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Test Report EN 779:2012



Job Number 20300-02
Date of Report 03-Sep-20

Filter Description



PTL Sample ID
31859
31860/31861

Manufacturer J P Air Tech
Filter Model Cylinder; Cone
Part Number JX130-B-C-Nano 9
Filter Type 660mm Cylinder; Cone
Dimensions (h_xw_xd), mm Refer to Additional Information
Effective Filter Area, m² 44 (combined)
Media Type 100 % synthetic base with nano-layer
Media Colour White
Media Additives None
Electrostatic Charge Not available
Sample Obtained Customer

Test Requester Information

Test Requester Paulo Rocchi
Date Requested 28/07/2020
Company Name J P Air Tech
Company Address Skiufervej 2, DK-4990 Sakskobing, Denmark
Date Sample(s) Received 22/07/2020
Date of Test Commencement 10/08/2020

Test Equipment Information

Optical Particle Counter Palas, Welas 3000H with 2300 sensor (inventory n^os 1081 and 1177)
Air Flow Meter Orifice plate with Foxboro Multivariable Transmitter and RTD (inventory n^os 1168, 1166 and 1167)

Statement

The results relate only to the tested item. The performance results cannot by themselves be quantitatively applied to predict filter performance in service.

Test Conditions

Dust Type ASHRAE 52.2
Liquid Aerosol DEHS
Solid Aerosol NA
Test Air Flow Rate (nominal), m³/hr 2653
Barometric Pressure, mbar 1001.0 1009.2 MIN-MAX
Test Air Temperature, °C 25.0 27.0 MIN-MAX
Relative Humidity, % 49.4 54.9 MIN-MAX

Test Results

Initial Resistance to Flow, Pa 198
Final Resistance to Flow, Pa 450
Initial Arrestance, % > 99
Average Arrestance, % > 99
Test Dust Capacity, g 1434

