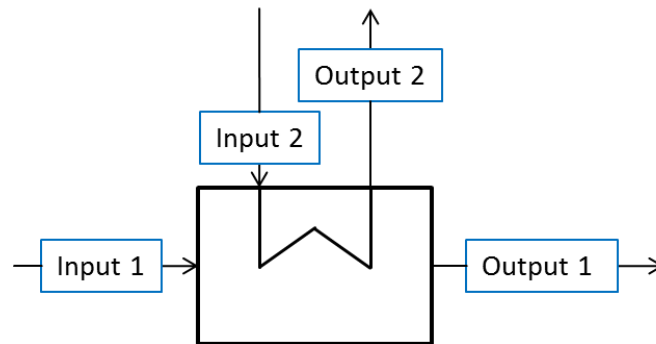


Heat exchanger

General description



This unit represents the simplified steady-state model of a heat exchanger. The unit calculates the maximum heat that may be transferred between two streams and multiplies this heat with a parameter – the efficiency ε .

$$|\dot{Q}| = \varepsilon |\dot{Q}_{\text{ideal}}| =$$

$$= \varepsilon \left| \int_{T_1}^{T_{\text{mix}}} \dot{m}_1 c_{p,1}(\theta) d\theta \right| = \varepsilon \left| \int_{T_2}^{T_{\text{mix}}} \dot{m}_2 c_{p,2}(\theta) d\theta \right|$$

Application example

Model parameters:

Efficiency	0.5
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Input Stream 1:

\dot{m}	1 kg/s
T	300 K
$x_{\text{N2,g}}$	1

Input Stream 2:

Efficiency	1 kg/s
T	400 K
$x_{\text{N2,g}}$	1

Results:

Output Stream 1:

\dot{m}	1 kg/s
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T	325.036 K
$x_{N2,g}$	1

Output Stream 2:

<i>Efficiency</i>	1 kg/s
T	375.044 K
$x_{N2,g}$	1