

**ONE LIFE.
PROTECT IT.**



XCD1⁺

**COMPARITIVE
TESTING
DOCUMENT**

INTRODUCTION.

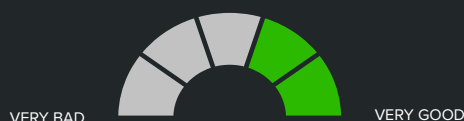
The **XKD1⁺ Personal Dust Monitor** provides instantaneous warning and detailed real-time data on airborne particulate levels so that users can take appropriate actions to stay safe and remain informed of particulate-related health hazards in a range of working environments.

Indicative testing has been repeatedly conducted on multiple **XKD1⁺** 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 **XKD1⁺ 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.

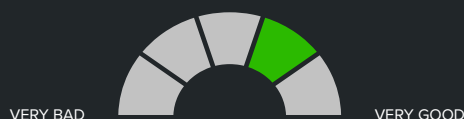
➤ **XKD1⁺** units show good to very good agreement with each other across a range of particle distributions and loading.



➤ The **XKD1⁺** units show good agreement at low baseline levels with few erroneous spikes or misreading.



➤ The **XKD1⁺** units show good agreement with the reference detector for a range of particle distributions and loading.



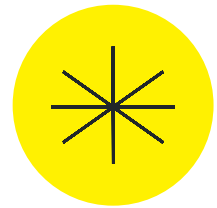
TASK SETUP.



1 m³ test cube volume.



Pre-weighed test dust.¹



8 units on an 8-spoke fixture.²



Text fixture rotated between tests.³



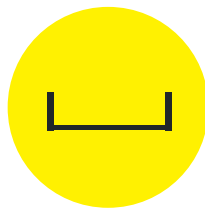
50 mg at 2-hour intervals 4 times.⁴



The report concentrates on PM_{4.25}.⁵



No additional calibration.



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



ARD.⁶

¹ Dust was dosed centrally and dispersed by compressed air.

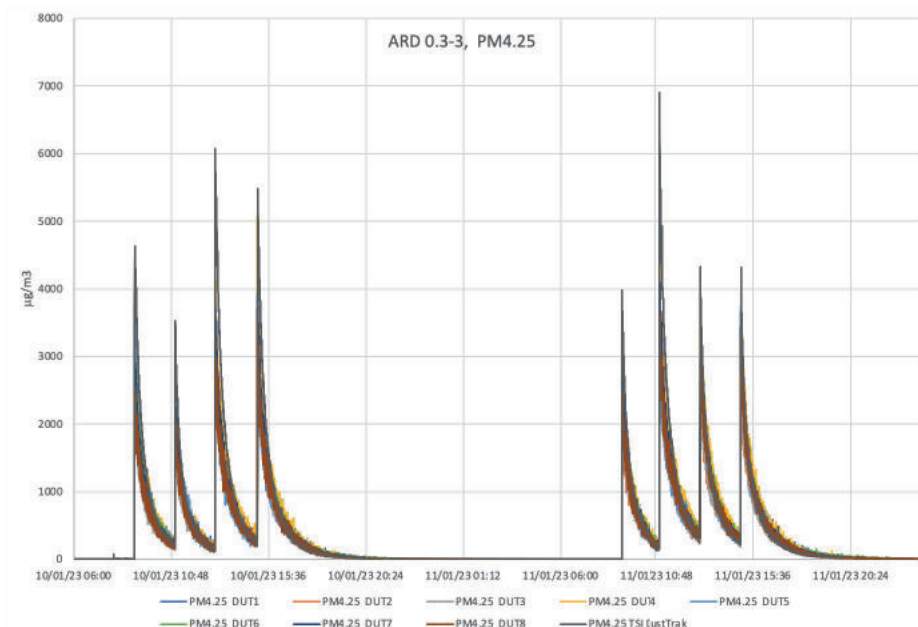
² **XCD1+** units were held in fixed positions equal distance from the centre.

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.

