



June 17- 19, Trondheim, Norway

CFD 2014

10th International Conference on
Computational Fluid Dynamics
in the Oil & Gas, Metallurgical and
Process Industries

PROGRAM

10th International Conference on Computational Fluid Dynamics
in the Oil & Gas, Metallurgical and Process Industries

Organized by:



Main sponsors:



Monday June 16
 1700-1800 Conference reception, RICA Nidelven

Tuesday June 17

	Auditorium A (Trondhjemalen)	Auditorium B (Gråkallen/Lade)	Auditorium C (Strinda/Illsvika)
0800-0820	Registration		
0820-0840	Opening		
0840-0925	Keynote: Phil Schwarz (CSIRO) multiphase flow applications of CFD - Experiences and Pragmatism	Complex	
0930-1100	Session 1A: Pragmatic Modelling (Chair: Phil Schwarz)	Session 1B: Packed Beds (Chair: Gerald Pereira)	Session 1C: Casting & Solidification (Chair: Jan Erik Olsen)
0930-1000	On pragmatism in industrial modeling , K.E. Trætli-Einarsrud, A. Solheim, S.T. Johansen & J. Zoric	A two-fluid model coupled with porous medium description to predict liquid spreading in trickle-bed reactors , Z.Solomenko, M.Fourati, Y.Haroun, F.Larachi, C.Boyer & F.Augier	Prediction of mass transfer between liquid steel and slag at continuous casting mold , P.Gardin, S.Gauthier & S.Vincent
1000-1020	A six chemical species CFD model of alumina reduction in a Hall-Héroult cell , P.J.Witt, Y.Q.Feng, G.A.Snook, I.Eick & M.Cooksey	Local simulation of the effect of void fraction on the overall reaction rate in packed beds reactors , M. Rolland	Structure effect of turbo-swirl in an uphill teeming ingot casting process , H. Bai, M. Ersson & P. Jönsson
1020-1040	A pragmatic approach to CFD modelling of separation processes , K.E.Trætli-Einarsrud, B.Panjwani & V.Paucharad	Transport of the moments of the age distr. by CFD in fixed bed operation units, L.Fangueiro Gomes, F.Augier, D.Leinekugel-le-Cocq, I.Vinkovic & S.Simoëns	Modelling of tracer mixing in continuous casting tundishes , C.Chen, A. Tilliander, L.T.I. Jonsson, G. Cheng & P. Jönsson
1040-1100	Multi-scale process models to enable the embedding of CFD derived functions: Curtain drag in flighted rotary dryers , A. Lee, M. Sheehan & P.A. Schneider	A multi-scale model for oxygen carrier selection and reactor design applied to packed bed CLC , M.Tabib, J.Morud, S.T.Johansen & S.Amini	Num. investigation of the immersion quenching process for heat treated parts using an eulerian multi-fluid approach , R.Kopun, D.Greif, Z.Kovacic & M.Suffa
1100-1130	Break		
1130-1300	Session 2A: Pragmatic Modelling (Chair: Phil Schwarz)	Session 2B: Particles & DEM (Chair: Niels Deen)	Session 2C: High Temperature Processes (Chair: Peter Witt)
1130-1200	Pragmatic approach to efficient modeling of commercial MOVPE reactors , H.Laux & J.Bassen	DEM-CFD simulations and imaging experiments on charging of pneumatically conveyed powders , M.W.Korevaar, J.T.Padding, J.Wang, M. De Wit, M.A.I.Schutyser, M.A.van der Hoef & J.A.M.Kuipers	Multi-scale modeling of hydrocarbon injection into the blast furnace raceway , C.Maier, C.Jordan, C.Feilmayr, C.Thaler & M.Harasek
1200-1220	CFD in problem analysis and optimization – the importance of correct boundary conditions , E.Manger	Establishing predictive capability of DEM simulations: sliding and rolling friction coefficient of non-spherical particles , L. Benvenuti, A. Aigner, D. Queteschner, M. Combarros, S. Pirker & C. Kloss	CFD modelling of a rotating arc plasma reactor , S.G.Johnsen & A.J.Simonsen
