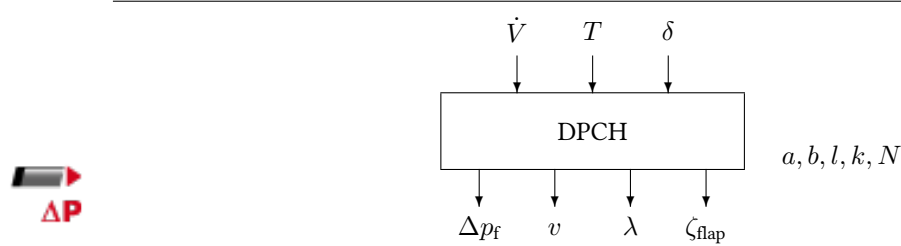


Block DPCH

The DPCH block calculates the pressure drop in a rectangular channel due to friction of an incompressible one-phase turbulent tubular flow from the empirical Colebrook-White equation and the hydraulic diameter. It is possible to include a flap in the channel.



Name	DPCH
Function	st0007
Inputs	2 ... [3]
Outputs	4
Parameters	4 ... [5]
Strings	0
Group	S

Inputs

- 1 Volume flow $\dot{V} / \text{m}^3 \text{h}^{-1}$
- 2 Air temperature $T / ^\circ\text{C}$
- 3 Flap angle $\delta / ^\circ$ (Open: $\delta = 0^\circ$. Closed: $\delta = 90^\circ$)

Outputs

- 1 Pressure drop $\Delta p_f / \text{Pa}$
- 2 Flow velocity $v / \text{m s}^{-1}$
- 3 Tube friction number $\lambda / \text{m s}^{-1}$
- 4 Zeta value of flap position ζ_{flap}

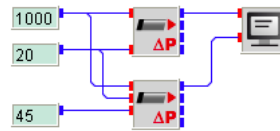
Parameters

- 1 Side length a / m
- 2 Side length b / m
- 3 Length l / m
- 4 Channel roughness k / mm
- 5 Number of flaps N (either zero, or up to three)

Strings

None

dpch.vseit



Two rectangular air channels with side lengths 0.3 and 0.2 m and a length of 1 m are simulated for a volume flow of 1000 m³/h and air temperature 20 °C as defined through two **CONST** blocks.

The upper **DPCH** block has no flaps while the lower block is assumed to have one flap at an opening angle of 45 ° as set by a third **CONST** block. The air temperature is set to 25 °C.

The **SCREEN** block displays the pressure drops in Pascal.

1.14992 219.52522