EUROPEAN TURBINE NETWORK

ISO standardization program

Background

Ongoing projects

Conclusions

Background – today situation

All currently used standards in industry have origin in different markets with different applications and different needs

Although valuable in their own right, currently used standards do not cover all aspects and needs of various applications used for rotary machinery

Different standards are used in different regions of the world

Background – ISO/TC142 WG9

Working Group 9 (WG9) created in 2006

Technical experts from various filtration companies from various countries

Working under ISO/TC 142 : “CLEANING EQUIPMENT FOR AIR AND OTHER GASES”

- WG3: ventilation (HVAC)
- WG4: HEPA and ULPA
- WG5: dust collectors
- **WG9: rotary machinery**

Objective of ISO/TC142 WG9

”Particulate air filter intake systems for rotary machinery and stationary internal combustion engines”

Develop internationally accepted standards

Develop standards for different filtration applications used for rotary machinery

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Ongoing projects within WG9

The actual ISO 29461 set of standards consists of:

- Part 1: Static filter elements
- Part 2: Cleanable (Pulse jet) filter systems
- Part 3: Mechanical integrity of filter elements
- Part 4: In-situ testing
- Part 5: Marine and Offshore environment filter systems
- Part 6: Cartridge testing method

ISO 29461-1:2013

“Static filter elements”

Base platform: EN779, ASHRAE 52.2, earlier ISO work

Cover filters from coarse to E11/E12 class

New treatment for electrostatically enhanced filters

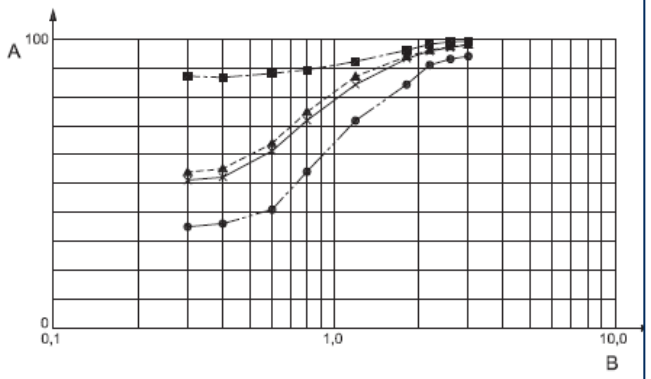
No classification system yet included

→ released in 2013

ISO 29461-1:2013

Reporting of test results

ISO 29461-1



Test no: .....

Test aerosol: .....

Loading dust: .....

Airflow rate: .....

Final test pressure drop: .....

Key

A	Efficiency (%)
B	Particle size (µm)
×——	Initial
▲----	50 g
■——	Final pressure drop
●----	Conditioned

ISO 29461-1

Testing organization:		**Report #:**	
GENERAL			
Test no.:	Date of test: yyyy-mm-dd	Supervisor:	
Test requested by:		Device receiving date: yyyy-mm-dd	
Device supplied by:			
DEVICE TESTED			
Model:	Manufacturer:	Construction:	
Type of media:	Effective filtering area:	Actual filter dimensions ($W \times H \times D$):	
TEST DATA			
Test airflow rate:	Test air temp:	Test air relative humidity: %	Test aerosol: **DEHS** Loading dust: **ISO 12103-A2**
RESULTS			
Initial pressure drop:	**Final test pressure drop:**	A_{50} (gravimetric efficiency at 50g):	**Test dust capacity** / **Remark:**

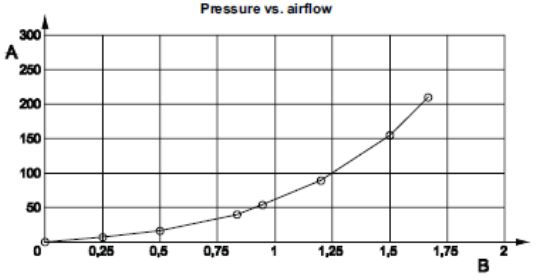
Efficiency versus DEHS-particles

Efficiency	Particle Size[b] 0,4 µm	0,6 µm	0,8 µm	1,2 µm
Filter				
Initial (E_0)	±	±	±	±
Conditioned[a] (Initial - ΔE_C)				
Dust loaded 50g	±	±	±	±
Dust loaded (final dp)	±	±	±	±
Media				
Initial	±	±	±	±
Conditioned	±	±	±	±
ΔE_C (Initial-Conditioned)				

[a] The conditioned filter efficiency is calculated from the media test: conditioned efficiency (filter) = E_0(filter) - ΔE_C

[b] See the attached Interpretation of Test Report.

Pressure vs. airflow



Key

A pressure drop

B airflow

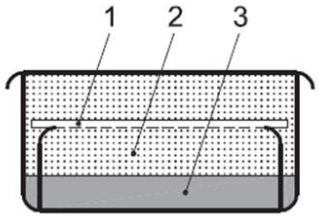
NOTE The performance results are only valid for the tested item and cannot by themselves be quantitatively applied to predict filter performance in service.

ISO 29461-1:2013

New electrostatic discharge method

- IPA vapor treatment

— After a period of 24 h, open the containers and prepare the media for particulate efficiency test (see A.2.4).



