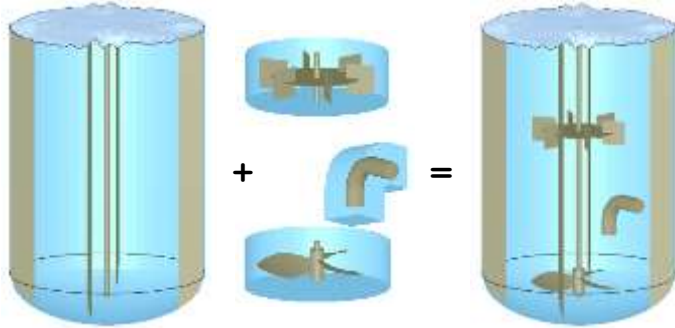
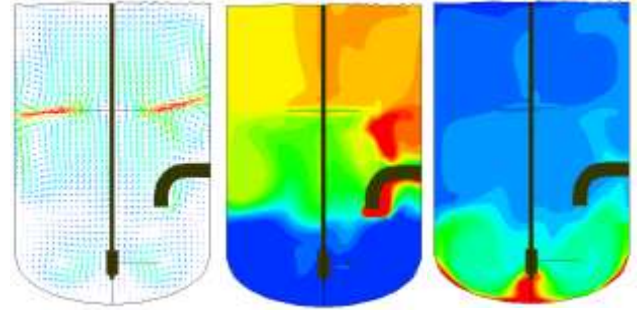


R-FLOW is a fluid and granular flow simulation software consisting of pre, solver and post modules. R-FLOW uses our originally developed “dynamic domain decomposition method” that makes it easy to simulate cases in which objects with different motions are mixed, such as agitated tanks with baffle plates and twin screw extruders. In addition, various dedicated functions for agitated tanks and screw extruder simulations are provided, including databases for various impellers, stirred tanks and screw geometries.

Gas-solid-liquid multiphase flow simulation in an aerated agitated tank

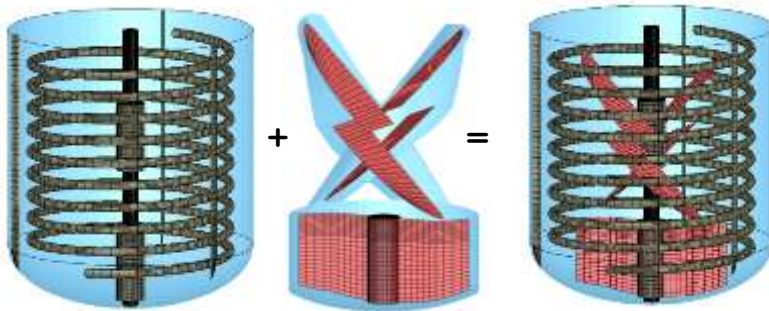


From left to right: Distributions of liquid flow velocity, bubble volume fraction and solid particle volume fraction.

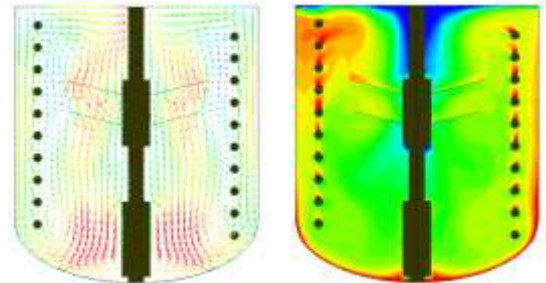


In R-FLOW, it is possible to create computational grids (blocks) for each part such as a stirred tank and impellers, combine them as appropriate, set stationary blocks and rotating blocks, and set coordinate movement for each block.

