



Test Methods

Water endurance for filter elements

ISO/TC142/WG9

Kanazawa, 2015-09-15

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Filter stops all type particles,
including fog droplets.

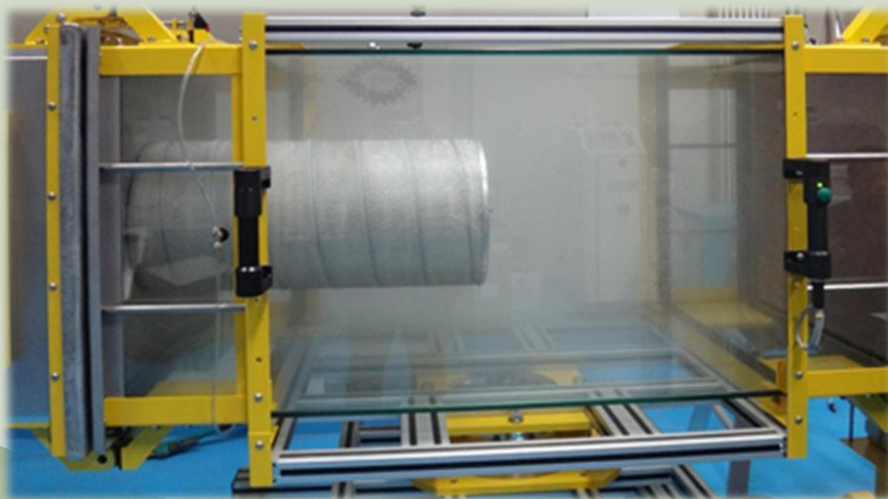
Water accumulation on filter media
may result in rapid increasing
pressure drop

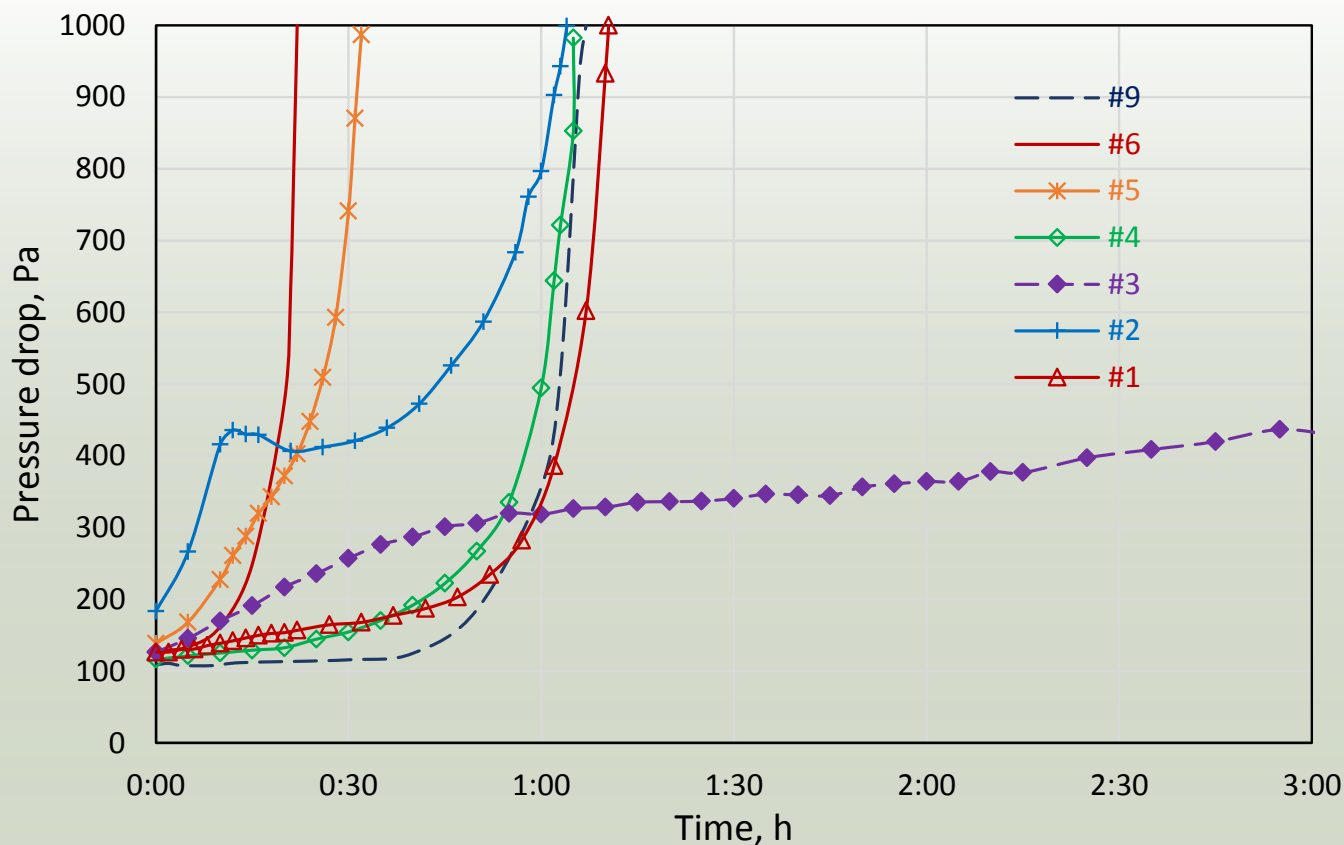
- Cellulous fibers swallow and become soft, compressed by airflow
- Water blocks airways if not penetrating
- Water + dust = mud blocks airways



