

fiatec **Filter & Aerosol Technologie GmbH**

Water penetration through a Bag Filter at different ambient air temperatures

28.01.2019



General (1)

Test Filter:

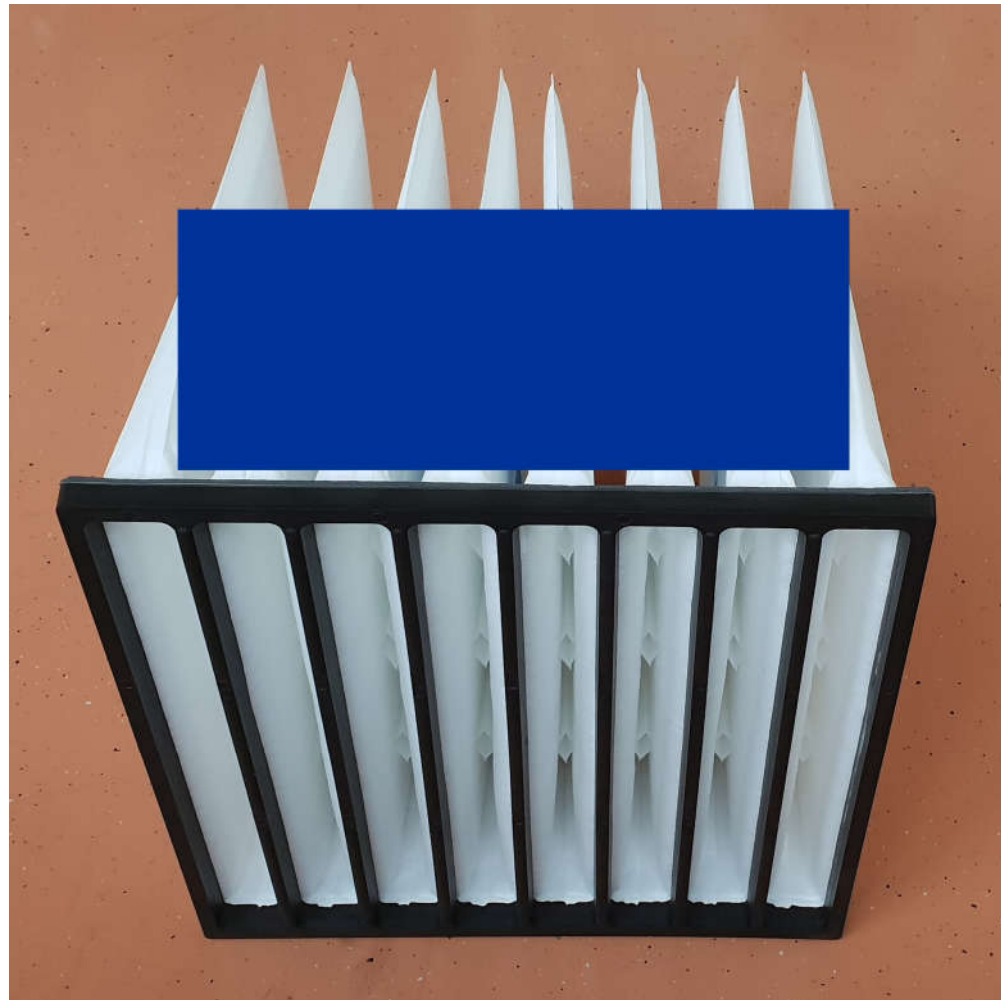
8-Pocket Bag Filter

Classification M6

Standard Size

592 x 592 x 600 mm

Synthetic Media



General (2)

Test Setup:

Test was performed on Fiatec's
ARAMCO Test Bench.

Airflow: 3.000 m³/h
Temp 1: ~ 40°C
Temp 2: ~ 6 to 8°C



Water Supply: de-ionized water using
4 x Schlick Mod 970 nozzles
1 x Schlick Mod 0/63

