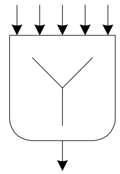
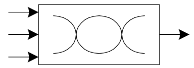
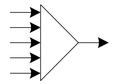
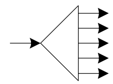
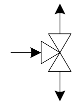
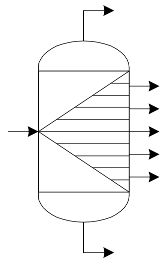
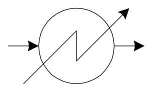
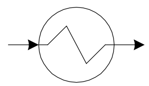
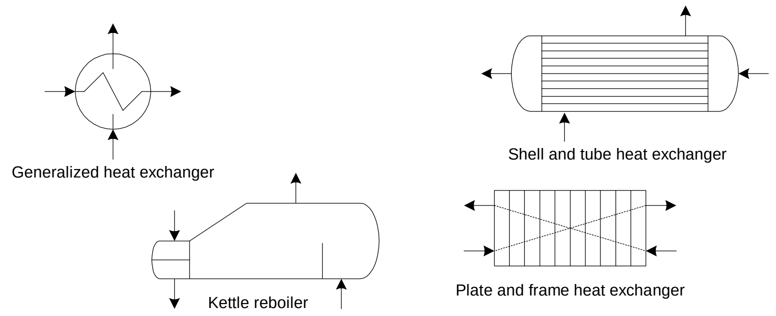
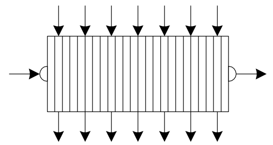
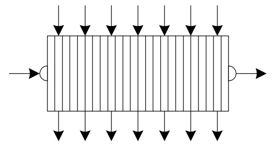
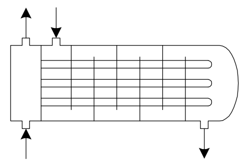
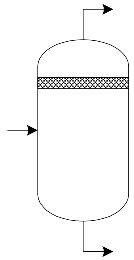
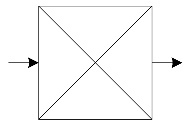
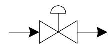
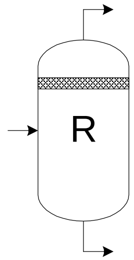
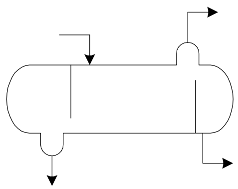
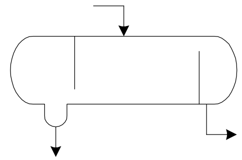
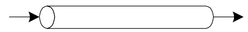
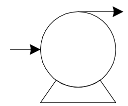
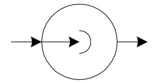
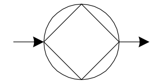
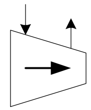
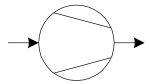
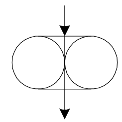
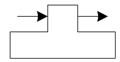
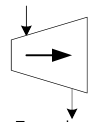
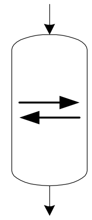
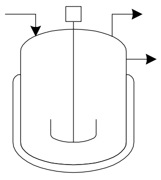
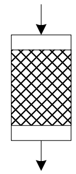
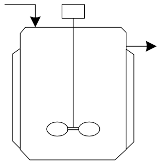
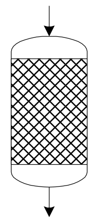
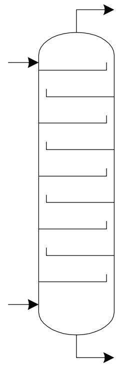
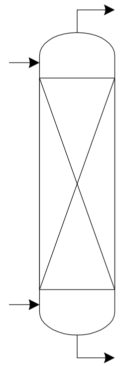
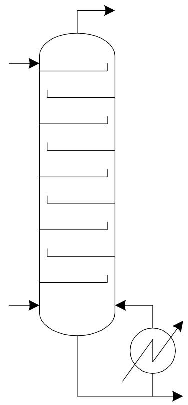
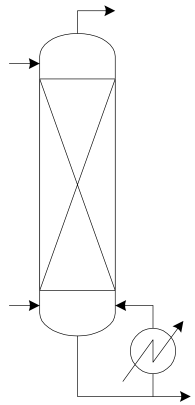
Unit operation	Short description	Module on the flowsheet
Mixer	Used to mix adiabatically several streams to obtain a single outlet stream	 Mixer  Static mixer  Other mixer
Stream splitter	Divides the stream resulting from the feeds adiabatic mixing into several streams of the same composition, temperature and pressure.	 Stream splitter  Three way valve
Component splitter	Makes it possible to separate the components of one stream between several streams. The recovery ratio of each component in the first outlet stream is fixed and also in intermediate sidestream. The rest of the feed is put in the last stream (bottom product). This unit operation can be used to simulate the calculation of a separation process in a simple and not time consuming way.	 Component splitter
Simple heat exchanger	Calculates the physical state (temperature and vapor fraction) of a stream when a heat duty is supplied. It allows to simply simulate a heat exchanger to heat or cool a stream.	 Simple heat exchanger
Cooler/Heater	Allows to adjust a stream temperature without worrying about the exchanger geometry. This module makes it possible to simulate a heat exchanger and to calculate the heat duty required to reach a specified temperature.	 Cooler/Heater

