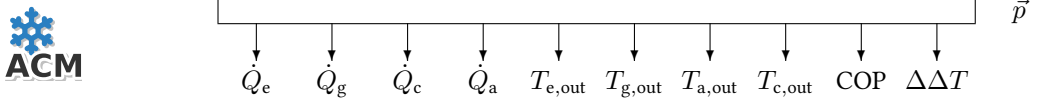
Block ACM

The ACM block simulates the absorption cycle process of a single- stage, indirectly heated absorption cooling machine with the refrigerant water and the solvent lithium bromide.



Name	ACM
Function	st0026
Inputs	6
Outputs	10
Parameters	15
Strings	0
Group	3

Inputs

1 External generator inlet temperature $T_{g,in}$ / °C
2 External massflow heating circuit $\dot{m}_{g,in}$ / kg s^{-1}
3 External absorber inlet temperature $T_{a,in}$ / °C
4 External massflow cooling circuit at absorber/condenser $\dot{m}_{a,in}$ / kg s^{-1}
5 External evaporator inlet temperature $T_{e,in}$ / °C
6 External massflow cooling circuit $\dot{m}_{e,in}$ / kg s^{-1}

Outputs

1 Refrigerating capacity of the evaporator $\dot{Q}_e$ / kW
2 Heating capacity of the generator $\dot{Q}_g$ / kW
3 Cooling capacity of the condenser $\dot{Q}_c$ / kW
4 Cooling capacity of the absorber $\dot{Q}_a$ / kW
5 Outlet temperature cooling circuit $T_{e,out}$ / °C
6 Outlet temperature heating circuit $T_{g,out}$ / °C
7 Outlet temperature cooling circuit absorber $T_{a,out}$ / °C
8 Outlet temperature cooling circuit condenser $T_{c,out}$ / °C
9 Coefficient of performance COP

10 Characteristic double temperature difference $\Delta\Delta T$ / K

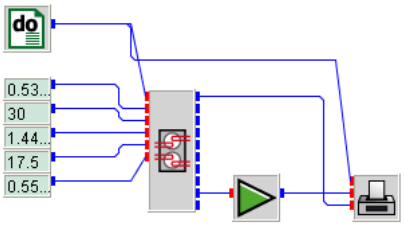
Parameters

1 Initial internal generator mean temperature $T_{g,0}$ / °C
2 Initial internal condenser mean temperature $T_{c,0}$ / °C
3 Initial internal absorber mean temperature $T_{a,0}$ / °C
4 Initial internal evaporator mean temperature $T_{e,0}$ / °C
5 Characteristic number for the generator heat transfer $(UA)_g$ / kW K^{-1}
6 Characteristic number for the condenser heat transfer $(UA)_c$ / kW K^{-1}
7 Characteristic number for the absorber heat transfer $(UA)_a$ / kW K^{-1}
8 Characteristic number for the evaporator heat transfer $(UA)_e$ / kW K^{-1}
9 Rich solution mass flow $\dot{m}_r$ / kg s^{-1}
10 Solution heat exchanger efficiency η_s
11 Heat capacity external heating fluid $c_{p,g}$ / kJ kg^{-1} K^{-1}
12 Heat capacity external cooling fluid $c_{p,a}$ / kJ kg^{-1} K^{-1}
13 Heat capacity external cooling circle fluid $c_{p,e}$ / kJ kg^{-1} K^{-1}
14 Dühring-Parameter B
15 Cooling capacity under design conditions $\dot{Q}_n$ / kW

Strings

None

acm.vseit



A DO blocks varies the external generator inlet temperature of an absorption cooling machine between 56 and 96 °C in steps of 2 °C. All other inputs of the ACM block are set constant through five CONST blocks. The coefficient of performance of the ACM is multiplied by a factor 100, i. e., converted into percent by a GAIN block.

The COP together with the refrigeration capacity of the ACM is displayed by a PLOT block.