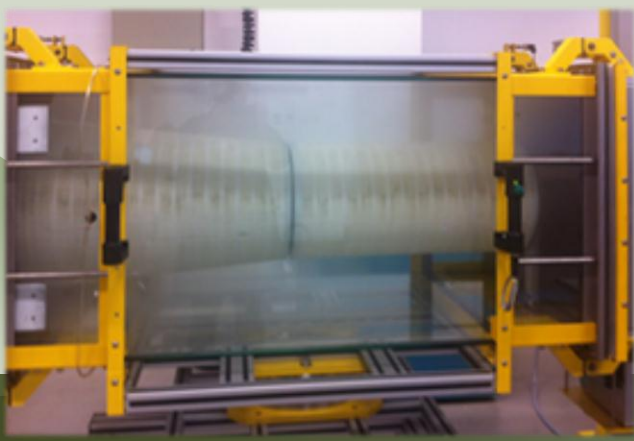
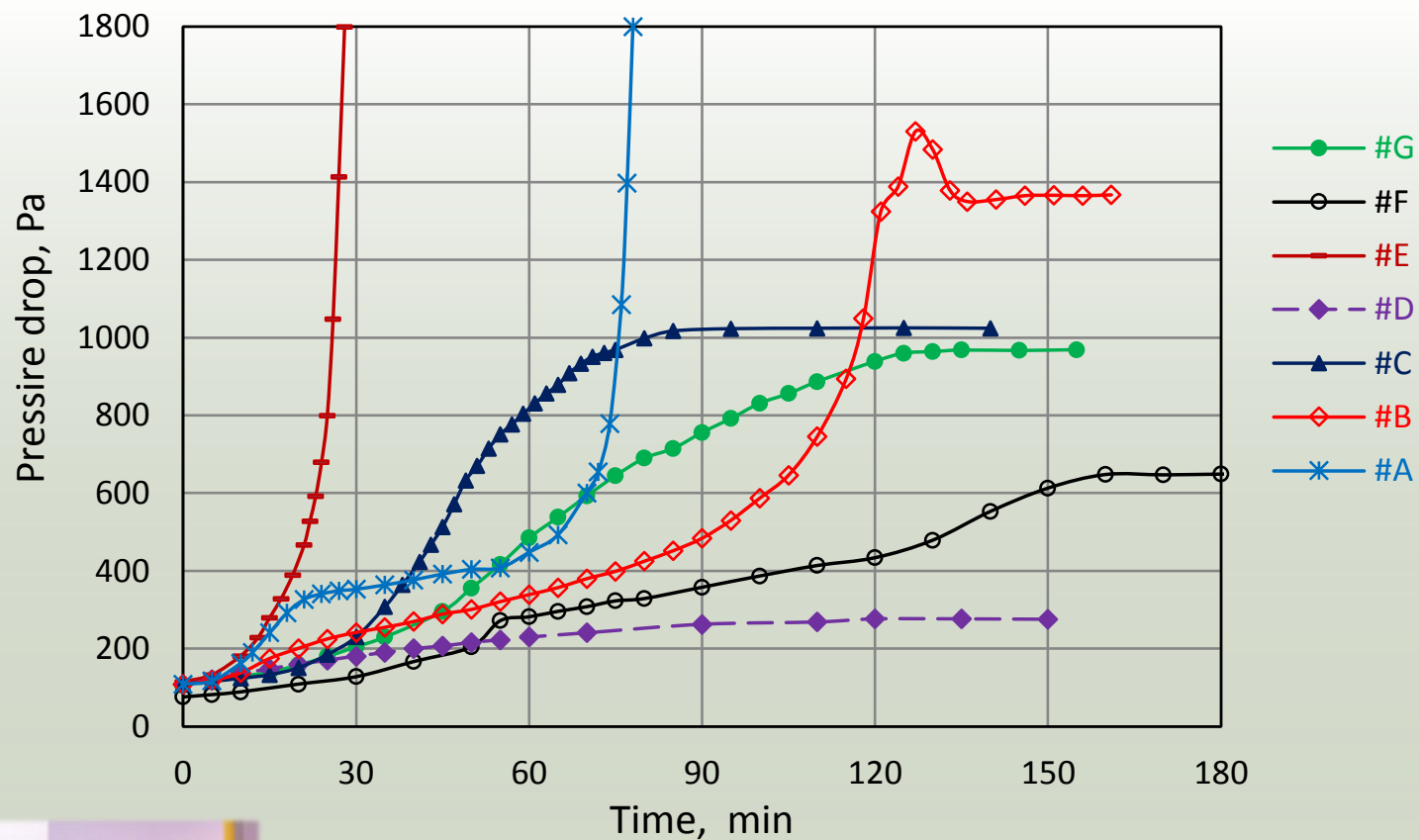
Typical filtration media for
Pulse-jet filters