Feeding Rate: 5,65 g/m³ / 400 g/min



Test Filter Upstream



New Filter

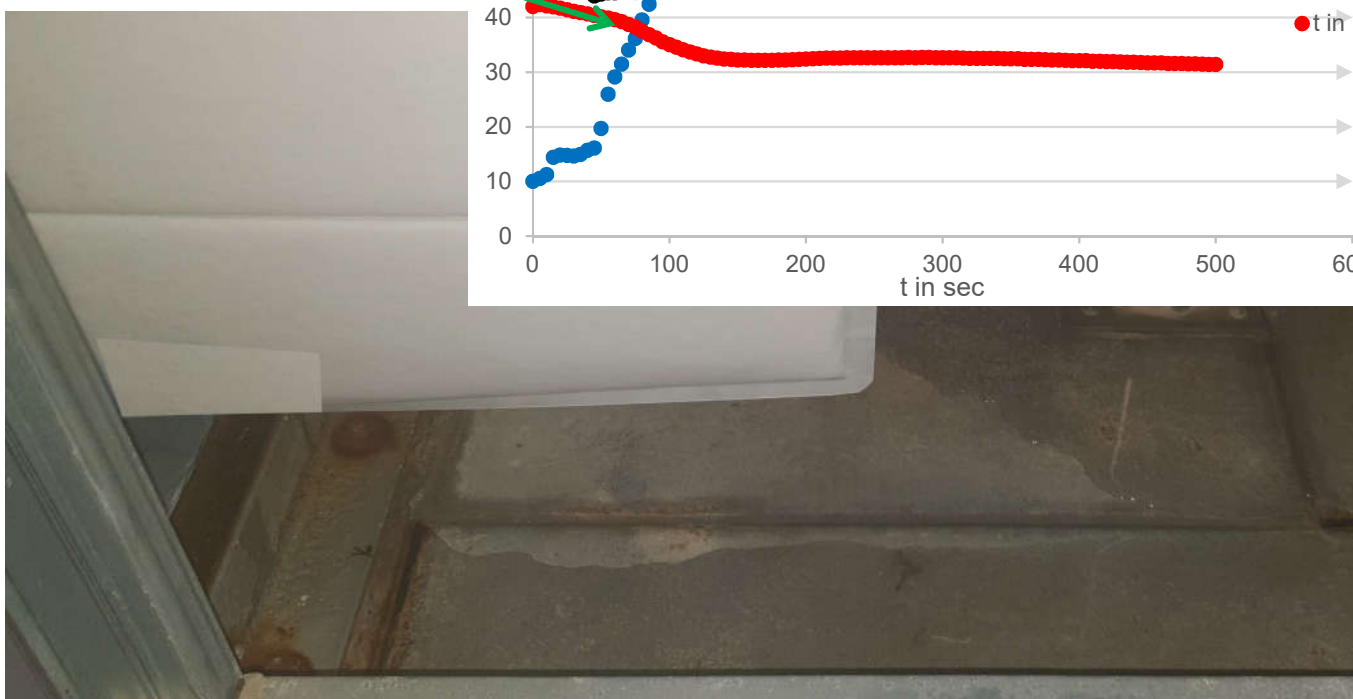


Filter after Test

Trial 1 (3) - High Ambient Air Temperature

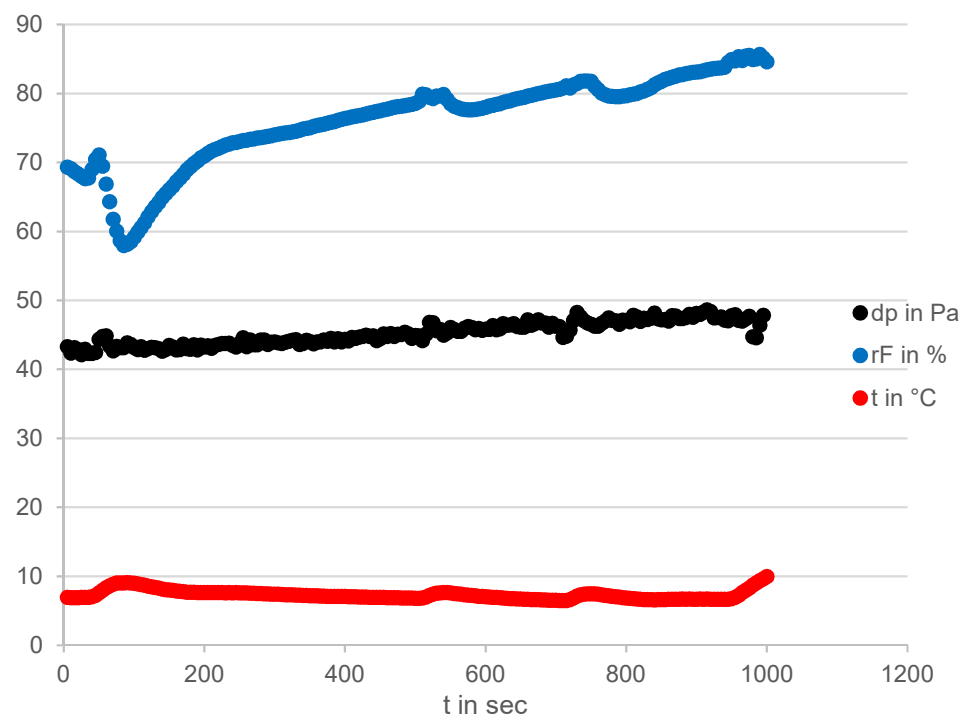
Result: Water pouring through media after 6 to 8 min