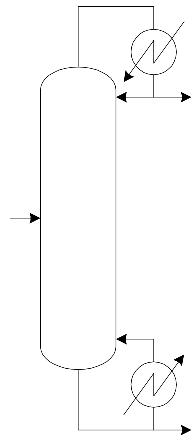
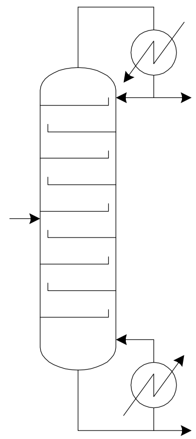
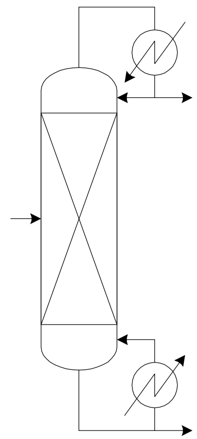
Unit operation	Short description	Module on the flowsheet
Heat exchanger	Calculates the heat exchange between two streams in a counter-current or co-current heat exchanger. For a given specification, the unit operation determines the output streams characteristics and calculates the exchanged heat duty (if it is not given). Moreover, from the knowledge of the global heat transfer coefficients, the unit operation enables to calculate a heat exchange area with or without taking into account possible phase changes. For heat exchangers with several tubes side and/or shell side passes, efficiency compared to pure counter-current is calculated.	
Multistreams heat exchanger	Calculates the heat exchange between a main stream and several secondary streams. As the streams remain unchanged on the mass level, only an energy balance is carried out. From the knowledge of the input and outlet temperatures of secondary streams, the thermal characteristics of the main outlet stream and the heat duties are calculated.	 Multi-fluid heat exchanger
Brazed plate-fin heat exchanger	This module calculates the thermal performances and the pressure drops of a brazed plate fin heat exchanger of given geometry in which can circulate several fluids in co-current or counter-current flow. For a given specification, the module determines the output streams characteristics, calculates the heat duties exchanged, internal temperature and enthalpy profiles assuming a common wall temperature. It allows to calculate a single heat exchanger, or a battery of heat exchangers in parallel and makes it possible a very detailed description of the heat exchanger geometry and the topology of the fluid circuits.	 Brazed plate fin heat exchanger
Shell and tube heat exchanger rating	This modules makes it possible to check the thermal and hydraulic behavior of polytube counter-current heat exchanger. Calculations take into account condensation on both sides (shell and tubes) and evaporation on the tubes side. It is possible to have different thermodynamic models for each fluid in the heat exchanger. All these results are summarized in the Heat Exchanger Specifications sheet.	 Heat exchanger rating