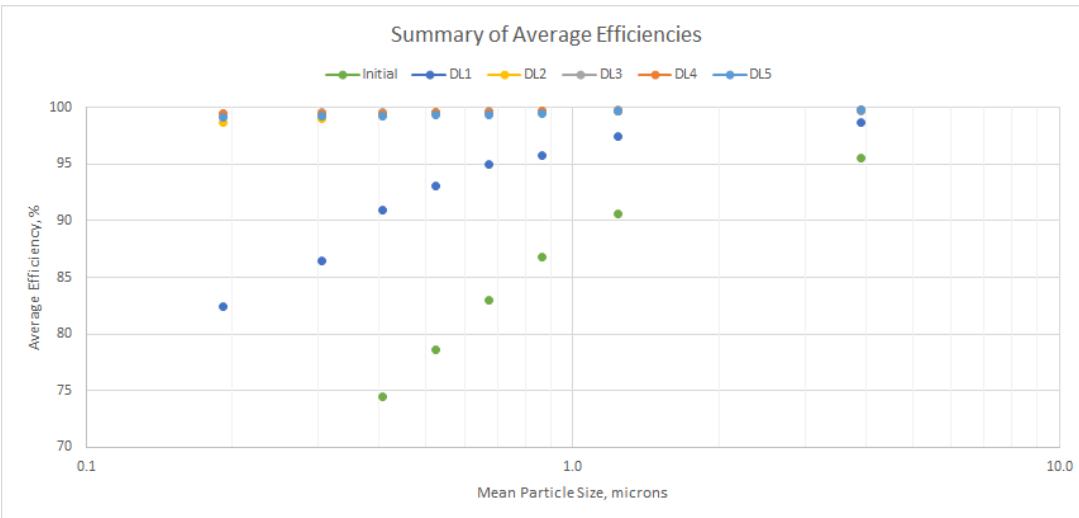
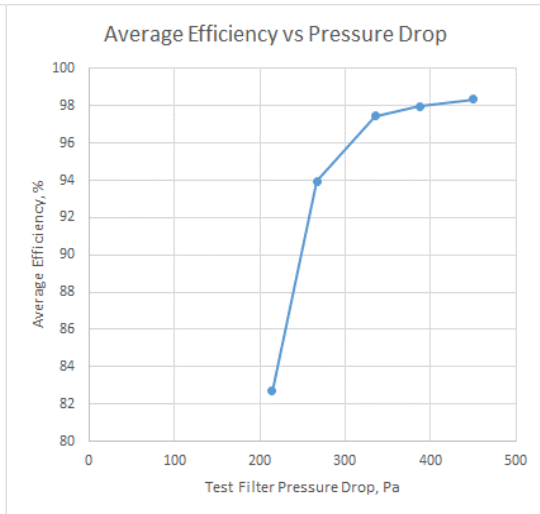
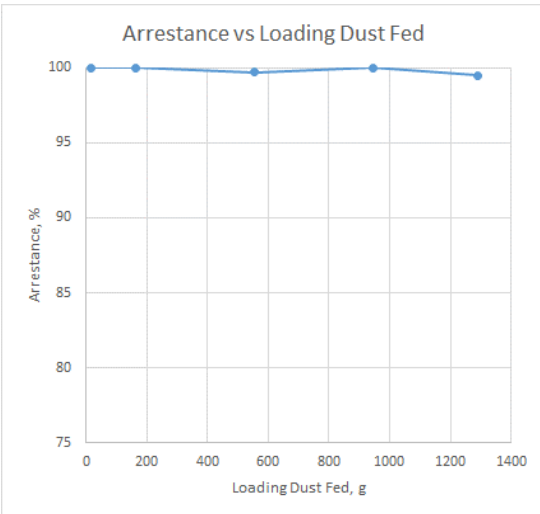
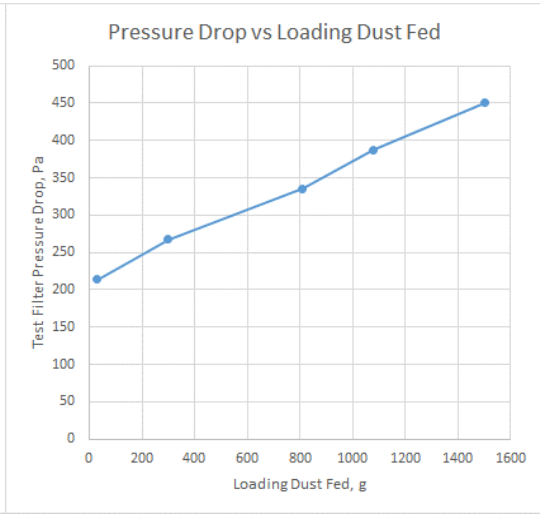
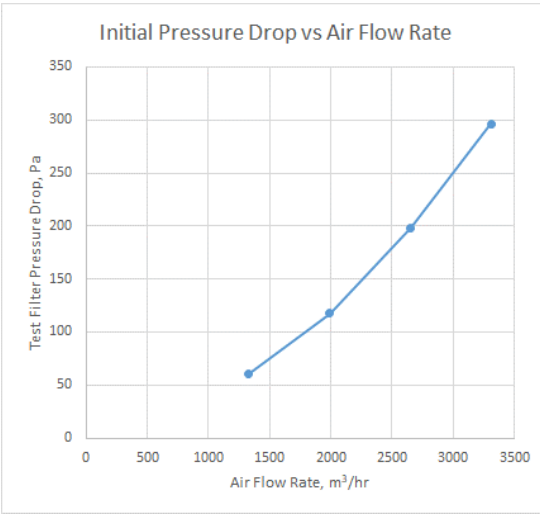
Filter Classification

F9 (2648 m³/hr, 450 Pa)

Initial Efficiency (0.4 µm), % 74
Average Efficiency (0.4 µm), % 98
Uncertainty, Average Efficiency (0.4 µm), % 0.1
Average Flat Sheet Efficiency (0.4 µm, 100 % face velocity), % NA (untreated samples)
NA (discharged samples)

