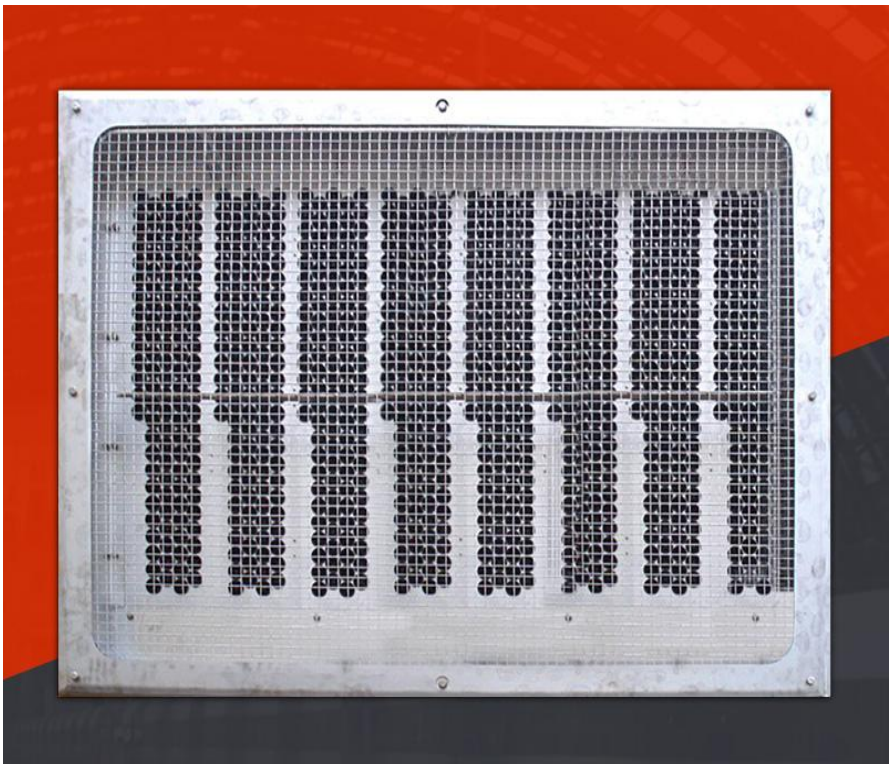
Date: 2010-11-11

Multi-cyclone separator for railway vehicles

- **Dust absorbing up to 95%**
- **Low maintenance**
- **with railway authorities**
  - Designed and produced according to DIN EN 15085
  - Vibration and shock test according to DIN EN 50155
  - Certificate of fire prevention



Multi-cyclone-separator for ventilation systems of railway vehicles

Description

High dust rates in the inlet air in railway vehicles can lead to frequent maintenance rates of downstream components or to failures, due to contamination by dust. Either contaminated textile filters have to get changed often or downstream components have to get cleaned regularly to ensure a failure -free operation of the system. The self-cleaning dust separator with continuous dust discharge for ventilation systems enables considerably longer maintenance rates and improves service lifetimes of the remaining components (filters, ventilators, controlling elements, …) in the system.

Pros and Cons of different dust separator systems

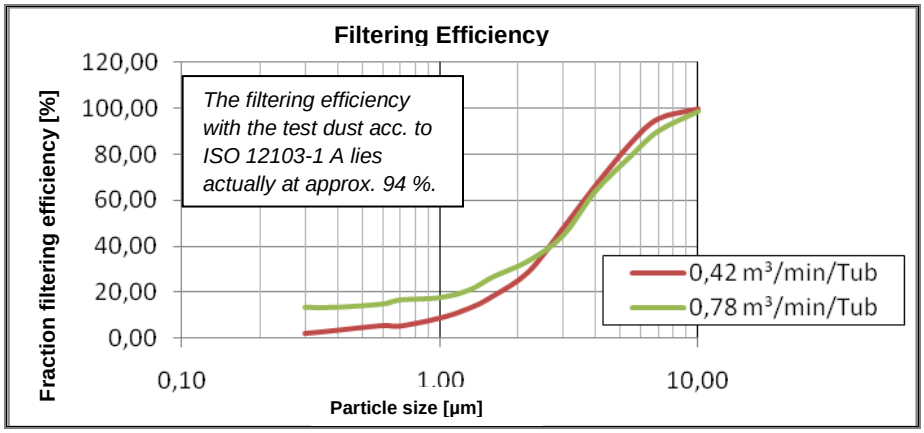
	Air intake grille without filter pad	Air intake grille with filter pad	Multi-cyclone
Filtering efficiency dust	--	++	++ (up to 95%)
Filtering efficiency water	++	++	+
Price	++	+	+-
Maintenance effort	+	--	+
Pressure drop	++	+	-

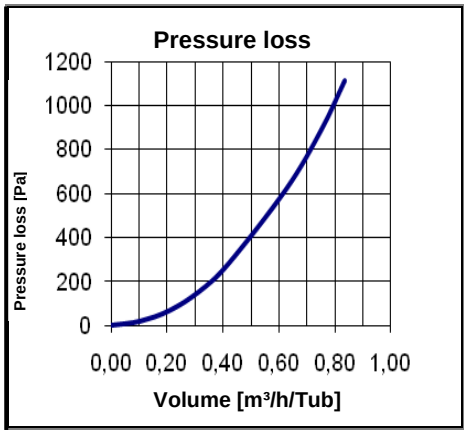
Standard air intake grilles do have a high filtering efficiency of water but no continuous filtration of dust.

The downstream **filter pads** behind ventilation grilles run out fast of dust-saving capacity with high air and dust amounts.

Multi-cyclones as pre -filters increase the service lifetimes of filter pads up to 2000 %.

Technical data





Tested in the dessert!

The dust exposure which railway vehicles in dessert regions are exposed to have been simulated with trucks. The installation soaks in the dust-containing air with approx. 700 m ³/h from the dust cloud of the truck driving ahead.

After the test drives, the dust amounts which have been filtered by the cyclone as well as the non-filtered dust amounts were determined. The dust samples also resulted useful information about the dust composition.

On the loading platform of the test vehicle was a generator and the complete ventilation equipment with multi-cyclone, dust discharge ventilator and different fine filters. Execution of the test by Krapf & Lex.

Functional principle
The incoming air is getting put into rotation by entrance. Due to the centrifugal force the dust is getting carried outside and exhausted by the dust discharge ventilator.

Filtering efficiency pre-filter	Dust amount in the fine filter	Filter service life time	
		Factor	Percentage
0%	1000 g	1	100%
50%	500 g	2	200%
75%	250 g	4	400%
80%	200 g	5	500%
85%	150 g	6,7	667%
90%	100 g	10	1000%
95%	50 g	20	2000%

Increase service lifetimes filter pad
The service life times of downstream fine filters increase depending on filtering efficiency of the multi-cyclone. With a dust amount of e. g. 1000 g the dust exposure drops down to 50 g. Therewith the service life time increases by 2000 %.

... shocks pressure
... dust
... water
... snow

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