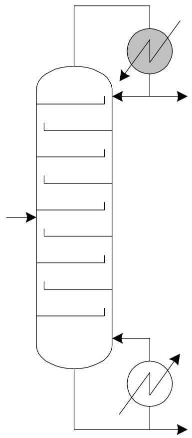
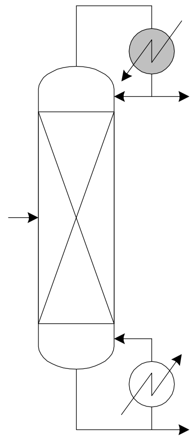
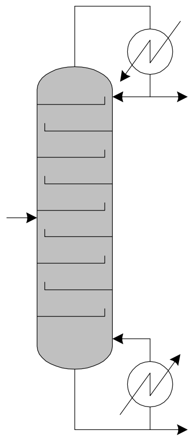
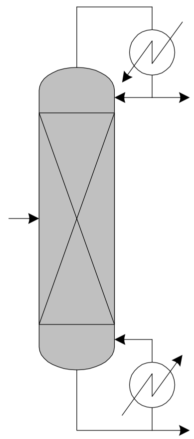
Unit operation	Short description	Module on the flowsheet
Double-pipe heat exchanger	This unit operation determines the heat duty exchanged and the outlet temperatures of a double-pipe type heat exchanger knowing its geometry. Several correlations are proposed to calculate the pressure drops and the heat transfer coefficients on both sides (tube and annular space). The flow inside the double-pipe can be counter-current or co-current. Calculations can be performed with possible condensation or evaporation on both sides.	
Generalized two-phase flash (liquid-vapor)	Used to represent a flash operation for which it is supposed that thermodynamic equilibrium is reached. This module simulates all kind of flashes such as constant temperature and pressure flash, constant pressure and heat duty flash, constant vapor fraction and temperature or pressure flash, constant pressure and entropy flash.	 Liquid-vapor separator  2-phase separator with one outlet stream  Expansion valve
Two-phase reactive flash (liquid-vapor)	Used to represent a flash operation for which it is supposed that thermodynamic equilibrium is reached. This module simulates several kind of flashes such as constant temperature and pressure flash, constant pressure and heat duty flash, etc. It is possible to take into account controlled and/or complex and/or equilibrium chemical reactions.	 Reactive two-phase flash
Generalized three-phase flash (liquid-liquid-vapor)	Used to model a flash separation for which two liquid phases and a vapor phase are at thermodynamic equilibrium. Several kind of flashes are available such as constant temperature and pressure flash (isothermal), constant heat duty and pressure flash (adiabatic) or constant pressure and vapor fraction flash. This unit operation has three outlet streams corresponding to the vapor stream, the "light" liquid stream and the "heavy" liquid stream.	 General 3-phase flash

