SIEMENS

gPROMS Process

Product core components and options

Product code	Component name	Component description	Core	Option
Standard product				
gSW-1500	gPROMS Process	gPROMS advanced modelling environment for fluids-based processes	✓	
Model libraries				
gSW-1101	Process – Standard (Basics, Signal, Control, Flow Transportation, Heat Exchange)	Combines Basics, Signal, Control, Flow Transportation and Heat Exchange libraries	✓	
gSW-1110	Process – Basics	Sources and sinks, mixers and splitters, stream analysers and other flowsheeting elements		✓
gSW-1111	Process – Signal	Signal manipulation, transformations, system identification, lookup tables and other signal processing functions		✓
gSW-1112	Process – Control	Controller models, logic switches, transfer function and other control elements for control design		✓
gSW-1113	Process – Flow Transportation	Compressors, expanders, valves, pipes and pumps		✓
gSW-1114	Process – Heat Exchange	Heaters, coolers and heat exchangers		✓
gSW-1102	Process – Standard (Reaction, Separation: Fluid-Fluid/Solid-Fluid)	Combines Reaction, Separations - Fluid-Fluid and Separations – Solid-Fluid libraries	✓	
gSW-1120	Process – Reaction	Conversion reactors, Gibbs reactors, single phase and VLE reactors and 1-D plug flow reactor		✓
gSW-1140	Process – Separation: Fluid-Fluid/Solid-Fluid	Library for fluid-fluid separation processes (including models for equilibrium tray and packed distillation columns, absorbers with/without condenser and reboiler and 2 and 3-phase separators) and solid-fluid separation processes (filter, dryer, centrifuge).		✓
gSW-1115	Process – Data-Driven	Models for inserting data-driven elements within first-principles flowsheets	✓	
gSW-1160	Process – Mass Balance	Mass balances-only models, including sources/sinks, mixers/splitters, conversion reactors, yield reactors and drums	✓	
gSW-1116	Process – Advanced Optimization	Models for topology/routing optimization within process flowsheets		✓
gSW-1122	Process – Reaction: Electrochemical Cell Reactor	High-fidelity models of electrochemical cell reactors		✓

gSW-1128	Process – Reaction: Trickle Bed Reactors	High-fidelity trickle-bed reactor modelling		✓
gSW-1135	Process – Reaction: Fixed-Bed Catalytic Reactors	Fixed-bed reactor models for modelling tubular and multitubular catalytic reactors, including a 3-dimensional (2-D tube and 1-D pellet) model, with customisable kinetics.		✓
gSW-1138	CFD interface for multitubular reactors	gPROMS/CFD software interface for detailed hybrid modelling of multitubular fixed-bed catalytic reactors		✓
gSW-1141	Process – Separation: Gas-Liquid Contactors	Rate-based two-dimensional (axial + radial film) distillation models for accurate prediction of heat and mass transfer		✓
gSW-1145	Process – Separation: Adsorption	Adsorption bed unit, with customisable templates for isotherms and mass and heat transfer coefficients and convenient definition of adsorption cycles		✓
gSW-1150	Process – Separation: Membranes	Library for membrane separation processes (hollow fiber module)		✓
gSW-1180	Olefins	Olefins plant steam cracking furnace models		✓
gSW-1191	Polyolefins – Fluidized Bed Reactor	Model of olefins polymerization using solid catalyst in gas-phase reactors, supporting multiple co-monomers and multiple active sites		✓
gSW-1192	Polyolefins – Loop Reactor	Model of olefins polymerization using solid catalyst in liquid-phase (loop) reactors, supporting multiple co-monomers and multiple active sites		✓
gSW-1193	Polyolefins – Slurry Reactor	Model of olefins polymerization using solid catalyst in slurry reactors, supporting multiple co-monomers and multiple active sites		✓
gSW-1194	Polyolefins – Autoclave Reactor	Model of high-pressure free-radical polymerization in Autoclave reactor, supporting multiple co-monomers and multiple initiators		✓
gSW-1196	Polyolefins – Solution Polymerization Reactor	Model of olefins polymerization using soluble catalyst in liquid phase, supporting multiple co-monomers and multiple active sites		✓
gSW-1300	Utilities	Utilities plant library with boilers, headers, steam and gas turbines		✓
gSW-1305	Power Generation	Power plant modelling		✓
gSW-1315	Water – Activated Sludge	Activated sludge models		✓
gSW-3101	Flare – Network	Library for modelling a flare network (including advanced pipe model and a flare tip model)		✓
gSW-3102	Flare – Advanced Depressurisation	Library for modelling an advanced depressurisation event (includes several different geometry rate-based models)		✓
gSW-3210	Oilfield	Models for oilfield modelling		✓
Platform functionality				
gSW-0120	Custom Modelling	Custom modelling for first-principles model development, or to customise certain aspects (such as kinetics, isotherms, pressure drop, costing) of gML/AML models		✓