T-drop with tap water



Trial 2 (4) - Low Ambient Air Temperature

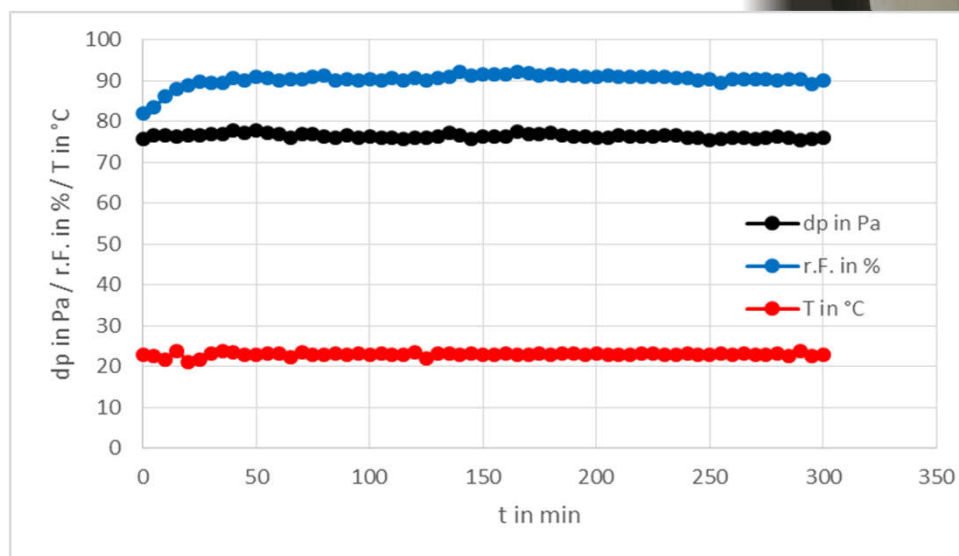
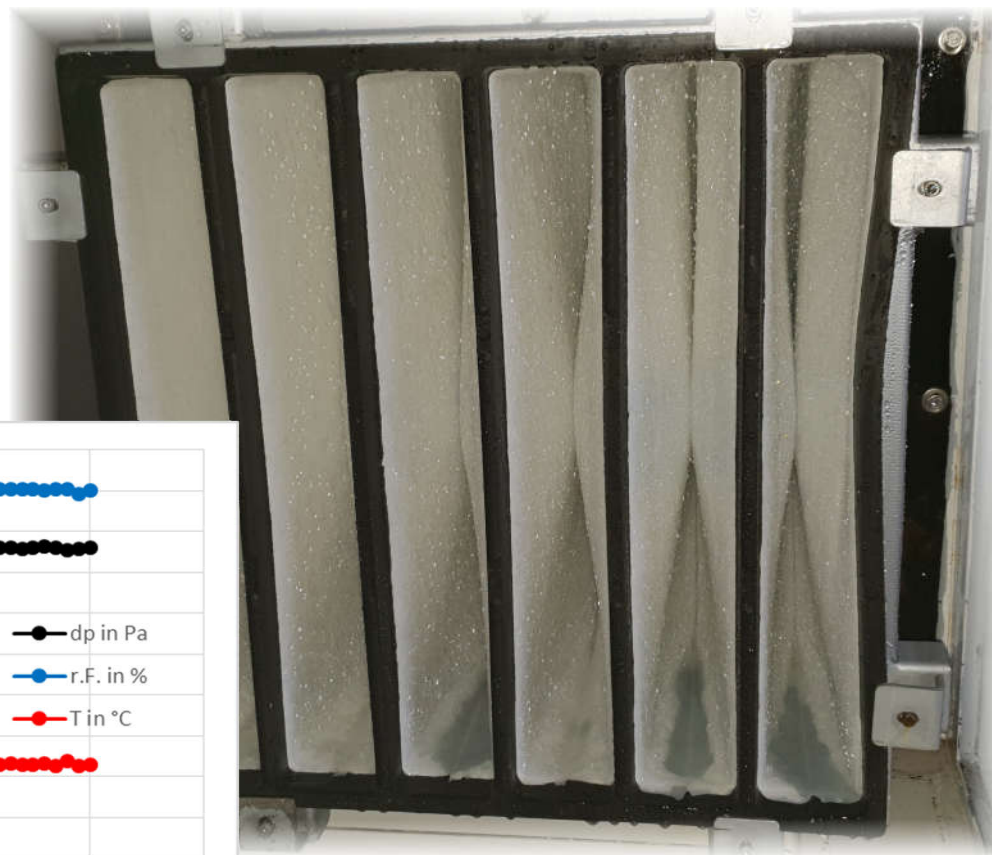
Result: Water dropping from media after 10 to 12 min



Trial 5 - Comparison Test

Rainproof Bag Filter

No penetration after 5h



Summary

- **Water penetrated faster at higher ambient air temperature**
- **Type of penetration was different.**
 - high temp: water pouring through filter
 - low temp: water dripping
- **No significant changes in dP of filter element**

Relevant Factors

- **Dynamic Viscosity**

- Eta H₂O at 10°C: 0,001307 Ns/m²
- Eta H₂O at 40°C: 0,000653 Ns/m²

- **Surface Tension**

- Sigma H₂O at 10°C: 0,0742 N/m
- Sigma H₂O at 40°C: 0,0696 N/m

- **Media Properties**

- **Different dP at different temperatures due to different density and viscosity of the air.**

**THANK YOU FOR YOUR
ATTENTION**