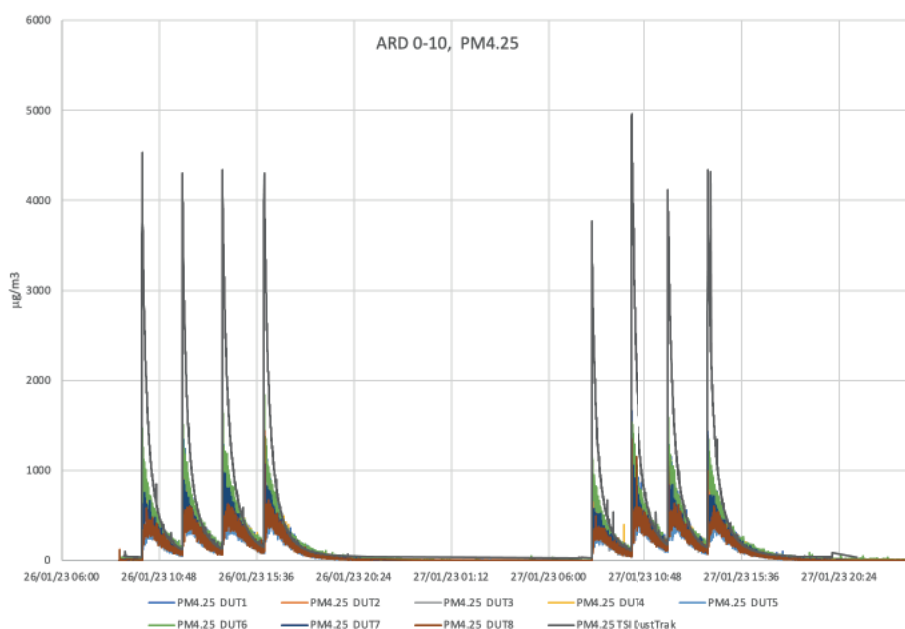
⁴ Dust levels were allowed to settle and this was repeated the following day.

⁵ Data was also collected for PM₁, PM_{2.5} and PM₁₀ size fractions.

⁶ All ARD test dusts were either standard or specified grades supplied by Fiotech GmbH.

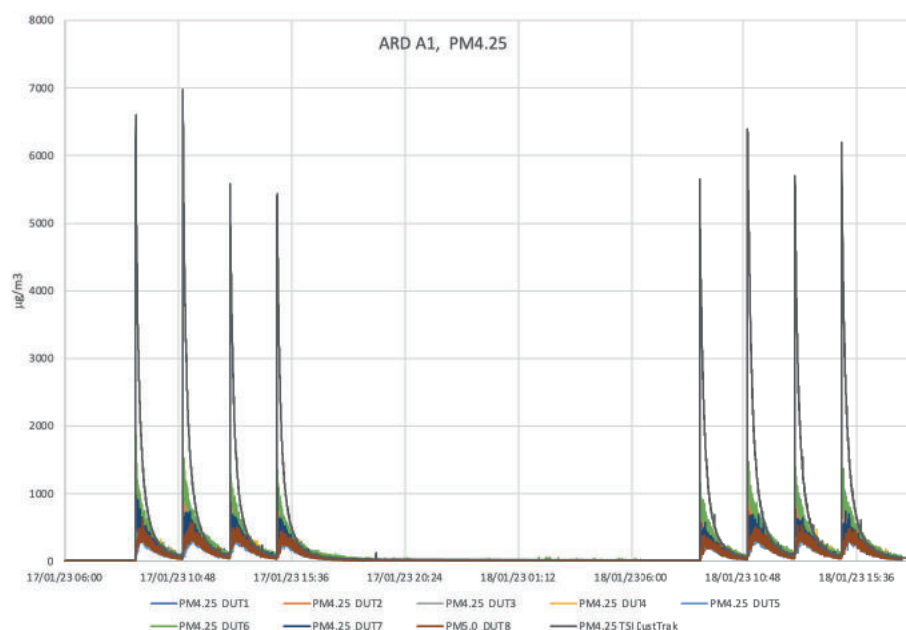


All 8 **XCD1⁺** units show good agreement to each other and to the TSI DustTrak when exposed to the ARD A1 0.3 to 3 µm test dust.