1220-1240	A combined multifluid-PBE model for a slurry bubble column reactor: application to the Fischer-Tropsch synthesis , C.B.Vik, J.Solsvik & H.A.Jakobsen	Understanding segregation in granular media , G.G.Pereira, M.Sooriyabandara & P.W.Cleary	Numerical investigation of syngas combustion in a HITAG system using CFD technique s, M.Saffari Pour, P.Mellin, W.Yang & W. Blasiak
1240-1300	Discussion on Pragmatic Modelling: J.Zoric / S.T.Johansen	Hard-sphere modelling of liquid bridge agglomeration , B.V.Balakin, G.Shamsutdinova & P.Kosinski	CFD Simulation of a burner head in a secondary reformer for ammonia synthesis , J.Bujalski & J.Dauparas
1300-1400	Lunch		
1400-1450	Keynote: Fotis Sotiropoulos (University of Minnesota) Immersed boundary methods for simulating flow-structure interaction in energy, environmental and cardiovascular problems		
1450-1620	Session 3A: Fluidized Beds (Chair: Harald Lauk)	Session 3B: Euler-Lagrangian Models (Chair: Stein Tore Johansen)	Session 3C: Combustion & Turbulence (Chair: Eirik Manger)
1450-1520	Num. investigation of the vertical plunging force of a spherical intruder into a prefluidized granular bed , Y.Xu , J.T.Padding, M.A.van der Hoef & J.A.M.Kuiper	Comparing Euler-Euler and Euler-Lagrange based modelling approaches for gas-particle flows , M.Braun, M.Lambert, S.Ozarkar & J.Sanyal	Multi-scale modelling of turbulent flows by embedded lattice-Boltzmann co-simulation , S.Pirker, S.Puttinger, P.Seil, S.Schneiderbauer
1520-1540	Operating experience with a high-temperature pseudo-2D fluidized bed reactor designed especially for detailed local data collection , A.Zaabout, S.Cloete, S.T.Johansen, S.Amini	Agglomeration study in the inlet section of a large scale spray dryer using stochastic Euler-Lagrange modelling , S.K.Pawar, J.T.Padding, N.G.Deen, A.Jongsma, F.Innings & J.A.M.Kuipers	Lifetime distributions of turbulent flow structures in chemical process equipment , F.Ghasempour, R.Andersson, D.J.Bergstrom & B.Andersson
1540-1600	Heat transfer in gas-solid fluidized bed through an integrated DIA/PIV/IR technique , A.Patil, E.A.J.F.Peters & J.A.M.Kuipers	State of the art in mapping schemes for dilute and dense Euler-Lagrange simulations , S.Radl, B.Capa Gonzales, C.Goniva & S.Pirker	Modeling of post combustion inside the off-gas duct system of the Ovako electric arc furnace , N.Arzpeyma, M.Ersson & P.Jönsson
1600-1620	Hybrid Eulerian-Lagrangian modelling of bi-disperse fluidized beds , S.Schneiderbauer, S.Puttinger & S.Pirker	Numerical simulation of ice accretion on vessels and structures due to sea spray , M.Popescu & S.T.Johansen	Modelling of the Ferrosilicon furnace: effect of boundary conditions and burst , B.Panjwani & J.E.Olsen
1620-1650	Break		
1650-1800	Sponsor presentations (Chair: Jan Erik Olsen)	Session 4B: Population Balance Methods (Chair: Kristian E. Trætli-Einarsrud)	Session 4C: Rotating Machinery (Chair: Fotis Sotiropoulos)
1650-1720	CD-Adapco	A study of breakage by single drop experiments , J. Solsvik & H.A. Jakobsen	CFD simulations of a Wankel pump with moving and static grids , J. Y. C Leong, T. Ba, S. Y. M. Wan, Y. Zhao, C. W. Kang, W. L. Loh & A. T. B. Lim
1720-1740	ASCOMP	Modelling of bubble size distr. by using homogeneous and inhomogeneous population balance approaches , L.Deju, S. C. P.Cheung, G. H.Yeoh & J.Y.Tu	CFD study of the Influence of pre-rotation of multiphase flow on pump performance , M.P.Strongin
1740-1800	ANSYS	Simulation of polydisperse gas-liquid systems with QBMM , A.Buffo, D.L.Marchisio, M.Vanni, J.Hofinger & P.Renze	Investigating CFD study of centrifugal compressor with vaneless diffusers , N.Hasan
1800	Close		