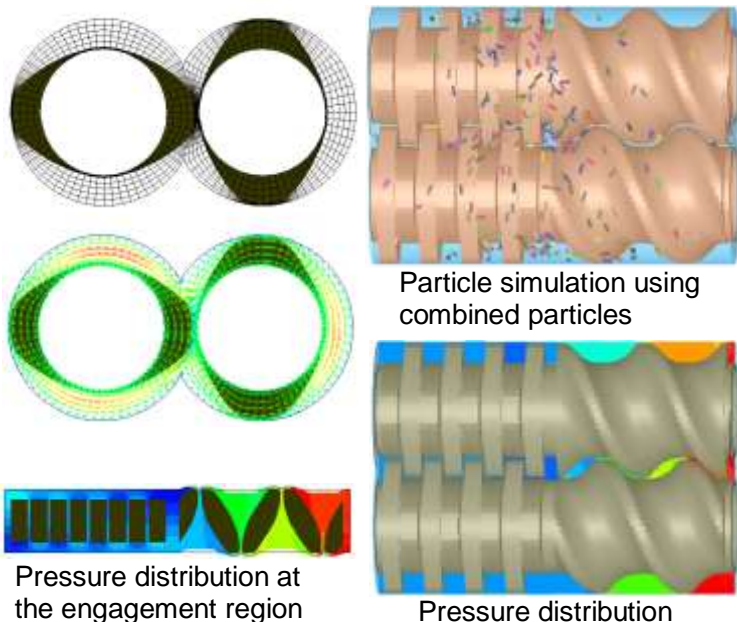
Solid-liquid multiphase flow simulation in Hi-F mixer



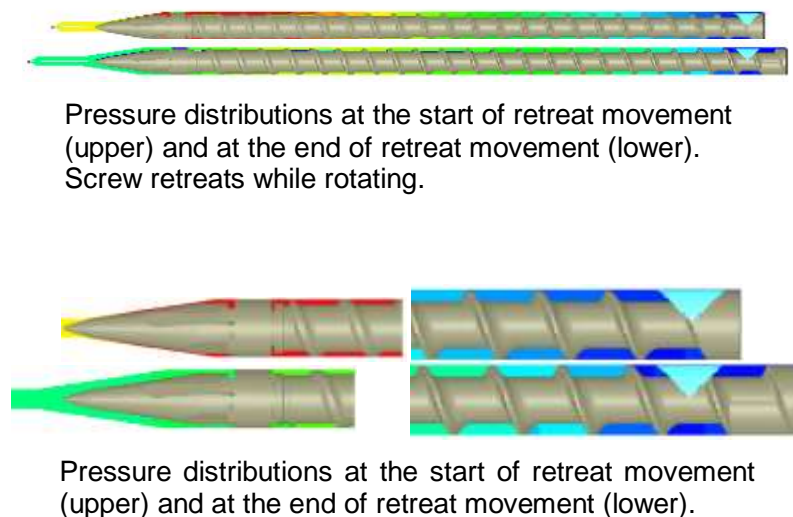
Distributions of liquid flow velocity and volume fraction of solid particles.