Test Engineer L. Grimes

Test Data



DL: Dust loading stage 1, 2, 3, 4 or 5

Data Tables

Initial Pressure Drop

Air Flow Rate, m ³ /hr	1322	1989	2652	3310
Pressure Drop, Pa	60	117	198	296

Loading Dust Fed, Pressure Drop & Arrestance

Dust Fed, g	30	300	810	1080	1500
Pressure Drop, Pa	214	267	335	387	450
Arrestance, %	100	100	100	100	100

Particle Removal Efficiency

^a - geometric mean size of the stated size range

Size Range, µm	Mean Size ^a , µm	Initial, %	DL1, %	DL2, %	DL3, %	DL4, %	DL5, %
0.143 - 0.255	0.191	63	82	99	99	99	99
0.255 - 0.365	0.305	68	87	99	100	99	99
0.365 - 0.453	0.407	74	91	99	100	99	99
0.453 - 0.604	0.523	79	93	100	100	100	99
0.604 - 0.750	0.673	83	95	100	100	100	99
0.750 - 1.000	0.866	87	96	100	100	100	99
1.000 - 1.540	1.241	91	97	100	100	100	100
1.540 - 10.000	3.924	96	99	100	100	100	100
Average Efficiency to Final Pressure Drop, %			83	94	97	98	98

Measurement Uncertainty for the Stated Efficiencies

Size Range, µm	Mean Size ^a , µm	Initial, %	DL1, %	DL2, %	DL3, %	DL4, %	DL5, %
0.143 - 0.255	0.191	1.1	1.1	0.1	0.0	0.1	0.0
0.255 - 0.365	0.305	0.7	0.8	0.1	0.0	0.0	0.0
0.365 - 0.453	0.407	0.8	0.8	0.1	0.0	0.1	0.0
0.453 - 0.604	0.523	0.6	0.6	0.1	0.0	0.0	0.1
0.604 - 0.750	0.673	0.6	0.4	0.1	0.0	0.1	0.0
0.750 - 1.000	0.866	0.8	0.3	0.1	0.1	0.1	0.1
1.000 - 1.540	1.241	0.5	0.3	0.1	0.1	0.1	0.1
1.540 - 10.000	3.924	0.6	0.3	0.1	0.1	0.2	0.1

Summary of Test Methods

The test methods used when performing a test in accordance with EN 779:2012 includes TM061, TM062, TM063, TM064 and TM065. The Welas 3000 H OPC has a calibration check performed at the start of each test day using MonoDust from Palas.

Deviations from Test Methods

The tests were conducted in accordance with EN 779:2012 using the test methods listed above, with the following deviations. Test method TM067 was used instead of TM065, where a cylindrical test filter was discharged in IPA vapour for 24 hours using a TOPAS TDC 584 discharge cabinet, and the efficiency was measured in its discharged state using the EN 779 test duct and efficiency measurement procedures. The sample time for all particle counts was 60 seconds. The zero count test on the particle counter performed prior to testing the discharged filter generated 38 counts in 2 minutes, which exceeded the limit of 18 counts in 2 minutes. All subsequent zero count tests were within specification.

The Interpretation of Test Reports

This brief review of the test procedures, including those for addressing the testing of electrostatically charged filters, is provided for those unfamiliar with EN 779 procedures. It is intended to assist in understanding and interpreting the results in the test report. For further details of procedures, the full EN 779 document should be consulted.

Many types of air filter rely on the effects of passive static electric charges on the fibres to achieve high efficiencies, particularly in the initial stages of their working life. Environmental factors encountered in service may affect the action of these electric charges so that the initial efficiency may drop substantially after an initial period of service. In many cases this is offset or countered by an increase in efficiency ('mechanical efficiency') as dust deposits in the filter media. In the later stages of operating life the efficiency may increase to equal or exceed the initial efficiency. The reported untreated and conditioned ('discharged') efficiencies show the extent of the electrical charge effect on initial performance. It should not be assumed that the measured conditioned ('discharged') efficiency represents real life behaviour. It merely indicates the level of efficiency obtainable with the charge effect completely removed and with no compensating increase in 'mechanical efficiency'.