Filter under Test





Test No.1, May 2015 Lab: Yantair
Length 660 mm, outer diam. 324 mm
Horizontal, airflow 1000 m³/h, fog conc. 10 g/m³



Test No.2, July 2015 Lab: Guodian
Duel cylinder, horizontal
airflow 2500 m³/h, fog conc. 8 g/m³

Way fog tests?

Provide information for

a) End customers

Screening candidate suppliers, risk assessment

b) Manufactures

Developing better products,
e.g. water endurable media

c) New project designers

Static or pulse-jet?

Vertical or horizontal?

Discussion and Remarks

❖ **Testers available**

Most testers for ventilation filters + humidifier
Easier with negative pressure system

❖ **Fog concentration, testing time**

8 to 10 g/m³, 3 hours, two tests in one day
20 g/m³, too short time; 3 g/m³, too long time

❖ **Vertical or horizontal**

Vertical system would show better performance
There are limited testers for vertical installation

❖ **Media tester and procedures**

To be developed, who?

❖ **Fog generation control**

Needed, but not precisely controlled yet

Discussion and Remarks (continued)

❖ **Fog challenge for dust loaded filters**

Not easy to control in terms of test procedures

❖ **Fog challenge with pulse-jet**

Probably not necessary

❖ **Influence of environmental parameters**

To be investigated, e.g. temperature, RH

❖ **Repeatability**

Need more tests

❖ **Round-Rabin test, reproducibility**

To be made, when?

