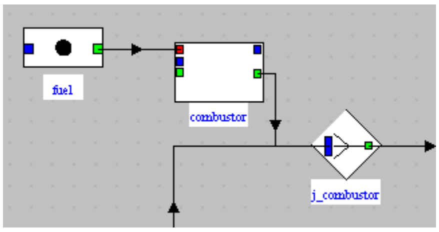
Representation of simple components as productive units

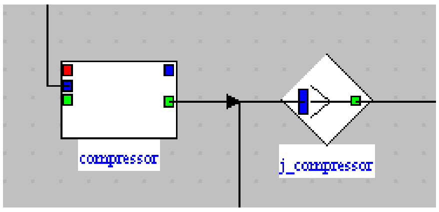
Exergy provider components

Component	F	P
Combustion	xq^+	Δxh



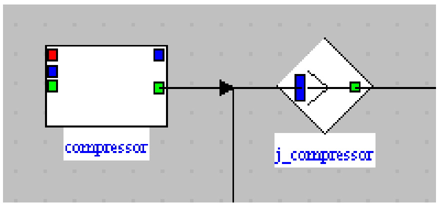
A combustion chamber converts the fuel exergy xq^+ (represented by a link arriving in the red port) in an exergy increase Δxh of the fluid. A junction must therefore be placed downstream; its other inputs are for instance the oxidizer and the compressor. The outgoing link comes from the green port.

Component	F	P
Compressor with internal exergy input	τ^+	Δxh



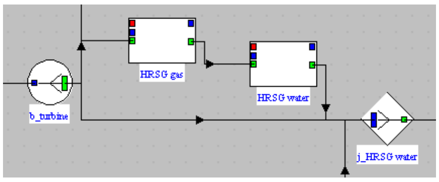
A compressor (or a pump) converts the mechanical power τ^+ received in an exergy increase Δxh of the fluid. A junction must therefore be placed; its other inputs are for instance the oxidizer and the combustion chamber. The outgoing link comes from the green port.

Component	F	P
Compressor with external exergy input	τ^+	Δxh

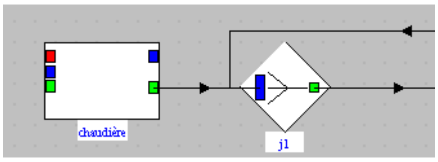


If the power received is internal, it is represented by a link entering the blue port. If it is external, it is not displayed on the editor, but is taken into account in the exergy balance screen.

Component	F	P
Internal heat exchange hot fluid upstream, cold fluid downstream	Δxh^+	Δxh



In a heat exchanger modeled as the coupling of two exchange processes, the resource corresponds to the exergy variation of the hot fluid, and the product to that of the cold fluid. The hot fluid must therefore correspond to one of the branches of a divider, and the cold fluid to one of the branches of a junction. Both components are connected as shown on figure.

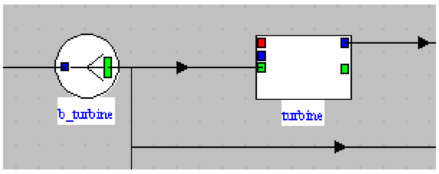


External heat exchange Q>0

$T_k > T_0$ xq^+ Δxh

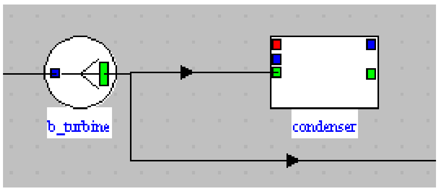
In a heat exchange with an external source with a temperature greater than that of the environment, bringing heat to the system, the resource is the heat-exergy xq^+ transferred from the source. This heat-exergy is converted en accroissement in an exergy increase Δxh of the fluid. A junction must therefore be placed downstream. The outgoing link comes from the green port.

Exergy receiver components



Turbine Δxh^+ τ

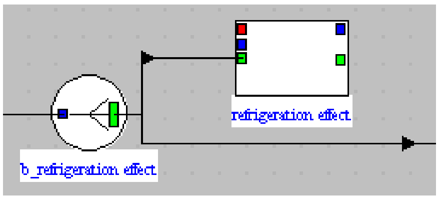
A turbine converts in mechanical power τ the exergy decrease □ Δxh^+ of the fluid (represented by a link entering the green port). A branch must therefore be placed upstream; it must at least have another output, such as the exhaust gases rejected in the atmosphere, or a condenser if steam is being expanded. The outgoing link comes from the blue port.



External heat exchange Q<0

$T_k > T_0$ Δxh^+

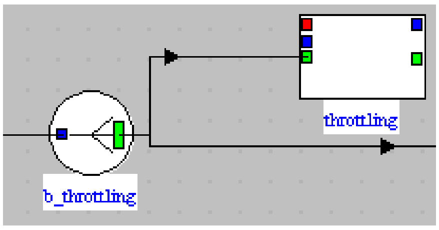
When the system is cooled by an external source whose temperature is greater than that of the environment, the heat-exergy lost is equal to the exergy decrease Δxh^+ of the fluid (represented by a link entering the green port). A branch must therefore be placed upstream; it must at least have another output. The temperature of the external source must be entered in the PDU exergy balance screen.



External heat exchange Q>0

$T_k < T_0$ Δxh^+

When the system is heated by an external source whose temperature is lower than that of the environment, the heat-exergy lost xq- is equal to the exergy decrease Δxh^+ of the fluid (represented by a link entering the green port). A branch must therefore be placed upstream; it must at least have another output. The temperature of the external source must be entered in the PDU exergy balance screen.



Throttling Δxh^+ 0

In a throttling, the relative exergy of the fluid decreases between the inlet and the outlet of the du component, because of the pressure drop at constant enthalpy. A branch must therefore be placed upstream. This component is purely dissipative.