Flow simulation in co-rotating twin-screw extruder



Flow simulation in injection molding machine

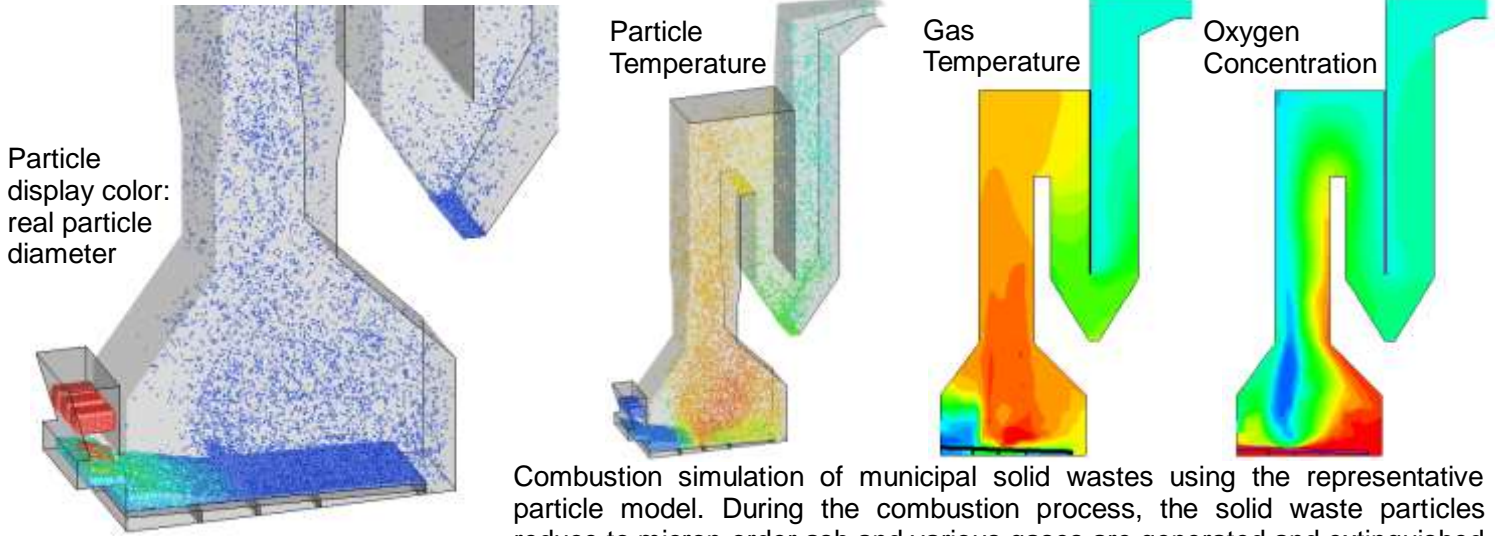


Granular Flow Simulation by R-FLOW



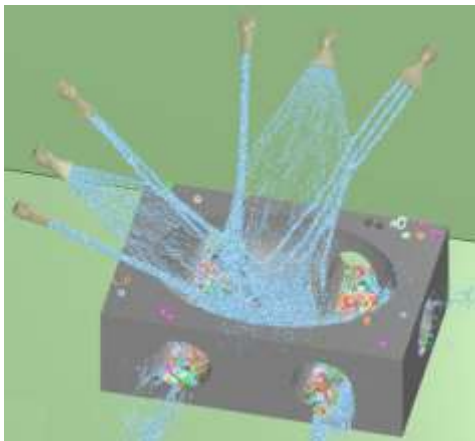
R-FLOW has various functions for simulating granular flows, enabling a wide range of coupled particle-fluid simulation. In addition, our originally developed “representative particle (coarse-grained) model” enables to simulate practical powders consisting of a huge number of particles.

Combustion simulation of municipal solid wastes in stoker-type incinerator



Combustion simulation of municipal solid wastes using the representative particle model. During the combustion process, the solid waste particles reduce to micron-order ash and various gases are generated and extinguished

Chip washing simulation by jet flow



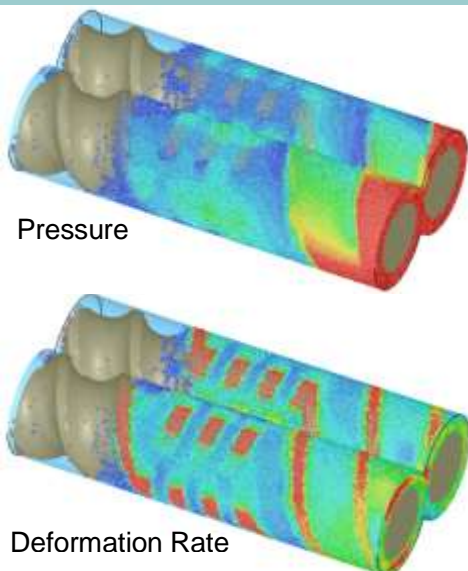
Circulating fluidized bed

Circulating fluidized bed simulation using the representative particle model. Particle display color represents vertical component of particle velocity.

⇐ The washing process of metal chips by the water jet ejected from nozzles is simulated using MPS method and DEM, where water flow is simulated by MPS method and metal chips are simulated by DEM with combined particles.



Twin screw extruder simulation by MPS method



Melting process simulation of pellets by DEM and MPS method