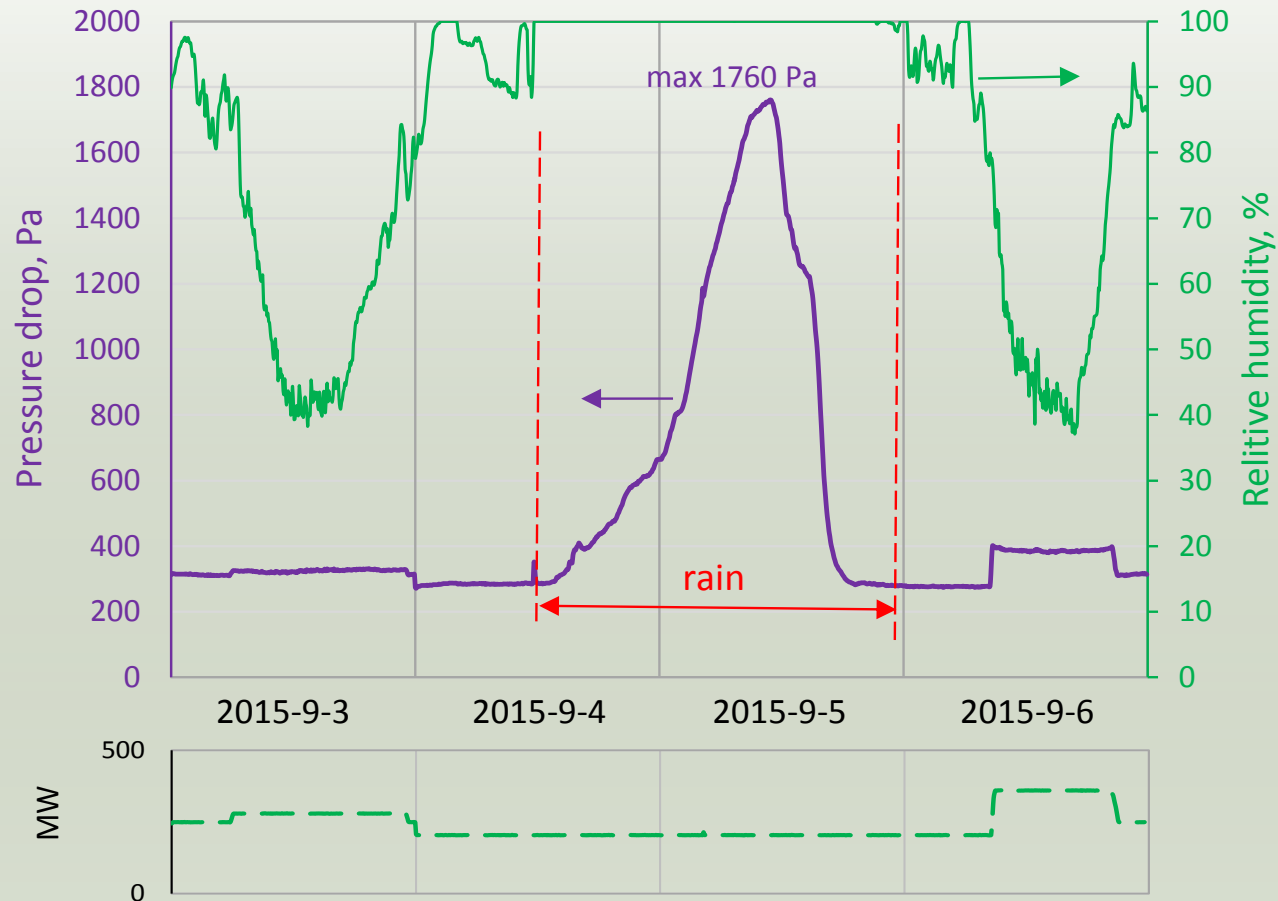
❖ **Classification**

Discuss, really need?