Key

1 sample
2 IPA vapour
3 liquid IPA

Figure A.3 — Principle of the isopropanol container (vessel and lid)

ISO 29461-2

“Cleanable (Pulse jet) filter systems”

System aspect taken into account

- Pulse delivery system
- Self-cleaning system technology

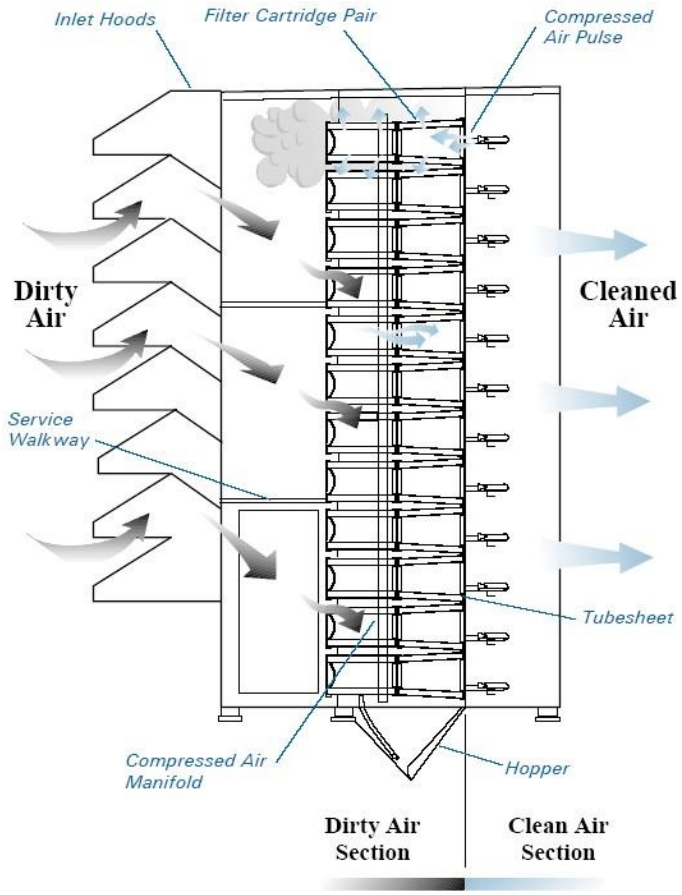
Running project

ISO 29461-2

Project work:

- Definition of scope
- Definition of test system
- Definition of test procedure
- Definition of test dust

- New approach for procedure



ISO 29461-3

“Mechanical integrity of filter elements”

Characterize integrity of filter elements (‘burst’ or ‘breach’)

Scope, procedure, etc to be done

Lower activity project at the moment

ISO 29461-4

“In-situ testing”

On-site evaluation of filter/system performance

Scope, procedure, etc to be done

Lower activity project at the moment

ISO 29461-5

“Marine and Offshore environment filter systems”

Salt challenge

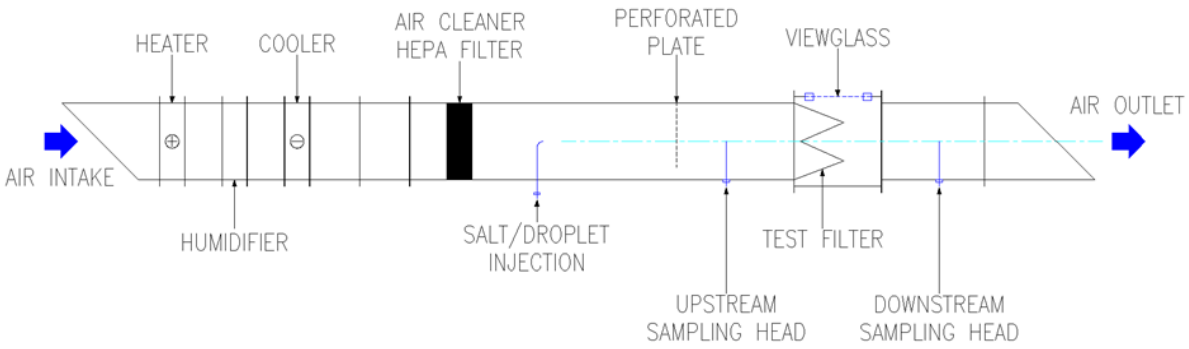
- Dry, wet/deliquescent
- New vs. loaded filters

Running project

ISO 29461-5

Project work:

- Definition of scope
- Definition of test system
- Definition of test procedure
- 2nd draft to be created



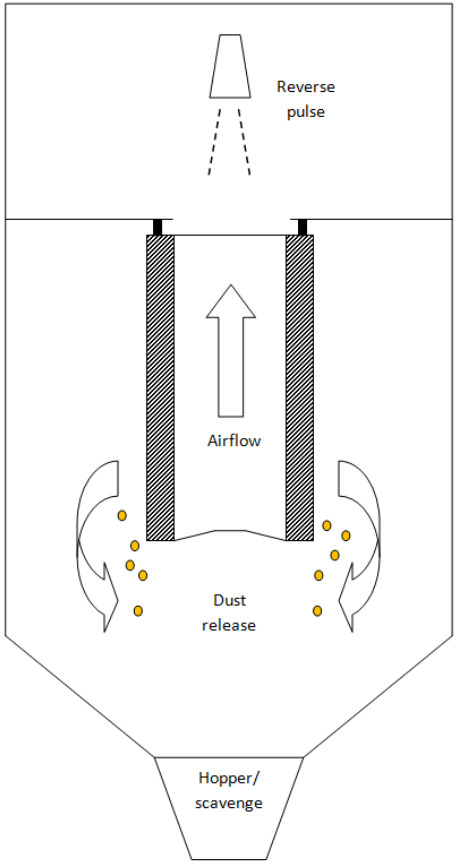
ISO 29461-6

"Cartridge testing method"

Pulse jet filter element test method

First draft document to be created

Lower activity project at the moment



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A new set of ISO standards ISO 29461 (part 1 to 6) are dedicated to filters for rotary machinery where part 1 is ready.

Wider scope for air filtration for rotary machinery in different environments using different applications

A standard provides a solid base of performance comparison - real life will always be different.

Sharing experiences and feedback will be key.