

TITLE:

- Videos - Up-flow filtration velocities for rapid sand filter grains 0.8-1.25 mm in water

SHORT DESCRIPTION:

- Videos of up-flow filtration velocities for rapid sand filter grains 0.8-1.25 mm in water for various flow rates at 12 degrees Celsius for the research for optimising Extended terminal sub-fluidisation wash in drinking water filtration processes

FORMAT:

- 43 wmv videos (details see below)

CONTACT INFORMATION:

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ORGANIZATIONS:

- Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department of Water Management
- Delft University of Technology, Faculty of Mechanical, Maritime and Materials Engineering, Department of Process and Energy
- Waternet, Amsterdam (funder)
- HU University of Applied Sciences Utrecht, Institute for Life Science and Chemistry
- Queen Mary University of London, Division of Chemical Engineering, School of Engineering and Materials Science

SUBJECT:

- Hydraulic modelling of multiphase flow systems

KEYWORDS:

- multiphase phenomena
- liquid-solid fluidisation
- drinking water treatment
- circular sustainable processes
- rapid sand filtration
- extended terminal sub-fluidisation wash
- filter backwash
- filter ripening
- hydraulic modelling

METHODOLOGICAL INFORMATION:

- Camera: Canon LEGRIA HF G25
- 43 videos of rapid sand filter grains in an experimental setup
- Rapid sand filter grains (0.8-1.25 mm) in a D=57 mm PVC transparent cylindrical column with water at 12 °C for various linear flow rates (flow from left to right). An advanced experimental study at the pilot plant at Waternet Amsterdam.



ADDITIONAL TECHNICAL INFORMATION:

Velocity [m/h]	Filename
40.0	Backwashing state 1.wmv
40.0	Backwashing state 2.wmv
20.0	Backwashing state 3.wmv
0	Backwashing state 4 end filtration.wmv
0-40.0	Backwashing state 5 start.wmv
40.0	Backwashing state 6.wmv
5.0	Backwashing state 7 etsw.wmv
5.0	ETSW bed with channel formation 1 (5 mph).wmv
5.0	ETSW bed with channel formation 2 (5 mph).wmv
5.0	ETSW bed with channel formation 3 (5 mph).wmv
5.0	ETSW bed with channel formation 4 (5 mph).wmv
5.0	ETSW bed with channel formation 5 (5 mph).wmv
5.0	ETSW bed with channel formation 6 (5 mph).wmv
10.0	ETSW bed with channel formation 7 (10 mph).wmv

Velocity [m/h]	Filename
0.8	01 RSF_Video - Fixed, no movement.wmv
1.0	02 RSF_Video - Fixed, no movement.wmv
1.0	03 RSF_Video - Fixed, no movement.wmv
2.0	04 RSF_Video - Fixed, no movement.wmv
3.0	05 RSF_Video - Fixed, no movement.wmv
3.0	06 RSF_Video - Fixed, no movement.wmv
4.0	07 RSF_Video - Fixed, no movement.wmv
5.4	08 RSF_Video - Fixed, no movement.wmv
5.9	09 RSF_Video - Fixed, no movement.wmv

7.1	10 RSF_Video - Fixed, no movement.wmv
8.2	11 RSF_Video - Fixed, no movement.wmv
9.0	12 RSF_Video - Fixed bed with ETSW setting.wmv
11.2	13 RSF_Video - Fixed bed with ETSW setting.wmv
10.4	14 RSF_Video - Fixed bed with ETSW setting.wmv
10.5	15 RSF_Video - Fixed bed with ETSW setting.wmv
18.0	16 RSF_Video - Fixed bed, top partiles movie a little.wmv
21.9	17 RSF_Video - Fixed bed, top partiles movie a little.wmv
23.7	18 RSF_Video - Fixed bed, top partiles movie a little.wmv
25.5	19 RSF_Video - Fixed bed, top partiles movie a little.wmv
26.0	20 RSF_Video - Fixed bed, top partiles movie a little.wmv
28.2	21 RSF_Video - Fixed bed, top partiles movie a little.wmv
26.3	22 RSF_Video - Sudden little fluid local spouts and particle movement.wmv
26.4	23 RSF_Video - Local particle movement.wmv
27.6	24 RSF_Video - Local particle movement.wmv
30.7	25 RSF_Video - Local particle movement.wmv
30.7	26 RSF_Video - Local particle movement.wmv
30.7	27 RSF_Video - Local spouts and particle movement.wmv
32.3	28 RSF_Video - Local spouts and particle movement.wmv
32.6	29 RSF_Video - Local spouts and particle movement.wmv
33.0	30 RSF_Video - Around minimum fluidisation point.wmv
33.4	31 RSF_Video - Around minimum fluidisation point.wmv
34.1	32 RSF_Video - Around minimum fluidisation point.wmv
35.2	33 RSF_Video - Around minimum fluidisation point.wmv
35.9	34 RSF_Video - Around minimum fluidisation point.wmv
35.7	35 RSF_Video - Minimum fluidisation point.wmv
38.3	36 RSF_Video - Minimum fluidisation point.wmv
39.5	37 RSF_Video - Minimum fluidisation point.wmv
n.a.	38 RSF_Video - Start-up and setting by knocking on wall.wmv
n.a.	39 RSF_Video - Stop flow, setting by knocking on wall.wmv
n.a.	40 RSF_Video - Switching off the pump, fast settling.wmv
n.a.	41 RSF_Video - Switching on and off the pump.wmv
n.a.	42 RSF_Video - Switching on the pump instability.wmv
n.a.	43 RSF_Video - Switching on the pump fast expansion.wmv

PROJECT:

- This research is part of the project “Hydraulic modelling of liquid-solid fluidisation in drinking water treatment processes” carried out by Waternet, Delft University of Technology, and HU University of Applied Sciences Utrecht and Queen Mary University of London. Financial support came from Waternet Drinking Water Production Department.

SHARING AND ACCESS INFORMATION:

- 4TU.ResearchData
- Delft, 2 December 2020