❖ **Static filter**

Include?

A recent example, pulse-jet system



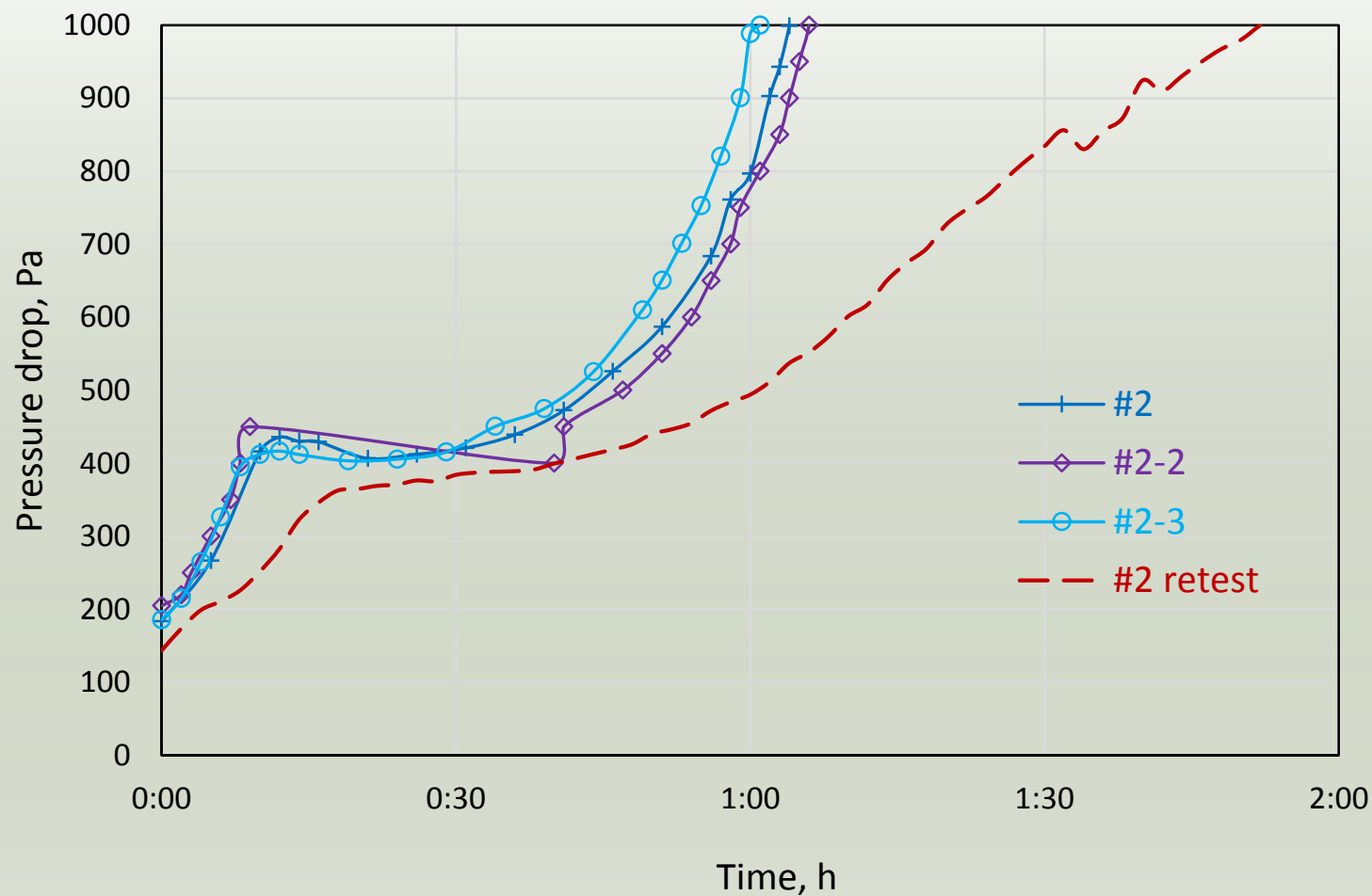
Date from Mr. L.X. Leng, Jingfeng Power Plant, Beijing, Sept. 2015



