

TITLE:

- Videos - Fluidisation for various velocities (calcite-pellets 0.8-0.9mm 1.4-1.7 mm in water)

SHORT DESCRIPTION:

- videos of fluidisation calcium carbonate granules in water for various flow rates

FORMAT:

- 52 wmv videos (details see below)

CONTACT INFORMATION:

- Onno J.I. Kramer - TU Delft (CiTG, 3ME) o.j.i.kramer@tudelft.nl / onno.kramer@waternet.nl 0000-0002-4825-9869
- Cas van Schaik - Waternet/HU-ILC / cas.vanschaik@outlook.com / 0000-0002-9592-9204
- Tim M.J. Nijssen - t.m.j.nijssen@tue.nl / 0000-0002-2574-8547

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
- Eindhoven University of Technology, Department of Chemical Engineering & Chemistry, Multiphase Reactors Group
- 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
- water softening
- calcite pellets
- liquid-solid fluidisation

METHODOLOGICAL INFORMATION:

- Camera: Canon LEGRIA HF G25
- 52 videos calcite grains fluidised in water in an experimental setup
- CaCO₃ calcite pellets (1.4-1.7mm) and (0.8-0.9mm) in a D=57 mm PVC transparent cylindrical column with water at 18 °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:

- File: CP__08-09 Video 01.wmv
- File: CP__08-09 Video 02.wmv
- File: CP__08-09 Video 03.wmv
- File: CP__08-09 Video 04.wmv
- File: CP__08-09 Video 05.wmv
- File: CP__08-09 Video 06.wmv
- File: CP__08-09 Video 07.wmv
- File: CP__08-09 Video 08.wmv
- File: CP__08-09 Video 09.wmv
- File: CP__08-09 Video 10.wmv
- File: CP__08-09 Video 11.wmv
- File: CP__08-09 Video 12.wmv
- File: CP__08-09 Video 13.wmv
- File: CP__08-09 Video 14.wmv
- File: CP__08-09 Video 15.wmv
- File: CP__08-09 Video 16.wmv
- File: CP__08-09 Video 17.wmv
- File: CP__08-09 Video 18.wmv
- File: CP__08-09 Video 19.wmv
- File: CP__08-09 Video 20.wmv
- File: CP__08-09 Video 21.wmv
- File: CP__08-09 Video 22.wmv
- File: CP__08-09 Video 23.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, 24 November 2020

Film #	Velocity [m/h]	Info
CP_14-17 Video 00	20	Fixed bed
CP_14-17 Video 01	53	Just below MF
CP_14-17 Video 02	57	MF, individual channels
CP_14-17 Video 03	67	Fluidisation, vertical channels
CP_14-17 Video 04	74	Local sludging behaviour
CP_14-17 Video 05	77	“”, Larger channels
CP_14-17 Video 06	84	“”, Individual voids, shock waves
CP_14-17 Video 07	91	Horizontal waves, occasionally sometimes upwards, sometimes downwards, a bit chaotic
CP_14-17 Video 08	98	“”
CP_14-17 Video 09	106	“”
CP_14-17 Video 10	113	Max small pump
CP_14-17 Video 11	111	Large pump
CP_14-17 Video 12	147	Large voids
CP_14-17 Video 13	180	Re-circulations, voids down vertically, up horizontally, moves up faster
CP_14-17 Video 14	214	“” Vortices
CP_14-17 Video 15	259	More and larger
CP_14-17 Video 16	274	More and more
CP_14-17 Video 17	353	Mega vortices and whirls
CP_14-17 Video 18	435	Tornados

Film #	Velocity [m/h]	Info
CP_08-09 Video 01	0	Fixed, small pump
CP_08-09 Video 02	0	Fixed
CP_08-09 Video 03	0	Fixed
CP_08-09 Video 04	24	Fixed
CP_08-09 Video 05	24	Starting MF
CP_08-09 Video 06	25	MF, individual streams
CP_08-09 Video 07	31	Particles restless, in their place
CP_08-09 Video 08	42	Fluid, expansion, proportional quiet movement
CP_08-09 Video 09	74	Re-circulations rotations
CP_08-09 Video 10	83	Proportional voids, little vortices
CP_08-09 Video 11	98	Down vertically, up horizontal movements
CP_08-09 Video 12	114	Limit small pump
CP_08-09 Video 13	129	Large pump
CP_08-09 Video 14	129	“”
CP_08-09 Video 15	145	“” But faster
CP_08-09 Video 16	161	“”
CP_08-09 Video 17	192	Vortices
CP_08-09 Video 18	196	“” Down and upwards whirls
CP_08-09 Video 19	239	“”
CP_08-09 Video 20	278	“”
CP_08-09 Video 21	294	Waves up and down
CP_08-09 Video 22	298	Turbulent jet streams
CP_08-09 Video 23	308	Hurricanes