SOP to ensure that dust isn't released into the un-protected area by opening the doors on the containment area too soon. It also saves time if, for example, the existing SOP called for the doors to remain closed for an hour after a pour while the delay curve shows 35 minutes would be required.



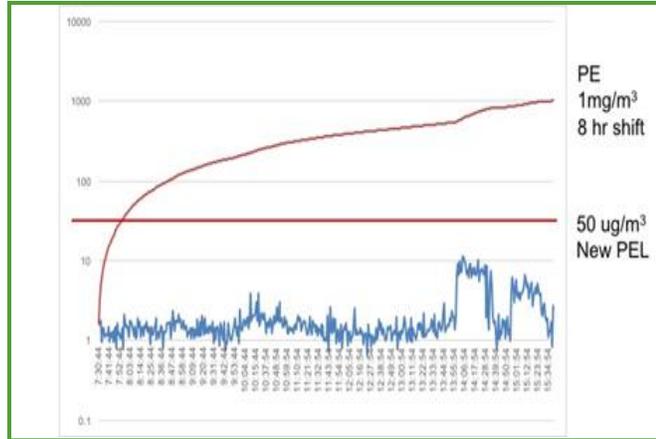
Full day monitor graph



Focus view of 2 events



FTIR Sample Analysis



Cumulative vs New PEL for Silica

Filter Analysis shows 76% crystalline Silica and real time analysis shows a high base level of dust concentration leading to high cumulative results very early in the shift. Respirator protection in this case is essential.

CONCLUSIONS

The ability to provide real-time data and correlate this with known events and to graphically represent this gives the Industrial Hygienist the data and information to allow them to thoroughly analyze the situation, pinpoint problem areas, and provide valuable insight and direction for the operation to protect the workers and avoid non-compliance with the regulator.

Hygienists report that having data gives them the credibility they need to get a “seat at the table” in executive discussion and decisions.

Customers also report better training results as the graphs are a powerful way to illustrate the danger of certain areas to human health.