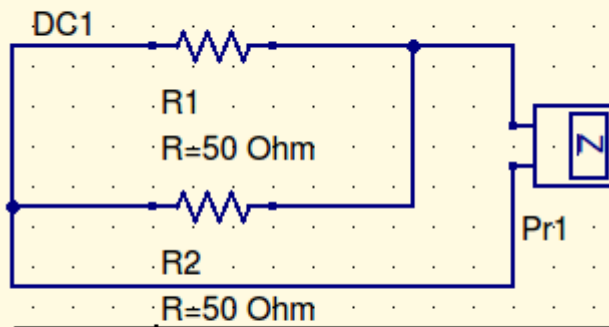


dc simulation



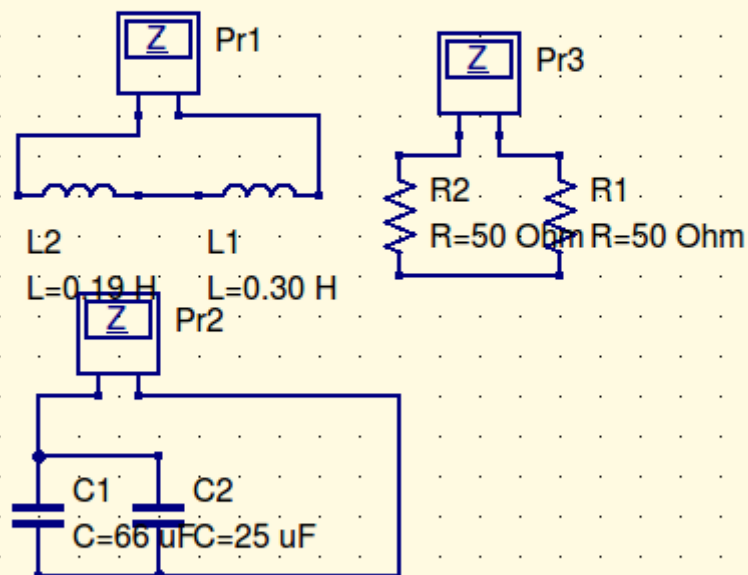
number	Pr1.Ohm	Pr1.V
1	25	25

ac simulation

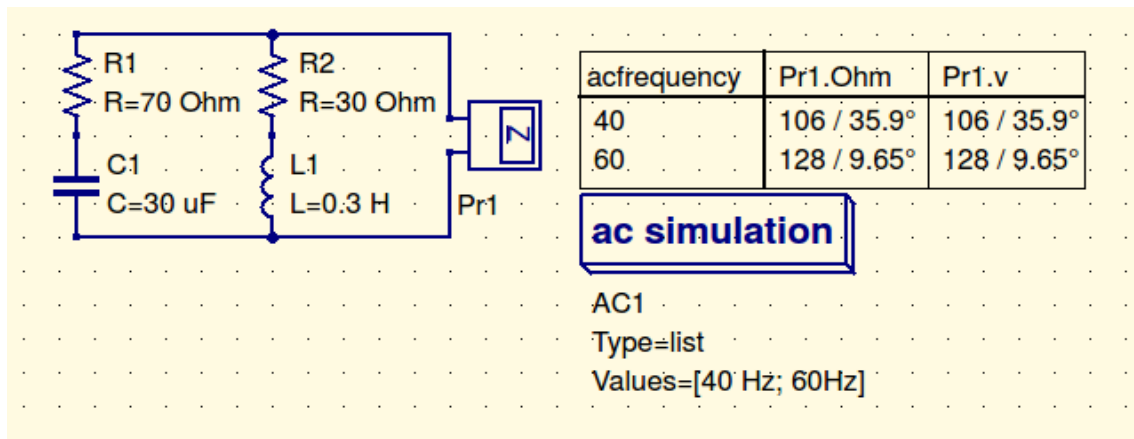
AC1

Type=list

Values=[40 Hz; 60 Hz]



acfrequency	Pr1.Ohm	Pr2.Ohm	Pr3.Ohm
40	123 / 90°	43.7 / -90°	100
60	185 / 90°	29.1 / -90°	100



Calculating the equivalent impedance:

40 Hz frequency

$$\begin{aligned}
 Z_1 &= \left(R_1 + \frac{1}{j\omega C_1} \right) \parallel (R_2 + j\omega L_1) = \\
 &= \left(70 - j \frac{1}{2\pi \times 40 \times 30\mu} \right) \parallel (30 + 2\pi \times 40 \times j0,30) = \\
 &= (70 - j132,63) \parallel (30 + j75,40) \\
 &= \frac{(70 - j132,63) \times (30 + j75,40)}{70 - j132,63 + 30 + j75,40} = \frac{149,97 \angle -62,2^\circ \times 81,15 \angle 68,3^\circ}{100 - j57,23} = \\
 &= \frac{12170,07 \angle 6,2^\circ}{115,22 \angle -29,8^\circ} = 105,6 \angle 36,0^\circ (\Omega)
 \end{aligned}$$

60 Hz frequency

$$\begin{aligned}
 Z_1 &= \left(R_1 + \frac{1}{j\omega C_1} \right) \parallel (R_2 + j\omega L_1) = \\
 &= \left(70 - j \frac{1}{2\pi \times 60 \times 30\mu} \right) \parallel (30 + 2\pi \times 60 \times j0,30) = \\
 &= (70 - j88,42) \parallel (30 + j113,10) = \\
 &= \frac{(70 - 88,42j) \times (30 + 113,10j)}{70 - j88,42 + 30 + j113,10} = \frac{112,77 \angle -51,6^\circ \times 117,01 \angle 75,1^\circ}{100 + j24,68} = \\
 &= \frac{13195,22 \angle 23,5^\circ}{103,00 \angle 13,9^\circ} = 128,1 \angle 9,6^\circ (\Omega)
 \end{aligned}$$