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The mathematical modelling team has many years of experience of working with international clients in the development and validation of mathematical and CFD models.

Client Base

- BNG
- BP
- Chemineer
- Hydrogen Energy
- Lyondell
- Pell Frishmann
- Perry Slignsby
- Sandusky Walmsley
- Sellafield
- Statiflo

Education/research

- MSc (2000) at Warsaw University of Technology: "Modelling of precipitation process" – work performed in co-operation with BASF AG Ludwigshafen Germany
- PhD (2006) at Warsaw University of Technology: "Mixing effects in precipitation induced by mixing with supercritical fluid" – work performed in co-operation with Nektar Therapeutics Bradford UK

Engineering Experience:

- Modelling of flow fields in complex geometries (e.g. models of rotor-stator)
- Modelling of flow fields using Large Eddy Simulations
- Modelling of flow fields with complex rheology fluids (e.g. CFD simulations of cavern formation for yield stress fluids)
- Modelling of solid-liquid systems: CFD models of solids distribution in stirred vessels, modelling of particle size distribution using population balance approach
- Modelling of gas-liquid systems: two phase CFD models of flow field in stirred tanks, modelling of bubble size distribution
- Modelling of chemical reactions in single phase and two phase systems
- CFD models of flow field for compressible fluids
- Incorporation of population balance techniques into CFD code

Consortia:

- FMP: CFD models of solids distributions in stirred vessels, CFD modelling of mixing in static mixers, Large Eddy Simulations of Kenics mixers, population balance
- Domino: CFD models of flow field in rotor-stator systems, modelling of particle break-up using population balance techniques
- WWM: CFD models of anoxic zones

EU funded projects:

- PROFORM: CFD models of flow fields in stirred tank, modelling of particle break-up and aggregation in stirred tanks. As part of this project, development of "in-house" code for solving the population balance equations.

DTI funded projects:

- M3P: CFD models of gas-liquid flow field in stirred tanks, modelling of bubble break-up and coalescence in stirred tanks
- Ultramix: CFD model of ultraviolet disinfection reactors

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