



Product family

# gO:Simulink

The gPROMS Object for Simulink®

## gO:Simulink ...

- brings process modelling power of gPROMS to control systems design
- easy transfer of models between process and control engineers
- allows easy re-use of non linear models such as distillation, or complex reactors
- full physical property and equilibrium or mass transfer modelling
- harnesses the advantages of both systems
- both groups work in their preferred environments

## ... for integrated process design and control.

The **gPROMS Object for Simulink® (gO:Simulink)** is a unique and powerful tool that enables control engineers to use complex non-linear gPROMS advanced process models directly within the Mathworks Simulink and MATLAB® environments.

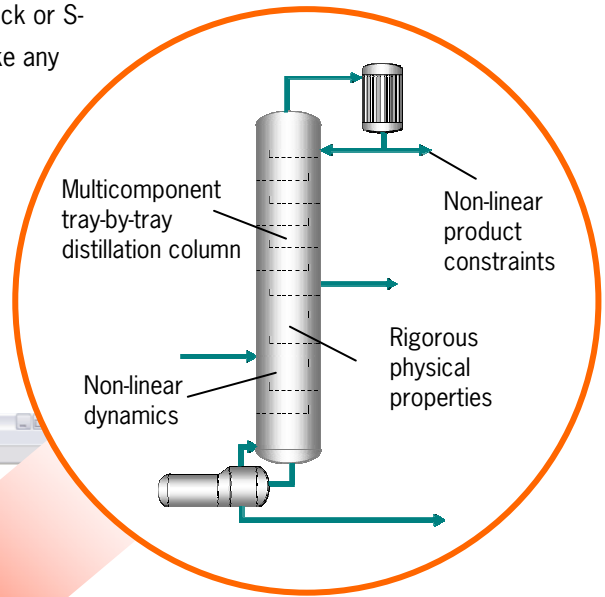
For example, a detailed dynamic distillation column built for a design study can be embedded as a Simulink block for use in control analysis and design.

This powerful combination of best-in-class technologies is designed to enable control engineers to work in their environment of choice using the detailed gPROMS non-linear Differential-Algebraic Equation (DAE) models built by process engineers during the equipment design. This helps promote seamless working across different parts of the organisation, unlike other modelling approaches where models need to be simplified and rewritten between environments.

