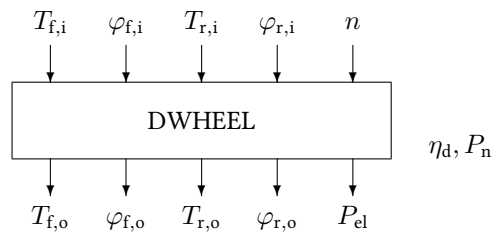


Block DWHEEL

The DWHEEL block simulation a desiccant wheel.



Name	DWHEEL
Function	st0004
Inputs	5
Outputs	5
Parameters	2
Strings	0
Group	S

Inputs

- 1 Fresh air inlet temperature $T_{f,i}$ / °C
- 2 Fresh air inlet relative humidity $\varphi_{f,i}$
- 3 Regeneration air inlet temperature $T_{r,i}$ / °C
- 4 Regeneration air inlet relative humidity $\varphi_{r,i}$
- 5 Rotational speed n / r.p.m.

Outputs

- 1 Fresh air outlet temperature $T_{f,o}$ / °C
- 2 Fresh air outlet relative humidity $\varphi_{f,o}$
- 3 Regeneration air outlet temperature $T_{r,o}$ / °C
- 4 Regeneration air outlet relative humidity $\varphi_{r,o}$
- 5 Electricity consumption P_{el} / W

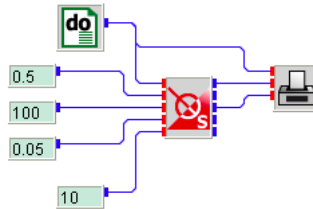
Parameters

- 1 Dehumidification efficiency η_d
- 2 Nominal electricity consumption P_n / W

Strings

None

dwheel.vseit



A desiccant wheel with a dehumidification efficiency of 0.8 and a nominal electricity consumption of 50 W is simulated by the **DWHEEL** block.

The fresh air inlet temperature is varied by a **DO** block between 10 and 40 °C in steps of 1 °C. The fresh air outlet temperature is plotted as a function of the fresh air inlet temperature together with the regeneration air outlet temperature by a **PLOT** block.

The other inputs of the **DWHEEL** block are defined through **CONST** blocks to a relative humidity of the fresh air of 50 percent, a regeneration air inlet temperature of 100 °C, a regeneration air inlet humidity of 5 percent, and a rotational speed of the rotor of 10 r.p.m.