For reasons of consistency, filter efficiencies are measured using artificially generated clouds of synthetic DEHS material (droplets) with closely controlled particle size. These efficiency measurements are repeated after the filter has been loaded with ASHRAE loading dust until the resistance has risen to a value of 250 Pa in the case of the coarse (G) procedure, and with up to a value of 450 Pa for the fine and medium (F and M) procedure. Test dust capacities measured in this way may be used to compare performances and for rankings but should not be assumed to simulate real life operating conditions as the properties of dusts encountered in service conditions vary widely.

Data For Extended Tests

Loading Dust Fed, Pressure Drop & Arrestance

	DL1	DL2	DL3	DL4	DL5	DL6
Dust Fed, g	30	300	810	1080	1500	4045
Pressure Drop, Pa	214	267	335	387	450	1012
Arrestance, %	100	100	100	100	100	99

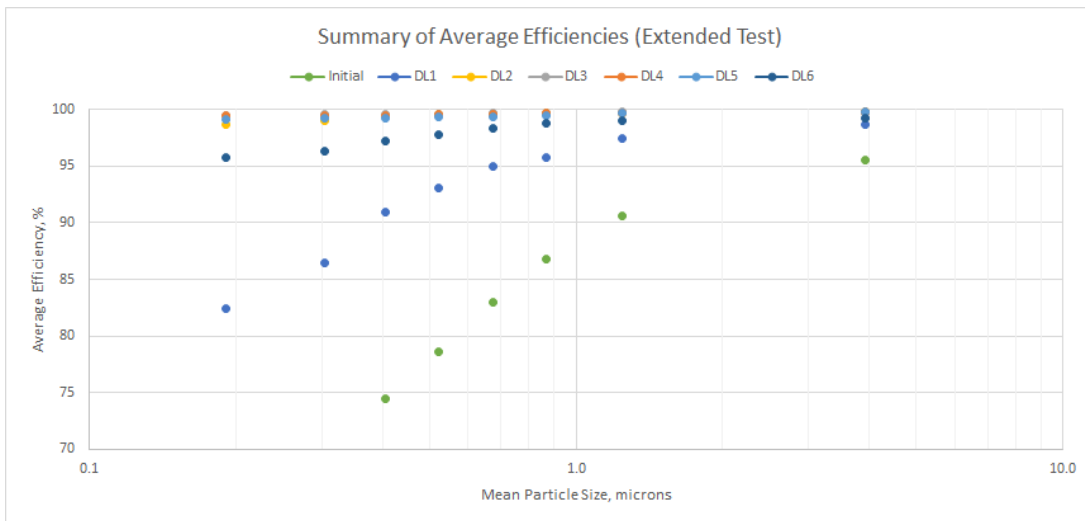
Particle Removal Efficiency

Size Range, μm	Mean Size ^a , μm	DL6, %
0.143 - 0.255	0.191	96
0.255 - 0.365	0.305	96
0.365 - 0.453	0.407	97
0.453 - 0.604	0.523	98
0.604 - 0.750	0.673	98
0.750 - 1.000	0.866	99
1.000 - 1.540	1.241	99
1.540 - 10.000	3.924	99

Measurement Uncertainty for the Stated Efficiencies

Size Range, μm	Mean Size ^a , μm	DL6, %
0.143 - 0.255	0.191	0.1
0.255 - 0.365	0.305	0.1
0.365 - 0.453	0.407	0.2
0.453 - 0.604	0.523	0.2
0.604 - 0.750	0.673	0.1
0.750 - 1.000	0.866	0.2
1.000 - 1.540	1.241	0.1
1.540 - 10.000	3.924	0.3

^a - geometric mean size of the stated size range



Additional Information



Upstream view of filter pair



Downstream view of filter pair



Upstream view of filter pair prior to test

Cylinder dimensions: 660 x 324 x 212 mm
Cone dimensions: 660 x 445/324 x 330/212 mm

Report Issue	History	Approval	Date
1	First issue to customer	Dr Mike Stillwell CEng	03/09/2020

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