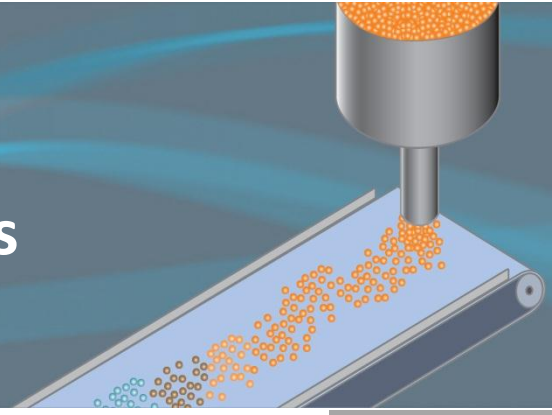
# gSOLIDS:
# Optimising solids process design and operation



Solids processes can be challenging to operate. They are often inefficient, suffer from long start-up times and have excess capacity. They are also capital and energy intensive.

PSE's gSOLIDS® is a powerful yet user-friendly software tool developed in close co-operation with lead users in the Pharmaceutical, Biotech, Food and FMCG industries to address these and other challenges.

gSOLIDS has an extensive model library and helps companies reduce capital cost through solids process design and operational analysis, including activities such as equipment and recycle sizing, scale-up and design, process optimisation, trouble-shooting and de-bottlenecking.

## General features

gSOLIDS is available on Windows and Linux (64 bit) platforms and provides:

- Extensive model library of solids processing unit operations
- Graphical interface with drag-and-drop flowsheeting and GUI model input
- Steady-state and dynamic (transient) modelling
- Advanced optimisation capabilities (steady-state, dynamic, MIO)
- Advanced model validation capabilities (multiple experiments, steady-state and dynamic)
- Integrated CFD interface through Hybrid Multizonal
- Capability to link to DEM tools
- Powerful and optimised numerical solvers

## Benefits

- Reduce capital investment
- Reduce start-up times
- Improve product quality
- Reduce product variability by optimising process for robustness
- Increase process efficiency through detailed process optimisation
- Reduce scale-up risk and time-to-market through detailed scale-up modelling with gSOLIDS, our Hybrid Multizonal gSOLIDS /CFD interface or by interfacing to DEM simulations
- Monitoring product quality during plant operation

## Unit operations

gSOLIDS provides a range of different unit operations in the following areas:

- Basic unit operations for mixing, utilities and control
- Classification including screens and cyclones
- Drying including fluid bed and spray drying
- Size change (e.g. agglomeration, milling and roller compaction)
- Storage and transport (e.g. hoppers and conveyors)

psenterprise.com/products/gsolids


## Contact

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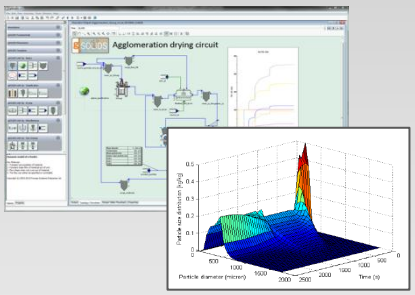
**"Using gSOLIDS we have a better likelihood that when we start up a new line it will work as planned"**

**– Ben Weinstein, P&G**




**gSOLIDS applications →**

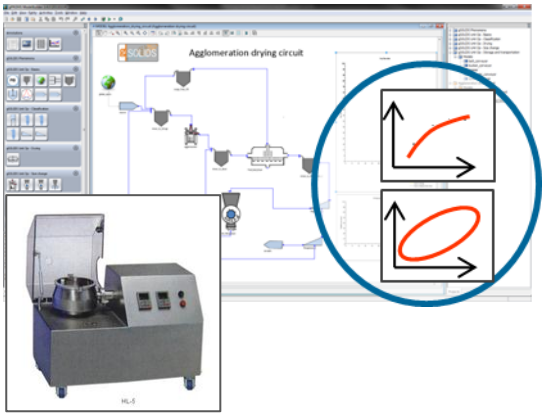
www.psenterprise.com

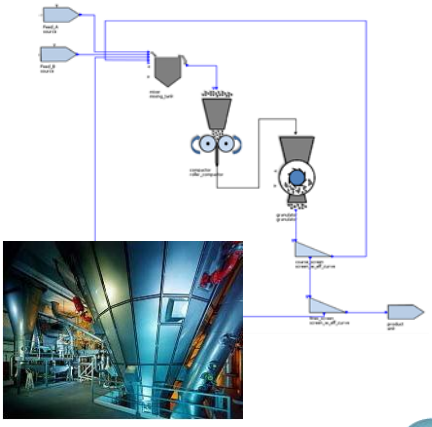
# gSOLIDS applications

## Determine model parameters

gSOLIDS has rigorous parameter estimation facilities that allow companies to customise library models to fit their own specific equipment.

Parameter estimation can be carried out using single, multiple, steady-state and dynamic experiments.



## Scale-up and recycle sizing

gSOLIDS provides companies with an efficient and low-risk option to size equipment and recycles by:

- analysing the impact of design
- reducing the number of experiment cycles
- reducing material and laboratory costs
- reducing process downtime

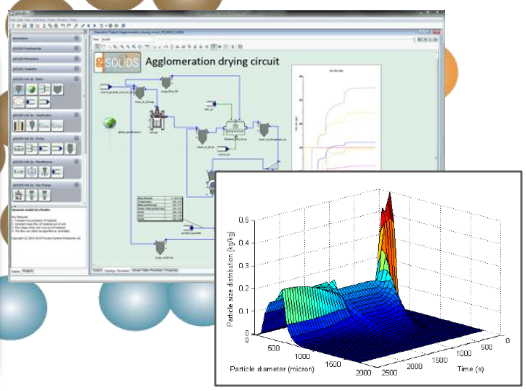
Equipment and recycle sizing can be done in gSOLIDS alone, through the gSOLIDS/Hybrid Multizonal CFD Interface or by interfacing to DEM simulations.

## Advanced process optimisation

gSOLIDS' advanced process optimisation facilities enable companies to improve process design and efficiency by optimising:

- equipment selection and design
- recycle structures
- operating conditions

Steady-state, dynamic and Mixed Integer Optimisation (MIO) are available options.




# PSE Consulting

PSE Consulting provides a range of consulting and application services to help companies use modelling technology to create value rapidly and cost-effectively. PSE services include process design optimisation, process development and plant optimisation. These services are offered through the PSE ModelCare® and PSE Strategic Assessment programs.

| | Pharma | Oil & Gas | Chemicals | FMCG | Refining | Minerals & metals | Energy | Food | Pulp & paper |
|---|---|---|---|---|---|---|---|---|---|
| Reaction | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Separation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| Crystallisation | ✓ | ✓ | ✓ | ✓ | | | | ✓ | |
| Polymerisation | | | ✓ | | | | | | |
| Solids process | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |

Advanced process engineering tools