Block CPUMP

The CPUMP block calculates the head and torque of a centrifugal pump.



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Inputs

1	Flowrate $\dot{Q}$ / $\mathrm{m^3\,h^{-1}}$
2	Rotational speed n / $\mathrm{s^{-1}}$

Outputs

1	Delivery height H / m
1	Torque T / N m

Parameters

1	Head coefficient $h_0 > 0$
2	Head coefficient $h_1 > 0$
3	Head coefficient $h_2 > 0$
4	Torque coefficient $c_0 > 0$
5	Torque coefficient $c_1 > 0$
6	Torque coefficient $c_2 > 0$

Strings

None

Description

The delivery height of a centrifugal pump is modeled by

$$H = h_0 n^2 + h_1 n\dot{Q} - h_2 \dot{Q}^2$$

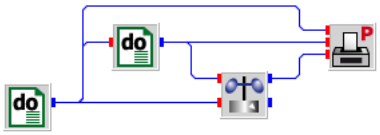
where n the rotational and $\dot{Q}$ is the flowrate. h_0, h_1, and h_2 are free positive fit parameters.

The torque is calculated by the equation

$$T = c_0 n^2 + c_1 n\dot{Q} - c_2 \dot{Q}^2$$

Again, c_0, c_1, and c_2 are free positive fit parameters.

cpump.vseit



The flowrate of a centrigugal pump is varied between zero and 14 m^3 per hour by a DO block. The rotational speed of the pump is varied between 30 and 50 per second in steps of 10 by a second DO block.

The delivery height of the pump is plotted as a function of the flowrate by a PLOTP block.