Wednesday June 18

	Auditorium A (Trondhjemssalen)	Auditorium B (Gråkallen/Lade)	Auditorium C (Strinda/Illsvika)
0830-0925	Keynote: William L. Oberkampf (William L Oberkampf Consulting) Concepts and Practice of Verification, Validation, and Uncertainty Quantification		
0930-1100	Session 5A: Pipe Flow (Chair: Sanjoy Banerjee)	Session 5B: Packed Beds & Permeability (Chair: Matthieu Rolland)	Session 5C: Metallurgy & Leaching (Chair: Pascal Gardin)
0930-1000	<i>Forecasting turbulent drag reduction in a pipeline flow on the basis of Taylor-Couette device experimental data</i> , D.Eskin	<i>CFD simulations of flow in random packed beds of spheres and cylinders: analysis of the velocity field</i> , F.Dorai, M.Rolland, A.Wachs, M.Marcoux & E.Clément	<i>Modelling thermal effects in the molten iron bath of the Hlsmelt reduction vessel</i> , P. Witt, Y.Q.Feng & M. P. Davis
1000-1020	<i>CFD modelling of gas entrainment at a propagating slug front</i> , J.Hua, J.Nordbø & M.Foss	<i>Pore-scale simulation of fluid flow in packed-bed reactors via rigid-body simulations and CFD</i> , G. Boccardo, L. Del Plato, D. Marchisio, F. Auglier, Y. Haroun, D. Ferre & M. Icardi	<i>Design optimization of a metal tapping room for minimized dust emission</i> , B.Panjwani, B.Wittgens, S.T.Johansen & B.Ravary
1020-1040	<i>Computational modelling of subsea hydrates formation and associated risks and impact on flow assurance</i> , M.Labois, N.Pagan, D.Lakehal & C.Narayanan	<i>Automated workflow for spatially resolved fixed bed reactors with spherical and non-spherical particles</i> , T.Eppinger, N.Jurtz & R.Aglave	<i>Heap leaching simulation: beyond shrinking core models</i> , L.Cai, R.Ferrier, Q.Lin, P. Mostaghimi, J.G.Gorman & S.Neethling
1040-1100	<i>Pressure and temperature prediction in presence of hydrate</i> , N.Hasan	<i>Numerical model for flow in rocks composed of materials of different permeability</i> , R Li, S. Yang, J.Pan, G.G. Pereira, J. Taylor, B. Clennell & C. Zou	<i>Design and improvement of an industrial airlift reactor using computational fluid dynamics</i> , T.Song, K.Jiang, J.Zhou, D.Wang, N.Xu & Y.Feng
1100-1130	Break		
1130-1300	Session 6A: Bubble & Droplet Dynamics (Chair: Antonio Buffo)	Session 6B: Fluidized Beds (Chair: Shahriar Amini)	Session 6C: Oil & Gas Applications (Chair: Martin Foss)
1130-1200	<i>A critical comparison of surface tension models for the volume of fluid method</i> , M.W. Baltussen, J.A.M. Kuipers & N.G. Deen	<i>The parametric sensitivity of fluidized bed reactor simulations carried out in different flow regimes</i> , S.Cloete, J.H.Cloete, S.T.Johansen & S.Amini	<i>Cool down simulations of subsea equipment</i> , A. Jensen & S. Grafsrønningen
1200-1220	<i>Numerical simulation of the influence of bubble bursting on a molten iron surface</i> , Y.G.Xu, M.Ersson & P.G.Jönsson	<i>Bed expansion and pressure drop in a bubbling fluidized bed</i> , K.J.Mandich & R. J.Cattolica	<i>Predicting emulsion pressure drop in pipes through CFD multiphase rheology models</i> , N. J. Inkson, J. Plasencia & S. Lo
