Software Information

- Please check, whether your inputs, the equations applied and the charactersitics are displayed correctly.
- You are welcome to send your feedback via `https://github.com/oemof/tespy/issues`.
- LaTeXpackages required are:
  - graphicx
  - float
  - hyperref
  - booktabs
  - amsmath
  - units
  - cleveref
- To supress these messages, call the model documentation with the keyword draft=False.

TESPy Version:	0.4.0 - dev
Commit:	d918f10d@feature/self_documenting_models
CoolProp version:	6.4.0
Python version:	3.8.0 (default, Oct 28 2019, 16:14:01) [GCC 8.3.0]

1 Connections in design mode

1.1 Specified connection parameters

label	m in kg/s (1)	p in bar (2)	h in kJ/kg (3)
source:out1_pipe:in1	10.000	1.000	40.000

Table 1: Specified connection parameters

1.2 Equations applied

$$0 = \dot{m} - \dot{m}_{\text{spec}} \tag{1}$$

$$0 = p - p_{\text{spec}} \tag{2}$$

$$0 = h - h_{\text{spec}} \tag{3}$$

1.3 Specified fluids

label	water (4)
source:out1_pipe:in1	1.000

Table 2: Specified fluids

1.4 Equations applied

$$0 = x_{\text{water}} - x_{\text{water,spec}} \tag{4}$$

2 Components in design mode

2.1 Components of type Pipe

2.1.1 Mandatory constraints

$$0 = \dot{m}_{\text{in},i} - \dot{m}_{\text{out},i} \; \forall i \in [1] \tag{5}$$

$$0 = x_{fl,\text{in},i} - x_{fl,\text{out},i} \; \forall fl \in \text{network fluids}, \forall i \in [1] \tag{6}$$

2.1.2 Inputs specified

label	Q (7)	pr (8)	hydro_group (9)
pipe	0.000	0.999	True

Table 3: Parameters of components of type Pipe

label	L	ks	D
pipe	100	0.000	0.285

Table 4: Parametergroup hydro_group

2.1.3 Equations applied

$$0 = \dot{m}_{\text{in}} \cdot (h_{\text{out}} - h_{\text{in}}) - \dot{Q} \tag{7}$$

$$0 = p_{\text{in},1} \cdot pr - p_{\text{out},1} \tag{8}$$

$$\begin{aligned} 0 =& p_{\text{in}} - p_{\text{out}} - \frac{8 \cdot |\dot{m}_{\text{in}}| \cdot \dot{m}_{\text{in}} \cdot \frac{v_{\text{in}}+v_{\text{out}}}{2} \cdot L \cdot \lambda\left(Re, ks, D\right)}{\pi^2 \cdot D^5} \\ Re =& \frac{4 \cdot |\dot{m}_{\text{in}}|}{\pi \cdot D \cdot \frac{\eta_{\text{in}}+\eta_{\text{out}}}{2}} \end{aligned} \tag{9}$$