

Process Engineering, Scale-Up e Modeling

To realize a **production unit at industrial-scale** many engineering skills should be integrated:

- Process engineering and scale-up
- Simulation of fluid dynamics and thermodynamics
- Process Design

Process engineering and scale-up

- In-house development of software for modeling particular proprietary hardware
- Kinetic modeling to estimate kinetic parameters from plant experimental data
- Reconciliation of plant data
- Stationary and/or dynamic simulation of complex process patterns; the outcome of this simulation will then be the basis for the design of any industrial plant
- Analysis and energy integration of processes and systems for the production of electric power and heat



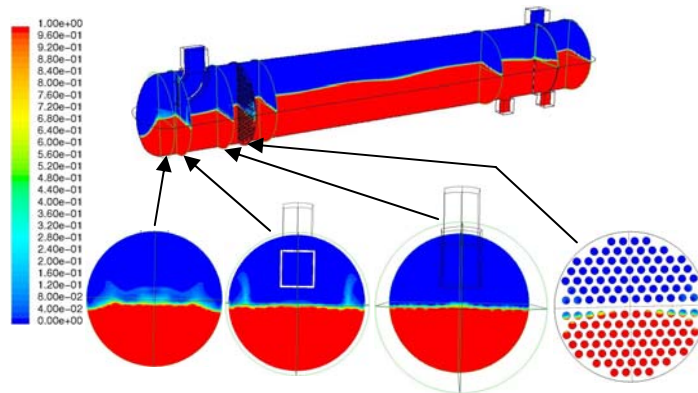
Process Engineering, Scale-Up e Modeling

Fluid dynamics and thermodynamics modeling

- Simulation of fluid flow in reactors
- Simulation of separators
- Simulation of parts of pipelines
- Simulation of parts of plant
- Simulations of equipment (blenders, distributors, etc.).
- Simulations of fire and dispersions
- Studies on the transport of oil and waxes slurry



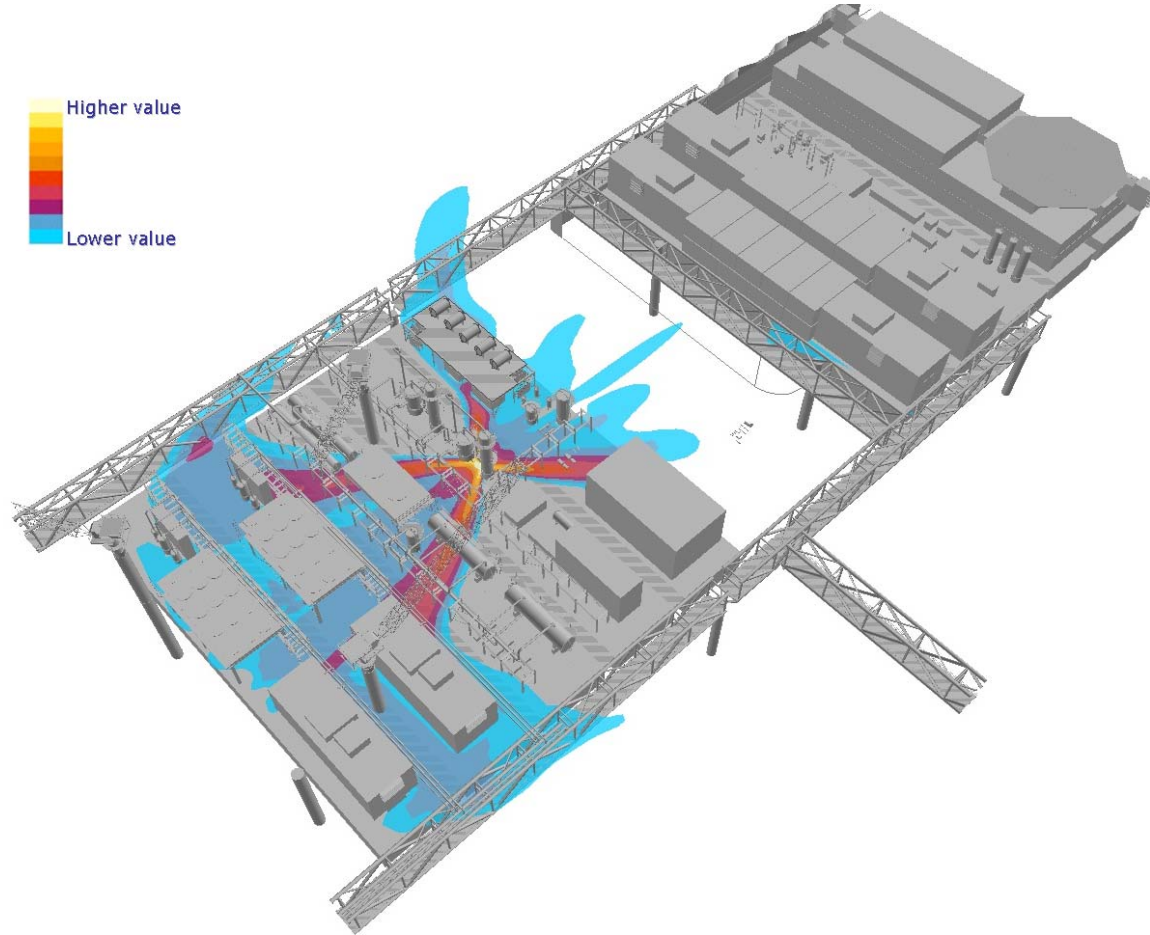
Simulation of free surface of liquid in a stirred reactor



Simulation of the evolution of the liquid phase in a horizontal separator



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Simulation of the dispersion of a substance in a plant

refining & marketing



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