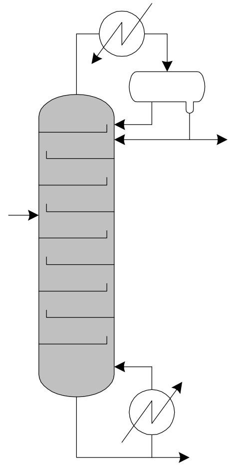
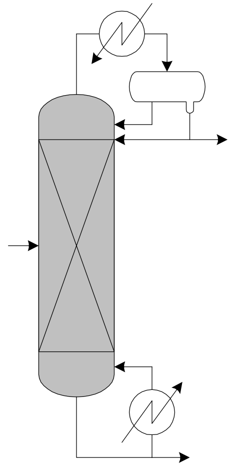
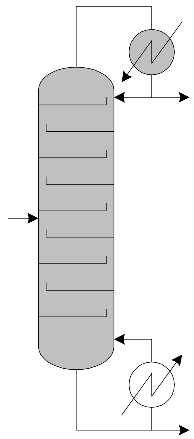
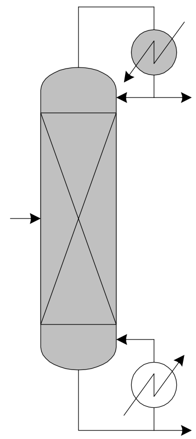
Unit operation	Short description	Module on the flowsheet
Decanter	Used to represent a liquid-liquid separation supposed to be at constant temperature and pressure thermodynamic equilibrium. If a demixion is detected, at the outlet a stream corresponds to the "light" liquid and another one to the "heavy" liquid. It is possible to specify liquid-liquid splitting ratios, independently from the selected thermodynamic model.	 Decanter
Pressure drop calculations	Enables to calculate pressure drops sustained by a fluid during an isothermal transport in a pipe comprising linear segments (tubular pipe) and/or fittings (enlargment, elbow, ...). The unit operation also carries out the calculation of possible phase changes and gives their location.	 Pipe segment
Pump	Used to simulate a pump. The pump exhaust pressure can either be provided or calculated from the knowledge of the electric power it consumes. Two representation models of its operation are available: volumetric pump or isentropic pump. Isentropic or volumetric efficiency as well as mechanical efficiency can be provided.	 Centrifugal pump  Linear pump  Generalized pump
Compressor	Used to simulate a mono or multistage compressor with or without intermediate cooling. Isentropic or mechanical efficiency can be provided. At the level of possible intermediate exchangers, the user can specify the cooling temperatures.	 Compressor
Generalized compressor	Allows to simulate a mono or multistage isentropic or polytropic compressor, with or without intermediate cooling. It has all the functionalities of the simple compressor unit operation but this unit operation makes it possible to use the manufacturers curves as data of simulation.	 Generalized compressor  Rotary compressor  Reciprocating compressor
Expander	Used to simulate a mono-stage expander with possibility of condensation. Calculation is performed from the outlet pressure or the temperature of dew point (or bubble point) pressure corresponding to the dew point (or bubble point) pressure expected on exit (this pressure will then be calculated by the module).	 Expander

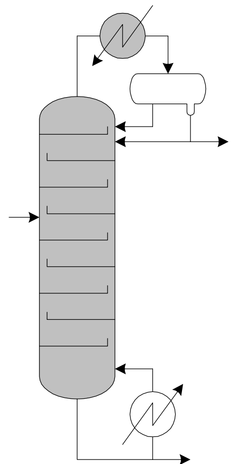
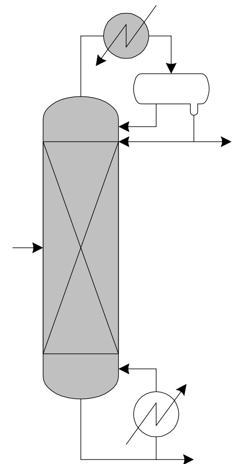
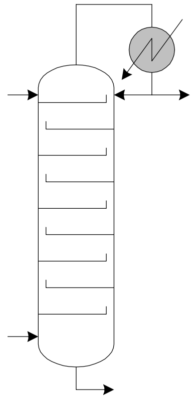
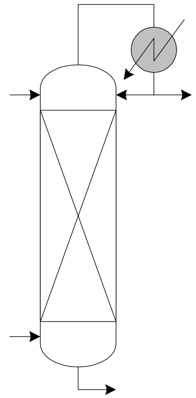
Unit operation	Short description	Module on the flowsheet
Equilibrium reactor	Used to represent a chemical equilibrium in gas phase, with a specified system pressure, and with the choice of the temperature (isothermal reactor) or of the heat duty (for example adiabatic reactor). The equilibrium is calculated either by using the method of the equilibrium constants, or by minimizing Gibbs free energy of the system. In case of equilibrium constants method, the user can define approach temperatures to the equilibrium by giving for each reaction temperature deviations compared to the system temperature.	 Equilibrium reactor
Continuous stirred tank reactor	Makes it possible to represent the operation of a perfectly stirred reactor with continuous feed and side stream. The mixture inside the reactor can be monophasic or two-phase. It is possible to take into account controlled and/or complex and/or equilibrium chemical reactions. For the calculation of the temperature within the reactor, various possibilities are proposed: adiabatic, isothermal... Phase changes are taken into account.	 Continuous stirred tank reactor
Simple chemical reactor	Used to represent a reactor that can be adiabatic, isothermal, at imposed outlet temperature or with heat duty supplied, in which several reactions are taken into account with a set of conversion rates or a set of selectivities.	 Simple reactor  Reaction tank
Plug flow reactor (tubular)	Allows to represent the operation in steady state of a tubular flow reactor in which the hydrodynamics corresponds to an "ideal plug" type flow. This unit operation makes it possible to take into account equilibrium chemical reactions or reactions with controlled or complex kinetics. Moreover, for the temperature profile inside the reactor calculation, various options are possible, in particular, it is possible to describe an external jacket in which circulates a co-current or counter-current service fluid.	 Plug flow reactor

