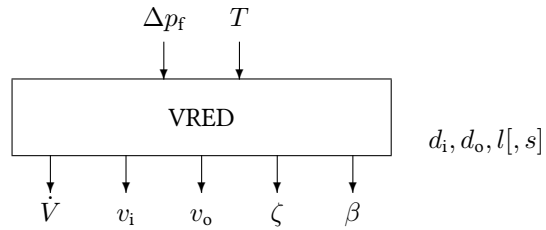


Block VRED

The VRED block calculates the volume flow in a reducer due to friction of an incompressible one-phase turbulent tubular flow.



Name	VRED
Function	st0020
Inputs	2
Outputs	5
Parameters	3 . . . [4]
Strings	0
Group	S

Inputs

- 1 Pressure drop Δp_f / Pa
- 2 Air temperature T / °C

Outputs

- 1 Volume flow $\dot{V}$ / $\text{m}^3 \text{h}^{-1}$
- 2 Inlet flow velocity v_i / m s^{-1}
- 3 Outlet flow velocity v_o / m s^{-1}
- 4 Zeta value ζ
- 5 Closing angle β / m s^{-1}

Parameters

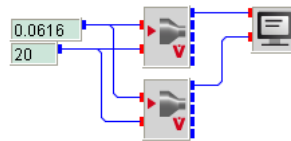
- 1 Inlet diameter d_i / m
- 2 Outlet diameter d_o / m
- 3 Length l / m
- 4 Sharpness s (evaluated only if BP(3) = 0)
 - 0 Sharp edge
 - 1 Broken edge
 - 2 Round edge

3 Smooth, round edge

Strings

None

vred.vseit



Two **VRED** blocks with different edge sharpnesses are compared for a pressure drop of 0.0616 Pa and an air temperature of 20 °C as defined by two **CONST** blocks.

The inlet diameter is set to 0.4, the outlet diameter to 0.25 m, respectively. The length of the reducer is assumed to be zero, i. e., a 90 ° reducer is simulated.

The **SCREEN** block displays the resulting volume flows.

103.08892 162.99789