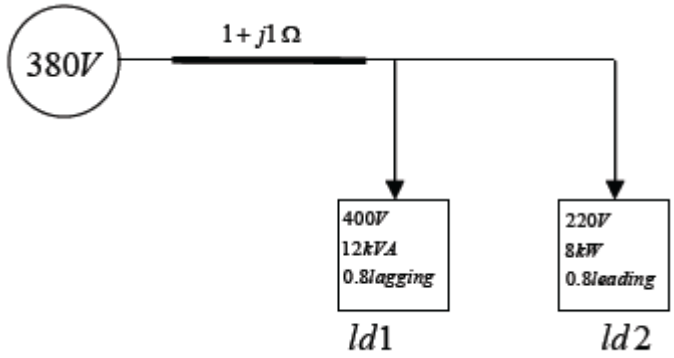
Question – A Three-phase circuit

A three-phase generator, with a combined (interlaced) voltage of $380\,\text{V}$ is connected to two three-phased loads through a transmission line. The transmission line's impedance is $1+1\cdot j\,[\Omega]$. Both Loads are connected in parallel, and given in the values specified in the following scheme:



Calculate the current through the transmission line (magnitude and phase).

Attempt at a solution

Well, Basically the problem is that I get two different answers in two different ways:

First, I tried to calculate both currents flowing through both loads:

$$I_1 = \frac{S_1}{V_1} = \frac{12\cdot 10^3}{400} = 30\ \text{A}$$

$$\cos(\phi_2) = \frac{P_2}{S_2} = 0.8 \quad \Rightarrow \quad S_2 = \frac{P_2}{0.8} = 10\ k\text{VA}$$

$$I_2 = \frac{S_2}{V_2} = \frac{10\cdot 10^3}{220} = 45.45\ \text{A}$$

$$\text{I}=\text{I}_1 + I_2 = 30 + 45.45 = \boxed{75.45\ \text{A}}$$

For now, I am only focused on the magnitude.
Second way, is to simply calculate the equivalent load's Impedance using the information given, and then calculate the current:

$$Z_1 = \frac{V_1^2}{S_1} \measuredangle \cos^{-1}(\phi_1) = \frac{400^2}{12\cdot 10^3} \measuredangle \cos^{-1}(0.8) = 13.33 \measuredangle 36.87^\circ$$

$$Z_2 = \frac{V_2^2 \cos(\phi_2)}{P_2} \measuredangle \cos^{-1}(\phi_2) = \frac{220^2\cdot 0.8}{8\cdot 10^3} \measuredangle - \cos^{-1}(0.8) = 4.84 \measuredangle - 36.87^\circ$$

$$Z_{\text{eq}} = \frac{Z_1 Z_2}{Z_1 + Z_2} = 4.19 \measuredangle - 19.31^\circ$$

$$I_T = \frac{V}{Z_{\text{eq}} + (1+j)} = \frac{380}{(4.19 \measuredangle - 19.31^\circ) + (1+j)} = \boxed{76.47 \measuredangle 4.45^\circ}$$

So the question is why I have some slight differences between both of the results I got (Magnitude only).