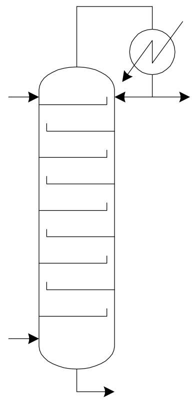
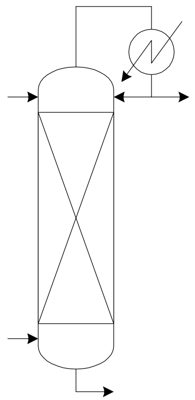
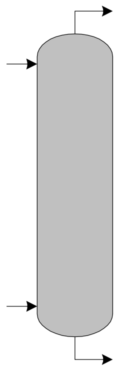
Unit operation	Short description	Module on the flowsheet
Absorber	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column without boiler nor condenser. A liquid feed, a vapor sidestream at the column overhead, a vapor feed and a liquid sidestream in bottom of column are necessary. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate absorber  Packed absorber
Absorber with reboiler	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column with a boiler but without condenser. A liquid feed, a vapor sidestream at the column overhead and a liquid sidestream in bottom of column are necessary. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate absorber with a reboiler  Packed absorber with a reboiler

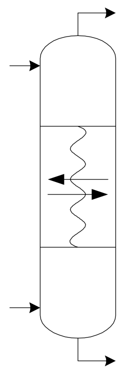
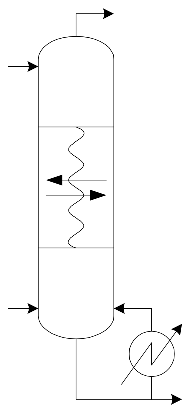
Unit operation	Short description	Module on the flowsheet
Distillation "short-cut"	Makes it possible to design a simple distillation column with one feed and two products, the distillate and the bottom product. When the separation fractions of two key components at the distillate and at the bottom product are specified, the unit operation provides: the reflux ratio, the number of theoretical stages, the position of the feed stage, the distillate and bottom product compositions, the reboiler heat duty, the heat to be removed at the condenser. This unit operation can be used for the approximate design of a distillation column. Several calculation methods are available : - Fenske, Underwood,Gilliland - Winn, Underwood, Gilliland - Fenske, Underwood, Erbar, Maddox - Winn, Underwood, Erbar, Maddox For the feed position determination, the user can choose between methods of Fenske or Kirkbride.	 ShortCut distillation
Two-phase distillation (L-V) with partial condenser	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column with a boiler and a partial condenser. A feed and at least a vapor distillate and a liquid bottom product are required.. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate distillation column  Packed distillation column

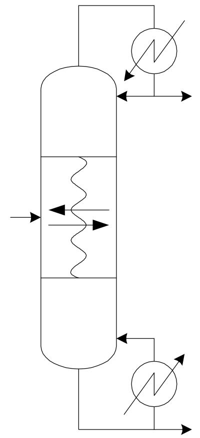
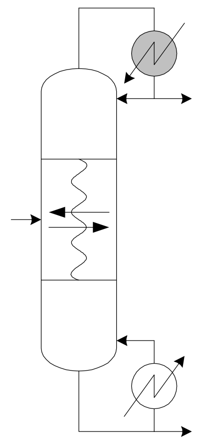
Unit operation	Short description	Module on the flowsheet
Two-phase distillation (L-V) with total condenser	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column with a boiler and a total condenser. A feed and at least a liquid distillate and a liquid bottom product are required.. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate distillation column (total condenser)  Packed distillation column (total condenser)
Three-phase distillation (L-L-V) with partial condenser, without decanter	Makes it possible to represent a multi-stage liquid-liquid-vapor separation process where takes place a counter-current mass transfer between one or two liquid phases and a vapor phase within a column with a boiler and a partial condenser, but without top decanter. Each stage of the column can be three-phase and phase stability tests are carried out in order to determine the locations of the two liquid phases coexistence. The distinction between heavy phase and light phase is carried out automatically by the program, by comparing the densities. A feed, a vapor distillate and a liquid bottom product are required. Heavy or light sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate 3-phase column  Packed 3-phase column

