SEYDLITZ®

SEYDLITZ.DK/COURSES Engineering Courses

Fluid Bed Technology: Fluidisation, Granulation/Coating and Drying

May 19 - 21, 2021
At Phoenix Copenhagen in the Heart of Copenhagen, Denmark
(Possibility to join online in real time for a reduced fee)

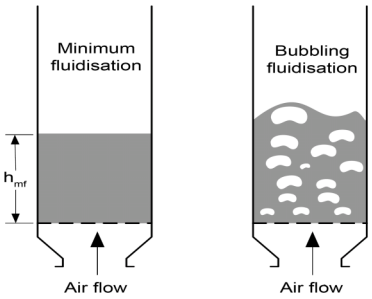
Possibility to join online

Outcome

Through alternating presentations, exercises and plenum discussions participants will acquire solid basic knowledge of fluid bed technology and fluidisation and be able to address practical problems in these fields.

Main subjects taught in the course

- Fluidisation and classification of particles
- Fluid bed designs -batch and continuous
- Formulation and process considerations
- Coating and agglomeration at particle level
- Scale-up of fluid bed systems
- Drying in fluid beds
- Moisture in air and powder
- Energy and mass balances
- Operational problems and how to solve them



Target group

The course addresses specialists, executives, technicians, planners & plant designers working in the chemical, pharmaceutical, biotech and/or food industry with manufacture or development of particle products in batch or continuous fluid bed processes such as granulation, coating, agglomeration and/or drying.

Form

The course runs for three consecutive days with alternating presentations, exercises and plenary discussions. The course is held in English.

The course is broadcasted in real time online via an online conference tool allowing participants not present in Copenhagen to join the full course.

All course material is available for download in advance of the course. It will be possible ask questions during the course also for online participants.

Course dinner

On the evening of the first day the participants are invited to a course dinner at a nearby restaurant in the heart of Copenhagen.

Registration and further information: Please see the next pages

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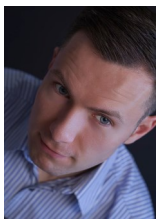
Teacher

Ph.D., HD Peter Dybdahl Hede



- Specialist in industrial particle technology with many years of experience from biotech, food ingredient and pharma industries
- PhD in Fluid bed technology and M.Sc. in Chemical Engineering
- Many years of teaching experience from The Danish Society of Engineers and numerous in-service training courses in particle technology and chemical unit operations
- Contact: PTHD@seydlitz.dk

Co-presenters

- Equipment manufacturers

NEUHAUS NEOTEC

Glatt®

Course Fee

The course fee is payable in advance either via direct deposit (details included in the invoice) or via credit card payment available upon online registration at our homepage.

The course fee includes all course presentations, calculation exercises and solutions, selected scientific papers as well as course diploma (all in PDF format).

All course material is available for download in advance of the course.

For physical presence in Copenhagen:
Per delegate EUR 2125,- plus VAT. VAT is reclaimable.

For online course presence during the three days:
Per delegate EUR 1785,- plus VAT. VAT is reclaimable.

Registration

Binding registration at **www.seydlitz.dk/courses** no later than **April 30 2021.**

In case of any questions, please contact **info@seydlitz.dk** or by phone **+45 44 10 87 00**.

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Course contents

CEST time zone

Day 1:	Subject
10.00 - 10.15	Course introduction
10.15 - 12.00	Particles and particle size distributions Particle shape and sphericity Measurement of particle size
12.00 - 13.00	Lunch
13.00 - 13.45	Single particles in fluids Stokes law Terminal velocity Particles falling under gravity in a fluid Stokes stopping distance
13.45 - 16.00	Multiple particles in fluids Fluidisation theory, types of fluidisation Minimum fluidisation velocity Pressure drop estimations, Two-phase theory, Geldart Chart Classification of particles, bubbles - diameter and bubble rise velocity Expanded bed height, elutriation, fluidisation regimes
18.00 - 21.30	Course dinner at restaurant in nearby Nyhavn

Day 2:	Subject
9.00 - 10.00	Fluidisation flow modes and mixing in fluid beds Introduction to fluid bed granulation and coating Industrial examples of granulated products
10.00 - 12.00	Fluid bed granulation/coating – equipment design and operations
12.00 - 13.00	Lunch
13.00 - 15.30	Fluid bed designs - top-spray, Wurster, tangential - batch vs. continuous fluid beds Back-mix vs. plug flow Use of fluidisation: Powder transport via fluidization -dense-phase/dilute-phase transport Saltation & choking velocity How to control a fluid bed process Filter systems and safety installations Atomisation: Two-fluid nozzles and the influence of droplets and droplet size Agglomeration and coating at particle level - viscous Stokes granulation theory Mechanical strength of granulates Modelling of granulation processes (DEM, population balances, CFD) Scale-up of fluid bed granulation systems, Practical correlations
15.30 - 16.00	Operational problems in fluidised beds

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Course contents - continued

CEST time zone

Day 3:	Subject
9.00 - 9.30	Mass and energy balances in fluid bed drying Drying and energy consumption - how can we save energy?
9.30 - 10.30	Moisture in air, H-X diagrams and how to use it for fluid bed drying estimations
10.30 - 11.00	Moisture in powder When powders lump: Common problems with moisture in powder
11.00 - 12.00	Design of fluid beds for granulation and coating processes NEUHAUS NEOTEC
12.00 - 13.00	Lunch
13.00 - 15.00	Design of fluid beds for gran. and coating processes (continued) Design of fluid beds for drying processes Case examples NEUHAUS NEOTEC
15.00 - 15.45	Formulation issues when working with products produced in fluid beds Case example from the biotech industry
15.45 - 16.00	Final remarks, Course evaluation

VISITCOPENHAGEN THE OFFICIAL WEBSITE