Thanks for attention

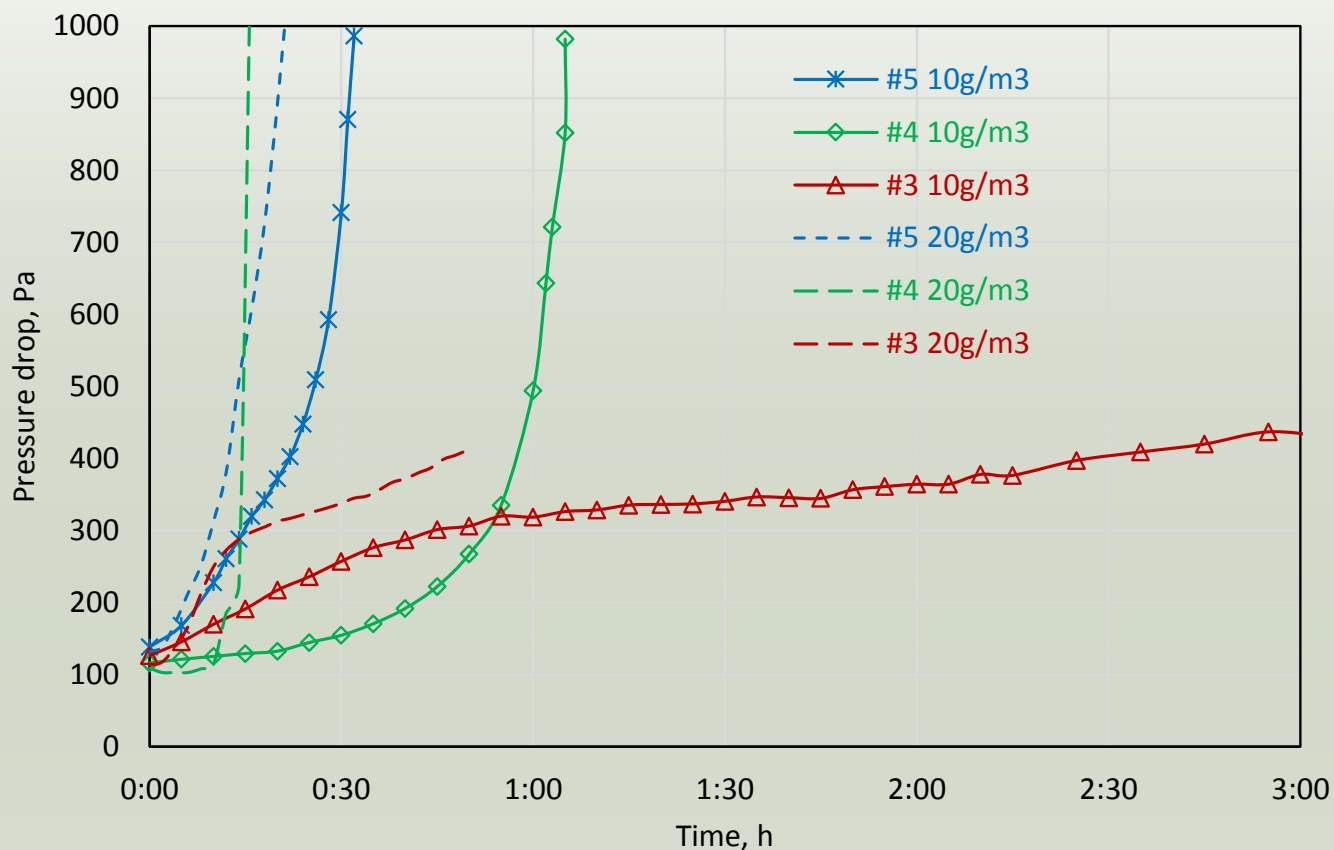
Jie Cai, cai4jie@163.com

Repeatability