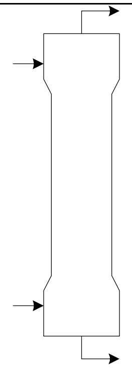
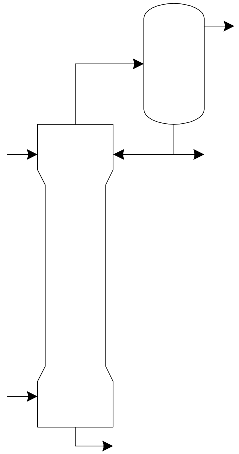
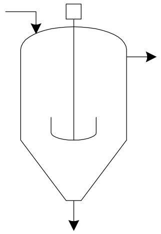
Unit operation	Short description	Module on the flowsheet
Three-phase distillation (L-L-V) with partial condenser and decanter	Makes it possible to represent a multi-stage liquid-liquid-vapor separation process where takes place a counter-current mass transfer between one or two liquid phases and a vapor phase within a column with a boiler, a partial condenser, and a top decanter. Each stage of the column can be three-phase and phase stability tests are carried out in order to determine the locations of the two liquid phases coexistence. The distinction between heavy phase and light phase is carried out automatically by the program, by comparing the densities. A feed, a vapor distillate and a liquid bottom product are required. Heavy or light sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate 3-phase column (decanter)  Packed 3-phase column (decanter)
Three-phase distillation (L-L-V) with total condenser, without decanter	Makes it possible to represent a multi-stage liquid-liquid-vapor separation process where takes place a counter-current mass transfer between one or two liquid phases and a vapor phase within a column with a boiler and a total condenser, but without top decanter. Each stage of the column can be three-phase and phase stability tests are carried out in order to determine the locations of the two liquid phases coexistence. The distinction between heavy phase and light phase is carried out automatically by the program, by comparing the densities. A feed, a liquid distillate and a liquid bottom product are required. Heavy or light sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate 3-phase column (total condenser)  Packed 3-phase column (total condenser)

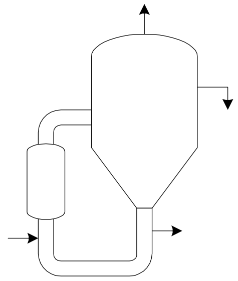
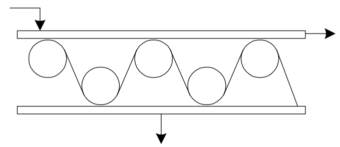
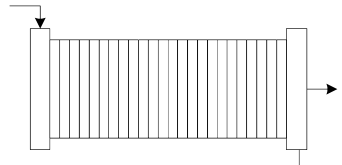
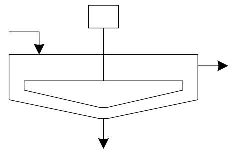
Unit operation	Short description	Module on the flowsheet
Three-phase distillation (L-L-V) with total condenser and decanter	Makes it possible to represent a multi-stage liquid-liquid-vapor separation process where takes place a counter-current mass transfer between one or two liquid phases and a vapor phase within a column with a boiler, a total condenser and a top decanter. Each stage of the column can be three-phase and phase stability tests are carried out in order to determine the locations of the two liquid phases coexistence. The distinction between heavy phase and light phase is carried out automatically by the program, by comparing the densities. A feed, a liquid distillate and a liquid bottom product are required. Heavy or light sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate 3-phase column (total condenser and decanter)  Packed 3-phase column (total condenser and decanter)
Stripper with total condenser	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column having a total condenser but without boiler. A column bottom vapor feed and at least a liquid distillate and a column bottom liquid sidestream are required. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate stripper (total condenser)  Packed stripper (total condenser)