1220-1240	<i>An enhanced front tracking method featuring volume conservative remeshing and mass transfer</i> , I.Roghair, M.van Sint Annaland & J.A.M.Kuipers	<i>Validation of a CFD model for 3d cylindrical gas-solid fluidized beds</i> , V.Verma, J.T. Padding, N.G. Deen & J.A.M.Kuipers	<i>Transient modelling of relief lines for surface testing application</i> , B.Zielinska, F.Allouche, L.Fraser & N.Zafar
1240-1300	<i>Drop breakup modelling in turbulent flows</i> , B. Lalanne, S. Tanguy, J. Vejrazka, O. Masbernat & F. Risso	<i>Procedural method for simulating an industrial urea granulation process</i> , P.Lau & M.Kind	
1300-1400	Lunch		
1400-1450	Keynote: Bernhard Müller (NTNU, Trondheim) Mach-uniform methods for multiphase flow simulation.		
1450-1620	Session 7A: Methods & Fundamentals (Chair: Bernhard Müller)	Session 7B: Fluidized Beds (Chair: Niels Deen)	Session 7C: Fluid Interfaces (Chair: Olivier Masbernat)
1450-1520	<i>Towards a mechanistic model for subcooled flow boiling at low-pressure</i> , S.Vahaji , S.C.P.Cheung, G.H.Yeoh & J.Y.Tu	<i>DEM development of heat and mass transfer in a spout fluidized bed with liquid injection</i> , V.S. Sutkar, S.Taalman, N.G. Deen, V.Salikov, S.Antonyuk, S.Heinrich & J.A.M.Kuipers	<i>Lattice Boltzmann simulations applied to understanding stability of multiphase interfaces</i> , G.G.Pereira
1520-1540	<i>Enabling CFD codes to perform systematic parameter continuation and stability analysis for realistic applications</i> , N.Cheimarios, E.D.Koronaki, H.Laux & A.G.Boudouvis	<i>Simulation of rectangular fluidized bed with Geldart D particles</i> , M.P.Tandon & A.Karnik	<i>Orr-Sommerfeld stability analysis of two-fluid Couette flow with surfactant using Chebyshev collocation method</i> , V.Bojja & M.Fernandino
1540-1600	<i>Extending a serial 3D two-phase CFD code to parallel execution over MPI by using the PETSc library for domain decomposition</i> , Å.Ervik, S.T.Munkejord & B.Müller	<i>Hydrodynamic investigation into a novel IC-CLC reactor concept for power production with integrated CO2 capture</i> , A.Zaabout, S.Cloete & S.Amini	<i>Effect of compressibility in CFD simulations of an oscillating water column device</i> , A.Kamath, H.Bihs, J.E.Olsen, Ø.A.Arntsens
1600-1620	<i>Space-time hp-adaptive DG-FEM scheme for one-dimensional multiphase flow models</i> , J.S.B.van Zwieten, R.A.W.M.Henkes, D.R. van der Heul, P.I. Rosen Esquivel, B. Sanderse & C.Vuijk	<i>CFD modelling of heat supply in fluidized bed fast pyrolysis of biomass</i> , P.Mellin, Y. Wu, E.Kantarelis & W.Yang	<i>CFD multiphase simulation of two-fluid sloshing with free surface motion using the level set method</i> , H.Bihs, A.Kamath & Ø.Arntsens
1620-1645	Break/Close		
1900	Dinner (RICA Nidelven)		