gSW-0200	Activity: Simulation	Steady-state and dynamic simulation activity	✓	
gSW-0210	Activity: Optimization	Steady-state and dynamic (including mixed-integer) optimization	✓	
gSW-0220	Activity: Model Validation	Validate model against experimental data, and estimate model parameters		✓
gSW-0225	Activity: State Estimation	State Estimation solver using the Extended Kalman Filter algorithm		✓
gSW-0230	Activity: Experiment Design	Use optimization techniques to determine the optimal next experiment		✓
gSW-0240	Activity: Global System Analysis	Systematically explore the effect of variability and uncertainty in input variables on output variables (e.g. KPIs)		✓
gSW-0245	Activity: Global System Analysis – Surrogate Model Generation	Generate surrogate model based on results of Global System Analysis (requires gSW-0251)		✓
gSW-0250	Solver: MINLP gOOSolver	Enhanced Mixed-Integer Nonlinear Programming solver		✓
gSW-0251	Solver: MINLP XPRESS Solver	Mixed integer linear programming solver		✓
gSW-0270	Solver: Cyclic Steady State	Specialised solver for determining cyclic steady states of periodic processes		✓
gSW-0300	Export to gPROMS Objects	Export models in encrypted form for use with gPROMS Objects, Web Applications and Digital Applications		✓
gSW-0310	Custom Model Library Management	IP protection and licence management of gPROMS model libraries		✓
gSW-0400	gPROMS High Performance Computing	Enable the use of up to 32 processors for parallelized execution (selected activities and solvers)		✓
gSW-0500	Hybrid Multizonal gPROMS/CFD Interface	gPROMS-CFD Hybrid Multizonal interface		✓
Physical properties				
gSW-0800	gPROMS Properties	General physical properties package for use with gPROMS	✓	
gSW-0801	gPROMS Properties – DIPPR	AIChE DIPPR[1] pure component databank for use with gPROMS Properties	✓	
gSW-0805	gPROMS Properties – Custom Databank Management	Software tools for developing and managing custom databanks		✓
gSW-0810	gPROMS Properties – SAFT	Self-Associating Fluid Theory models (PC-SAFT, SAFT-VR SW, SAFT-gamma Mie) and associated databanks for use with gPROMS Properties		✓
gSW-0860	Multiflash	KBC Multiflash physical properties package[2]		✓
gSW-0866	Multiflash - MS EXCEL Plug-in	Multiflash - MS EXCEL Plug-in		✓
gSW-0869	Multiflash - DIPPR	AIChE DIPPR databank for use with gPROMS Multiflash Properties		✓

[1] Property of AIChE

[2] Property of KBC Process Technology Ltd

gSW-0870	Multiflash - Chemical Reaction Equilibrium Module	Multiflash - Chemical Reaction Equilibrium Module		✓
gSW-0871	Multiflash - PC-SAFT EOS Model	Multiflash - PC-SAFT EOS Model		✓
gSW-0873	Multiflash - CSM Model	Multiflash - CSM Model		✓
gSW-0874	Multiflash - Water/Steam Model (IAPWS95)	Multiflash - Accurate computation of physical properties of water and steam		✓
gSW-0878	Multiflash - Mercury	Multiflash - Mercury		✓
gSW-0880	gPROMS/OLI Interface	gPROMS/OLI Interface		✓
Options				
gSW-1170	Multiphase Flow – Beggs and Brill	Multiphase Flow - Beggs and Brill		✓
gSW-1171	Multiphase Flow – PSE1	Multiphase Flow - PSE1		✓

Key

Included in product	✓	
Standard option		✓
Included in core product, but can be purchased optionally if additional licences required		✓