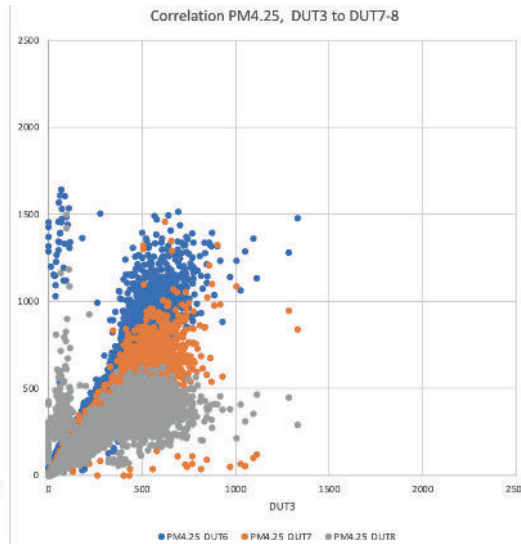
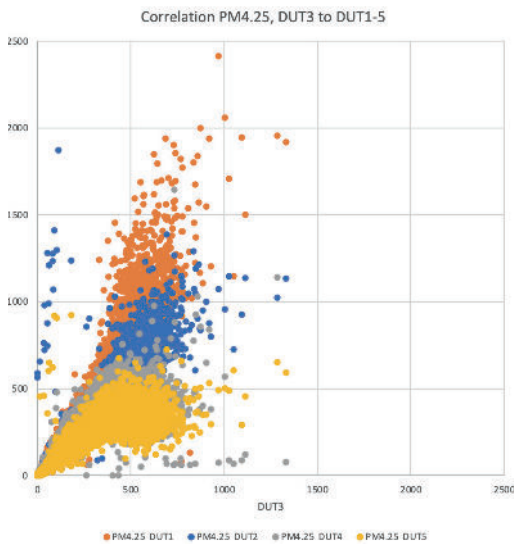
All 8 **XCD1⁺** units show good agreement when exposed to the ARD 0 to 10 µm test dust.

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



All 8 **XCD1⁺** units show good agreement when exposed to the ARD A1 Ultrafine test dust.

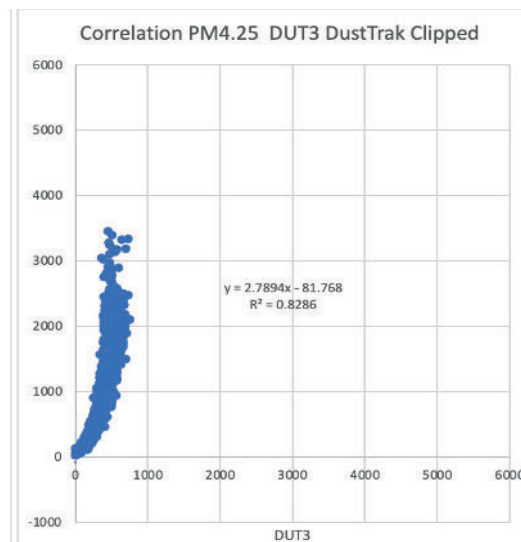
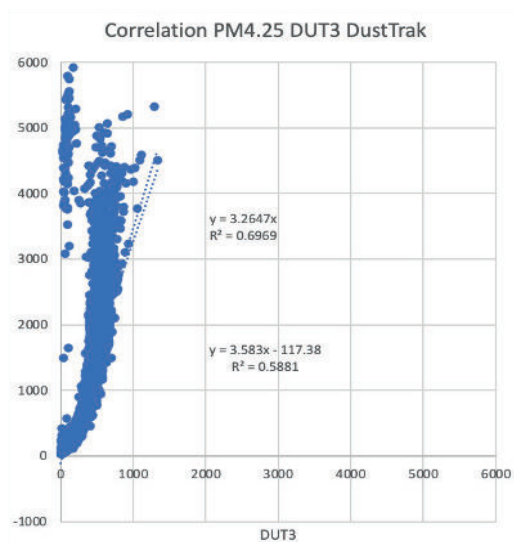
The units track the TSI DustTrak well, but report slightly lower values.



All 8 **XCD1⁺** 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 **XCD1⁺** units vs DUT3 for ARD 0 to 10 μm fraction.



A typical **XCD1⁺** 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.

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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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