TROLEX

ONE LIFE.
PROTECT IT.

D1+

COMPARATIVE TESTING DOCUMENT

INTRODUCTION.

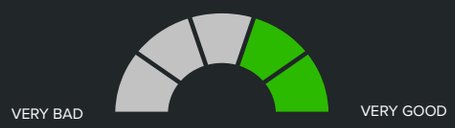
The **XXD1+ Personal Dust Monitor** provides instantaneous warning and detailed real-time data on airborne particulate levels so that users can take appropriate actions to stay safe and remain informed of particulate-related health hazards in a range of working environments.

Indicative testing has been repeatedly conducted on multiple XXD1+ sensors in which the sensors and reference devices were exposed to a range of test dusts including A1 and Nominal 0 to 10 µm Arizona Test Dust and periods of low dust, in order to give an indication of typical device performance.

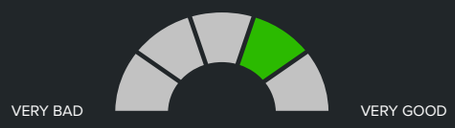
Multiple **XXD1+ Personal Dust Monitor** devices were tested alongside a TSI DustTrak DRX instrument using Arizona Road Dust (ARD) supplied by Fiatech GmbH, where testing for dust exposure on all devices were carried out in a test cube.

KEY CONCLUSIONS.

- XXD1+ units show good to very good agreement with each other across a range of particle distributions and loading.



- The XXD1+ units show good agreement at low baseline levels with few erroneous spikes or misreading.

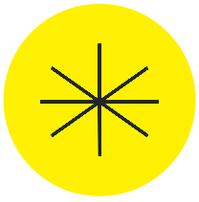


- The XXD1+ units show good agreement with the reference detector for a range of particle distributions and loading.

TASK SETUP.

1 m^3 test cube volume.

Pre-weighed test dust.[1]



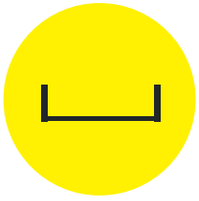
8 units on an 8-spoke fixture.[2]

Text fixture rotated between tests.[3]

50 mg at 2-hour intervals 4 times.[4]

The report concentrates on PM4.25.[5]

No additional calibration.



Pre and post-exposure tests carried out in an unnoccupied space.

ARD.[6]

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[1] Dust was dosed centrally and dispered by compressed air.

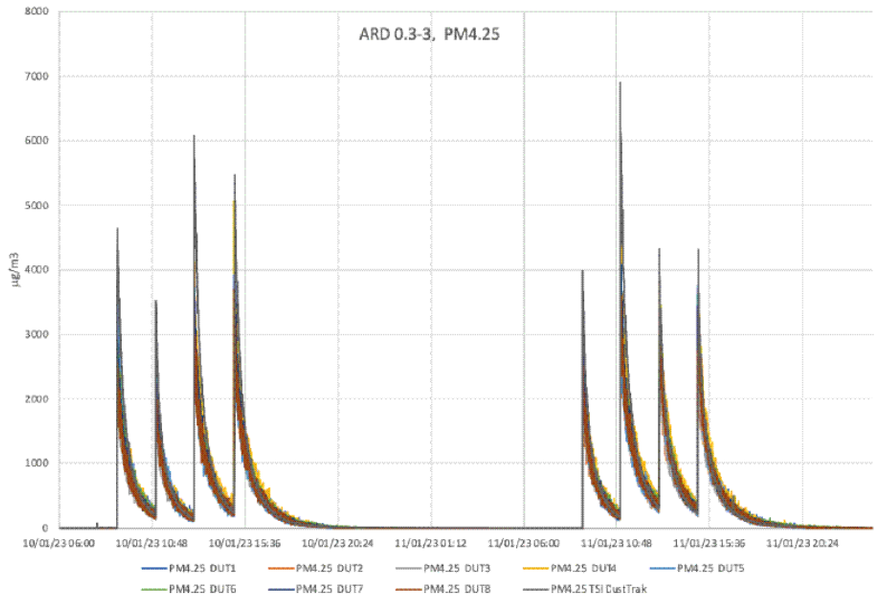
[2] **XXD1+** units were held in fixed positions equal distance from the centre.

[3] Text fixture rotated to ensure sensors were tested in equivalent positions. Little difference was seen between positions suggesting that dust dispersal and sampling was uniform.