Unit operation	Short description	Module on the flowsheet
Stripper with partial condenser	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column having a partial condenser but without boiler. A column bottom vapor feed and at least a vapor distillate and a column bottom liquid sidestream are required. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage. The mathematical model is based on the concept of theoretical stage, nevertheless it is possible to introduce Murphree efficiencies. The column sizing or rating can be carried out for all kind of column internals as well as many types of plates (see column sizing). It is also possible to specify that the whole column, or part of it, corresponds to a zone in which occur chemical reactions.	 Plate stripper  Packed stripper
Column sizing	Makes it possible to carry out the sizing of a column on a minimum diameter or on a fixed pressure drop for the column. Flooding factors, hydraulic characteristics and pressure drops will then be obtained for the column corresponding to a diameter and standard thickness of column wall. This module also makes it possible to perform rating of existing columns calculating flooding factors, hydraulic characteristics and pressure drops. It is used to carry out or to check the sizing of a column, without having carried out preliminary rigorous calculation. No fluid phase equilibrium or enthalpy calculation is carried out inside this unit operation, output streams being considered equal to input streams. Transport properties (density, viscosity and surface tension...) can either be calculated from a thermodynamic model or provided by the user. All kind off column packings as well as many types of trays can be studied: valve trays, bubble cap trays, sieve trays (with or without downcomer) or accumulating trays (for liquid sidestreams).	 Column sizing

Unit operation	Short description	Module on the flowsheet
Absorber by rate-based model (optional)	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column without boiler nor condenser. The rate-based model takes into account thermodynamic equilibrium at the interface, mass and energy transfer between the two phases as well as hydrodynamics (fluid flows). Contrary to a model based on the concept of theoretical stage, it is here possible to describe the type of flow (plugflow, perfectly stirred...), as well as the type of column internals used (plate, packing...). The concept of theoretical stage is replaced here by a rigorous calculation of the involved physical phenomena (Maxwell-Stephan theory) including the concept of non-equilibrium stage. A liquid feed, an overhead vapor, a vapor feed and a liquid sidestream at the bottom of the column are required. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage.	 Mass transfer absorber
Absorber with reboiler by rate-based model (optional)	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column without condenser. The rate-based model takes into account thermodynamic equilibrium at the interface, mass and energy transfer between the two phases as well as hydrodynamics (fluid flows). Contrary to a model based on the concept of theoretical stage, it is here possible to describe the type of flow (plugflow, perfectly stirred...), as well as the type of column internals used (plate, packing...). The concept of theoretical stage is replaced here by a rigorous calculation of the involved physical phenomena (Maxwell-Stephan theory) including the concept of non-equilibrium stage. A liquid feed, an overhead vapor, a vapor feed and a liquid sidestream at the bottom of column are required. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage.	 Mass transfer absorber with a reboiler

Unit operation	Short description	Module on the flowsheet
Distillation with partial condenser by rate-based model (optional)	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column with reboiler and partial condenser. The rate-based model takes into account thermodynamic equilibrium at the interface, mass and energy transfer between the two phases as well as hydrodynamics (fluid flows). Contrary to a model based on the concept of theoretical stage, it is here possible to describe the type of flow (plugflow, perfectly stirred...), as well as the type of column internals used (plate, packing...). The concept of theoretical stage is replaced here by a rigorous calculation of the involved physical phenomena (Maxwell-Stephan theory) including the concept of non-equilibrium stage. A liquid feed, an overhead vapor and a liquid sidestream at the bottom of column are required. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage.	 Mass transfer distillation column (partial condenser)
Distillation with total condenser by rate-based model (optional)	Makes it possible to represent a multi-stage liquid-vapor separation process where takes place a counter-current mass transfer between a liquid phase and a vapor phase within a column with a reboiler and a total condenser. The rate-based model takes into account thermodynamic equilibrium at the interface, mass and energy transfer between the two phases as well as hydrodynamics (fluid flows). Contrary to a model based on the concept of theoretical stage, it is here possible to describe the type of flow (plugflow, perfectly stirred...), as well as the type of column internals used (plate, packing...). The concept of theoretical stage is replaced here by a rigorous calculation of the involved physical phenomena (Maxwell-Stephan theory) including the concept of non-equilibrium stage. A liquid feed, an overhead liquid distillate, and a liquid sidestream at the bottom of column are required. Sidestreams and/or intermediate liquid or vapor feeds as well as exchanged heat duties can be specified at each stage.	 Mass transfer distillation column (total condenser)