Thursday June 19

	Auditorium A (Trondhjemssalen)	Auditorium B (Gråkallen/Lade)	Auditorium C (Strinda/Illsvika)
0830-0925	Keynote: Jiyuan Tu (RMIT University) CFD Modelling of Bio-Fluids and Its Applications		
0930-1100	Session 8A: Pipe Flow (Chair: Ernst Meese)	Session 8B: Discrete Particle Modelling (DPM/DBM) (Chair: Markus Braun)	Session 8C: Particles & Deposition (Chair: Jiyuan Tu)
0930-1000	<i>CFD modelling of the two-phase flow of different mixtures in a closed system flow wheel</i> , J.F. Roca R, J.N.E. Carneiro, J.E.S. Oliveira, S. Mo, M. Fossen & S.T.Johansen	<i>Adding argon injection through the DPM +VOF technique to an advanced multi-physics and multiscale model for continuous casting of steel</i> , P.E.Ramirez Lopez, P.Jalali, U.Sjöström & C.Nilsson	<i>Analysis of particle deposition from turbulent liquid-flow onto smooth channel walls</i> , M.Dupuy, A.Xayasenh, E.Waz, P.Le Brun & H.Duval
1000-1020	<i>Modelling of particle transport and bed-formation in pipelines</i> , C. Narayanan, S. Gupta & D. Lakehal	<i>Governing physics of shallow and deep subsea gas release</i> , J.E.Olsen & P.Skjelte	<i>Modelling of pulverised fuel transport for industrial applications</i> , A.I.J.Love, D.Giddings & H.Power
1020-1040	<i>Quasi-3D modelling of two-phase flows in pipes</i> , A. Vichansky	<i>Modeling of bubbly flows with free surface using a hybrid volume of fluid and discrete bubble model approach</i> , D.Jain, J.A.M.Kuipers & N.G.Deen	<i>Numerical Study of the gas-particle flow in a conveying line: accounting for wall-friction and wall-roughness</i> , A.Soleimani, S.Schneiderbauer & S.Pirker
1040-1100	<i>Simulation of two-phase viscous oil flow</i> , S.T.Johansen, S.Mo, J.Kjølaas, C.Brekken & I.Eskerud Smith		<i>A study of simulation and experiment on airborne wear particles from wheel-rail contacts</i> , H.Liu, L.Jonsson & P.Jönsson
1100-1130	Break		
1130-1300	Session 9A: Industrial Applications (Chair: Harald Laux)	Session 9B: Bubbly Flows (Chair: Ingo Eick)	Session 9C: Separation (Chair: Dmitri Eskin)
1130-1200	<i>Fully coupled multiphase simulation of a bottom-spray wurster coater using a hybrid cpu/GPU CFD/DEM approach</i> , E. Siegmund, C. Radeke & J.G. Khinast	<i>A Baseline model for monodisperse bubbly flows</i> , R. Rzehak, E. Krepper, Th. Ziegenhein & D. Lucas	<i>CFD modeling of oil-water separation efficiency in three-phase separators</i> , L. Oshinowo, E. Elsaadawy and R. Vilagines
1200-1220	<i>Benchmark of multi-component diffusion models for simulation of MOVPE reactors</i> , J.Bassen & H.Laux	<i>Monodisperse bubbly flows with ANSYS CFX and OpenFOAM: a comparison</i> , S.H.L. Kriebitzsch, R. Rzehak & D. Lucas	<i>Towards simulating flotation with OpenFOAM</i> , G.Holzinger, G.Wierink & S.Pirker
1220-1240	<i>Effect of the wind turbine wake in large offshore wind farms</i> , M. Popescu, B.Panjwani, J.Samseth & E.Meese	<i>Experimental studies of bubbly flow in a micro-structured bubble column reactor using digital image analysis</i> , K. Thiruvalluvan Sujatha, J.A.M. Kuipers & N.G. Deen	<i>Lagrangian and Eulerian simulations of inclusion behaviour in liquid metal processing</i> , J.P. Bellot, V. Descotes & A. Jardy
1240-1300	<i>A modeling strategy for large-scale mechanical draught air-cooled systems</i> , C.J.Meyer & A.Zapke	<i>Two dimensional numerical simulation of bubble dynamics in a vertical Hele-Shaw cell</i> , X.Wang, B.Klaasen, B.Blanpain & F.Verhasghe	<i>Effect of geometric optimization of hydrocyclones</i> , N.Hasan
1300-1400	Lunch		
1400-1450	Keynote: Sanjoy Banerjee (City College of New York) What can DNS and LES do for us?		
1450-1515	Closing/Awards		
1515	End		

The organizing committee are grateful for the support from the conference sponsors: FACE (the multiphase flow assurance centre), Total, ANSYS, CD-Adapco, Ascomp, Statoil and Elkem.