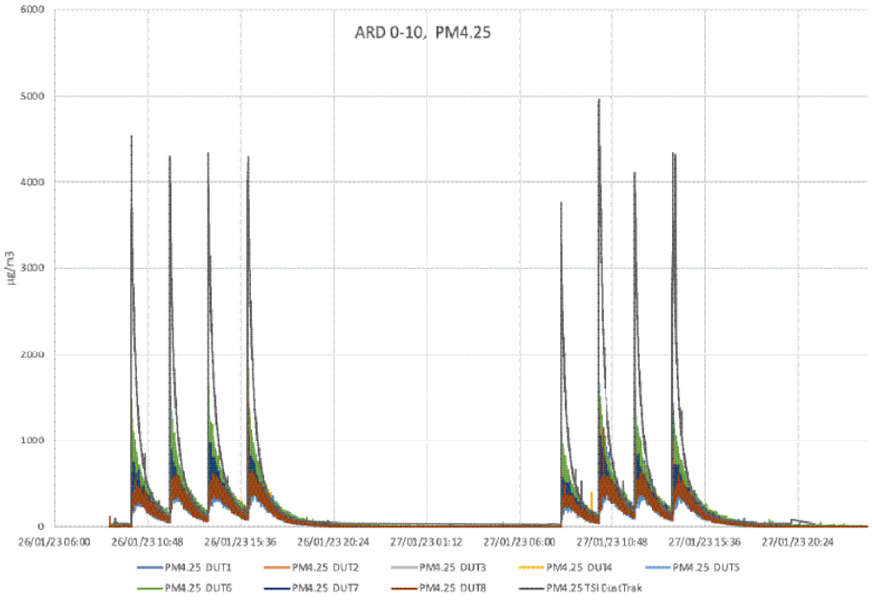
[4] Dust levels were allowed to settle and this was repeated the following day.

[5] Data was also collected for PM1, PM2.5 and PM10 size fractions.

[6] All ARD test dusts were either standard or specified grades supplied by Fiatech GmbH.

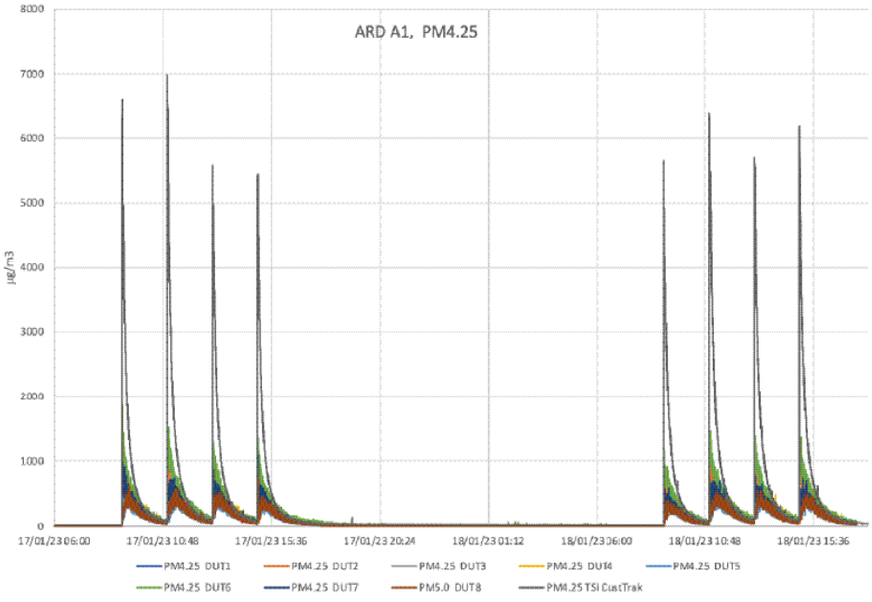


All 8 XD1+ units show good agreement to each other and to the TSI DustTrak when exposed to the ARD A1 0.3 to 3 µm test dust.