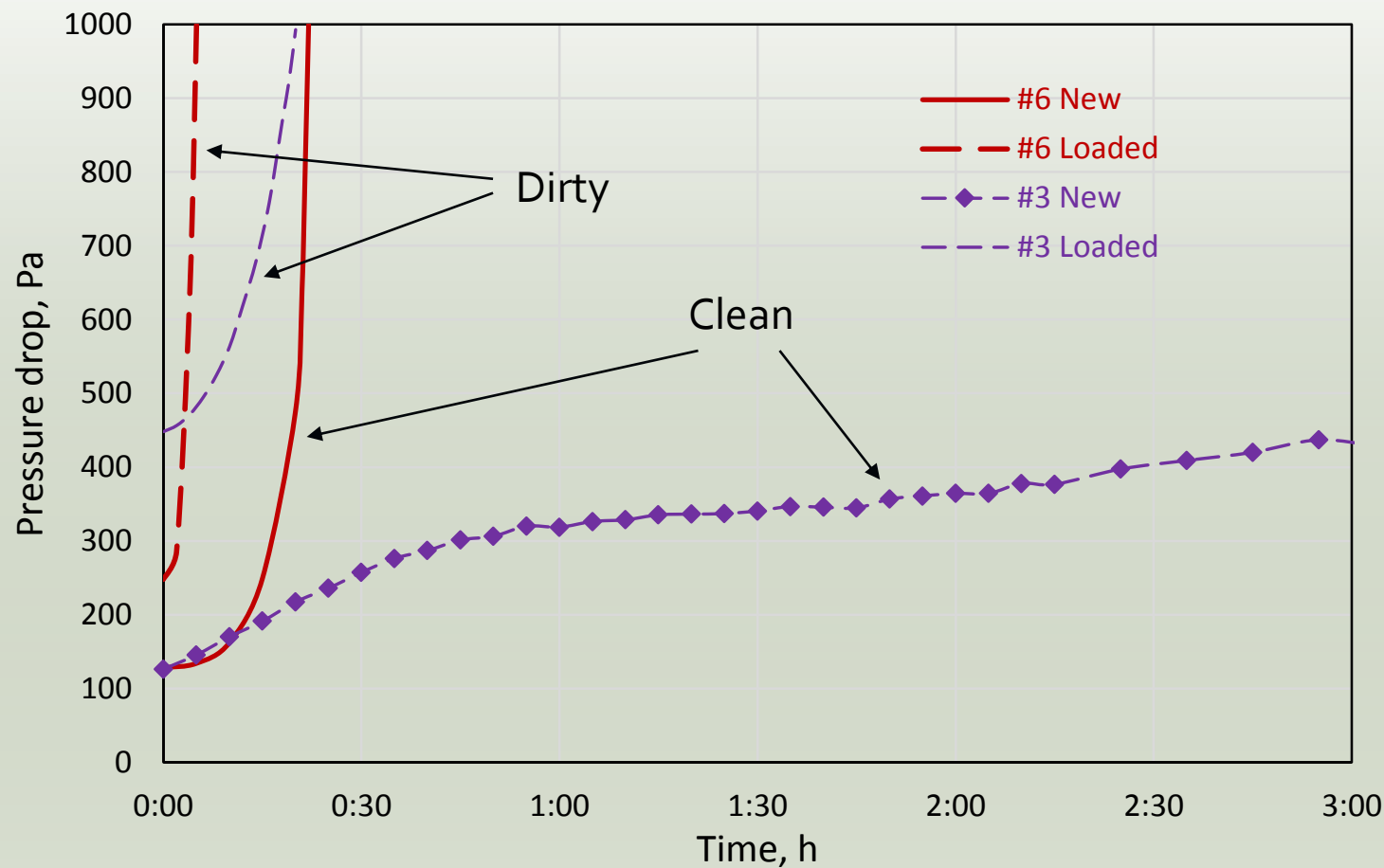
Single cylinder, Horizontal, airflow 1000 m³/h, fog conc. 10 g/m³