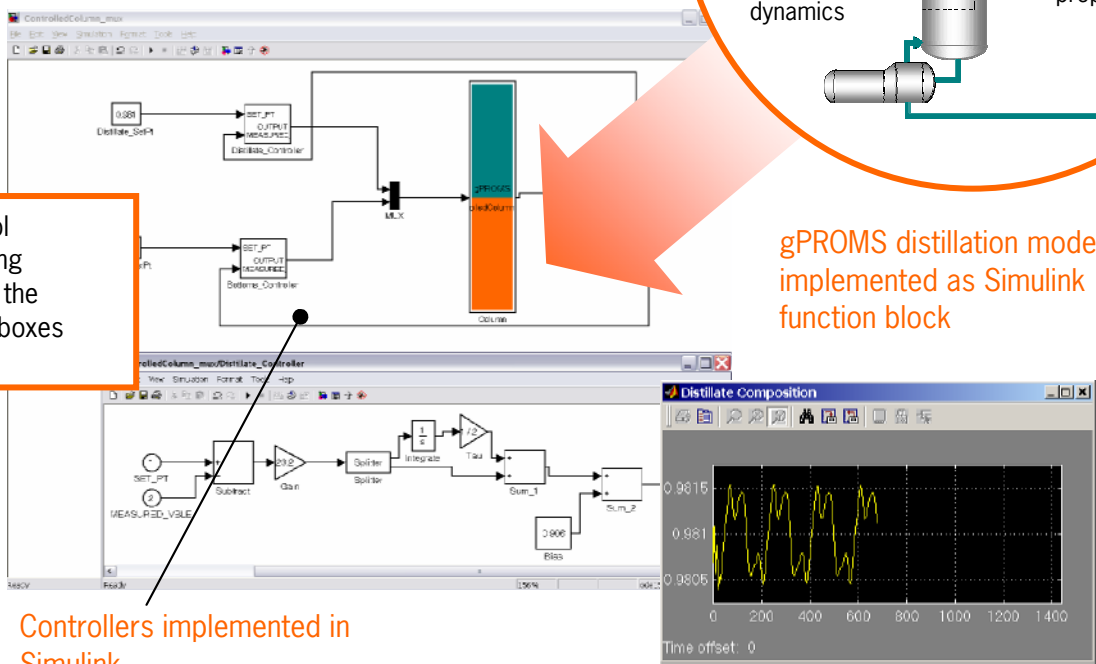
## How gO:Simulink works

You can package and export any gPROMS model to Simulink with all the solvers and support software required for its solution. gO:Simulink then embeds the model in the Simulink flowsheet as a Simulink Block or S-function, where it is executed just like any other Simulink block.

A powerful dictionary feature allows replacement of individual gPROMS models – such as control elements – by equivalent Simulink blocks if required.



Refine control schemes using Simulink and the MATLAB toolboxes



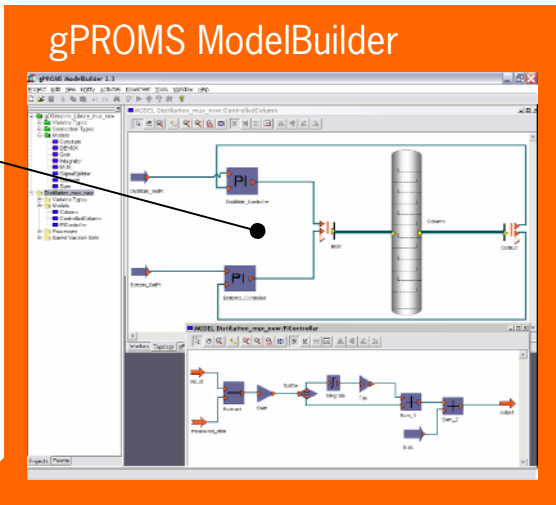
gPROMS distillation model implemented as Simulink function block

Controllers implemented in Simulink

## Using gO:Simulink – a simple step-by-step guide

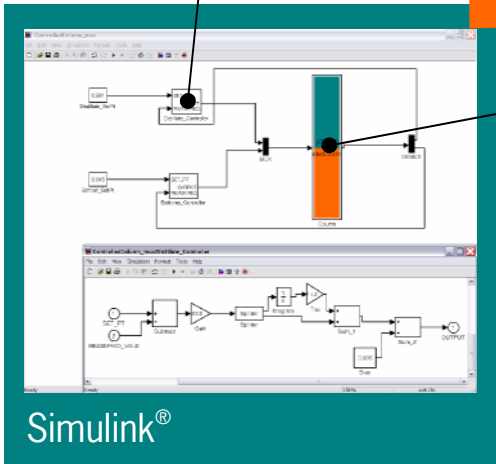


**Step 1:** Build process model (which may contain initial control schemes) in gPROMS for optimising equipment design



Controllers and other elements translated **automatically** to Simulink® format using translation dictionary

**Step 2:** Export gPROMS model directly to Simulink



**gO:Simulink**  
Non-linear gPROMS process model executing within Simulink

**Step 3:** Refine control schemes using Simulink and the MATLAB toolboxes



The gO:Simulink block executes just like any other Simulink block. gO:Simulink automatically takes care of all the mathematical transformations required to convert gPROMS' Integro-Partial Differential-Algebraic Equation (IPDAE) formulation to Simulink's Ordinary Differential Equation (ODE) representation.

This operation is transparent to the user and takes minimal time, yet allows models of virtually any level of complexity to be used within Simulink.

## Licensing

gO:Simulink is licensed as an optional component of the gPROMS family. A gPROMS ModelBuilder licence is required if you wish to build the gPROMS model that will execute within Simulink.

### Prerequisites are:

- gPROMS ModelBuilder licence for creating reaction models
- Mathworks Simulink® version 4.0 or later

gO:Simulink is available on the following platforms: **Microsoft Windows XP, Windows 2000, NT 4.0.**

PSE is a Simulink Connections Partner