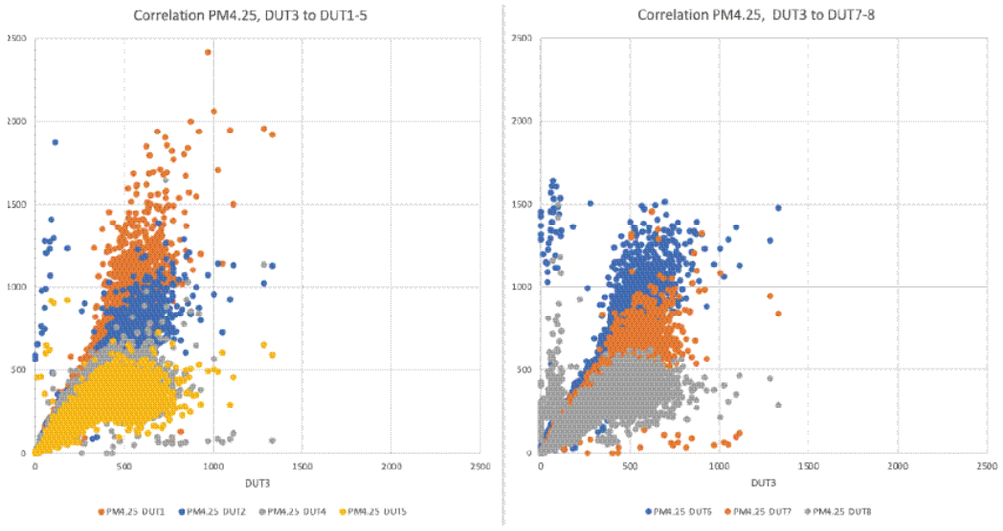
All 8 XD1+ units show good agreement when exposed to the ARD 0 to 10 µm test dust.

The units track the TSI DustTrak well, reporting slightly lower values, but the same for every dose.



All 8 XD1+ units show good agreement when exposed to the ARD A1 Ultrafine test dust.

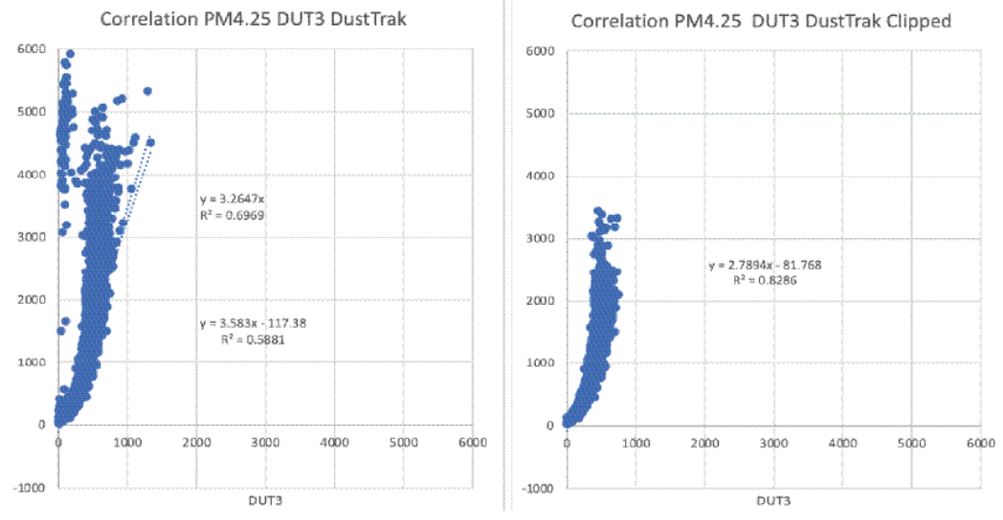
The units track the TSI DustTrak well, but report slightly lower values.



All 8 XXD1+ units show good agreement to each other and to the TSI DustTrak when exposed to the ARD A1 0.3 to 3 µm test dust.

	DUT1	DUT2	DUT3	DUT4	DUT5	DUT6	DUT7	DUT8
Slope	1.65	1.2	-	0.9	0.7	1.5	1.1	0.7
Intercept	11	0.4	-	20	14	9	5	17
R^2	0.02	0.92	-	0.85	0.86	0.90	0.92	0.80

Correlation for XXD1+ units vs DUT3 for ARD 0 to 10 µm fraction.



A typical XXD1+ unit shows good correlation to the DustTrak DRX for the ARD 0 to 10 µm fraction.

This is improved when the data immediately around dust generation is removed.

At Trolex, we save lives.

We believe that no person should risk their life to earn a living.

We aim to become the world's leading name in health and safety technology through pioneering products that provide real-world benefits to our customers whenever workers operate in hazardous environments.

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