Unit operation	Short description	Module on the flowsheet
Liquid-liquid extraction	Makes it possible to represent a multi-stage liquid-liquid extraction process where takes place a counter-current mass transfer between two liquid phases. Two feed streams including solvent, an extract sidestream and a raffinate sidestream are required. A feed, an extract sidestream and a raffinate sidestream can also be specified at each stage. The mathematical model is based on the concept of theoretical stage. For liquid-liquid equilibrium calculations, splitting ratios between the raffinate and extract phases can be calculated by the selected thermodynamic model or provided by the user.	 Liquid-liquid extraction column
Liquid-liquid extraction with reflux	Makes it possible to represent a multi-stage liquid-liquid extraction process where takes place a counter-current mass transfer between two liquid phases. In this case the first stage is replaced by a stage known as "reflux stage". Its role is to represent a separation process that enables to regenerate solvent, from the extract resulting from the extraction process itself. Two feed streams including solvent, an extract sidestream, a raffinate sidestream and a recovered solvent stream are required. A feed, an extract sidestream and a raffinate sidestream can also be specified at each stage. The mathematical model is based on the concept of theoretical stage. For liquid-liquid equilibrium calculations, splitting ratios between the raffinate and extract phases can be calculated by the selected thermodynamic model or provided by the user.	 Liquid-liquid extraction column with reflux
Liquid-solid crystallizer	Allows to model any equipment for separation of a solid phase and a liquid phase making the assumption that the thermodynamic equilibrium is reached. Moreover, it is possible to define some parameters that can take into account the deviation from the thermodynamic equilibrium. This unit operation can be used to calculate only the saturation level of the studied solution.	 Liquid-solid crystallizer

Unit operation	Short description	Module on the flowsheet
Evaporator-crystallizer	Used to model any equipment for separation of a solid phase, a liquid phase and a vapor phase, making the assumption that the thermodynamic equilibrium is reached. Moreover, it is possible to define some parameters that can take into account the deviation from the thermodynamic equilibrium. This unit operation can be used to calculate only the saturation level of the studied solution.	 Evaporator-crystallizer
Belt filter	Makes it possible to simulate a belt filter to perform liquid-solid separation. Calculation is performed from knowledge of cake moisture, solid fraction in the filtrates and solid separation fractions of the components in the mixture. The filter is fed by a suspension and eventually by wash water for belt and/or for vacuum chambers. A solid phase and a filtrate are recovered as outlet streams.	 Belt filter
Filter press	Makes it possible to simulate a filter press to perform liquid-solid separation. Calculation is performed from knowledge of cake moisture and solid fraction in the mother liquors leaving the filter. The filter is fed by a suspension. A solid phase and a filtrate are recovered as outlet streams.	 Plate frame filter
Clarifying filter	Makes it possible to simulate a clarifying filter to perform liquid-solid separation. Calculation is performed from knowledge of solid fraction in the sludge and in the overflow settler. The filter is fed by a suspension. A clarified effluent and sludge are recovered as outlet streams.	 Clarifier

Unit operation	Short description	Module on the flowsheet
Hydrocyclone	Makes it possible to simulate an hydrocyclone to perform liquid-solid separation. Calculation is performed from knowledge of solid fraction in the solids discharge and in the liquid discharge. A calculation for each component is also possible from knowledge of splitting ratios for n-1 components. A top discharge clarified stream and a bottom rich solid discharge streams are recovered as outlet streams.