Influence of fog concentration

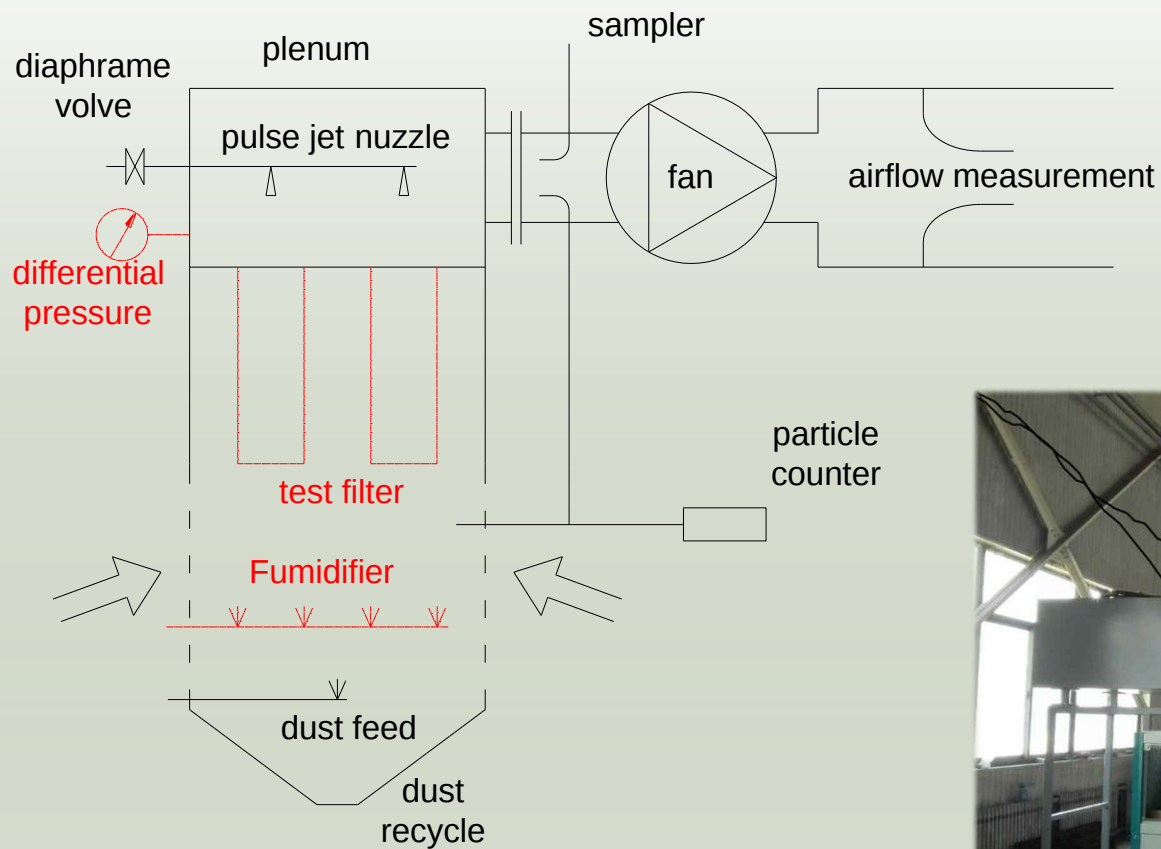


Single cylinder, horizontal, airflow 1000 m³/h, fog conc. 10 g/m³

Clean and dirty filters



Single cylinder, horizontal, airflow 1000 m³/h, fog conc. 10 g/m³



Vertical Tester Removable



Comparison test to be done
with horizontal systems, where water
accumulates on top of filter

Tests for typical climates with a removable tester

