EE2029: Introduction to Electrical Energy System

Per Unit Analysis: Single Phase Per Unit Analysis

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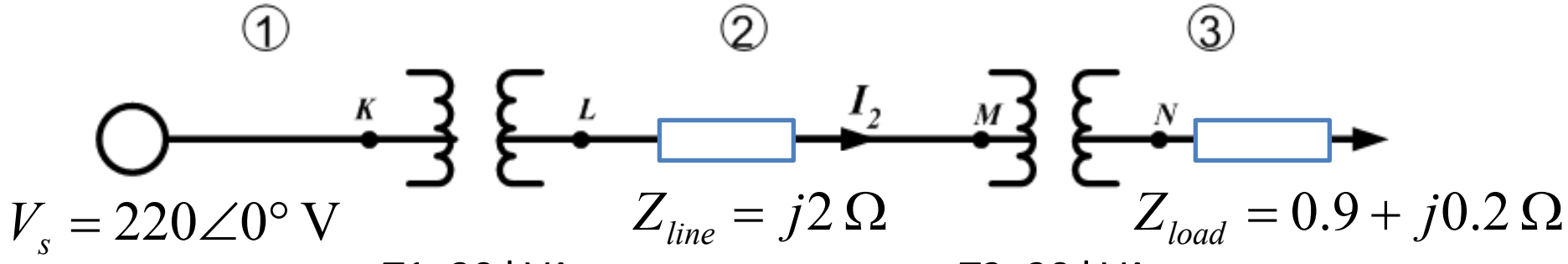
Steps of Per Unit Analysis

1. Choose $S_B^{1\Phi}$ for the system.
2. Select V_B for different zones (usually follows transformer voltage ratings).
3. Calculate Z_{B} for different zones.
4. Express all quantities in p.u.
5. Draw impedance diagram and solve for p.u. quantities.
6. Convert back to actual quantities if needed.

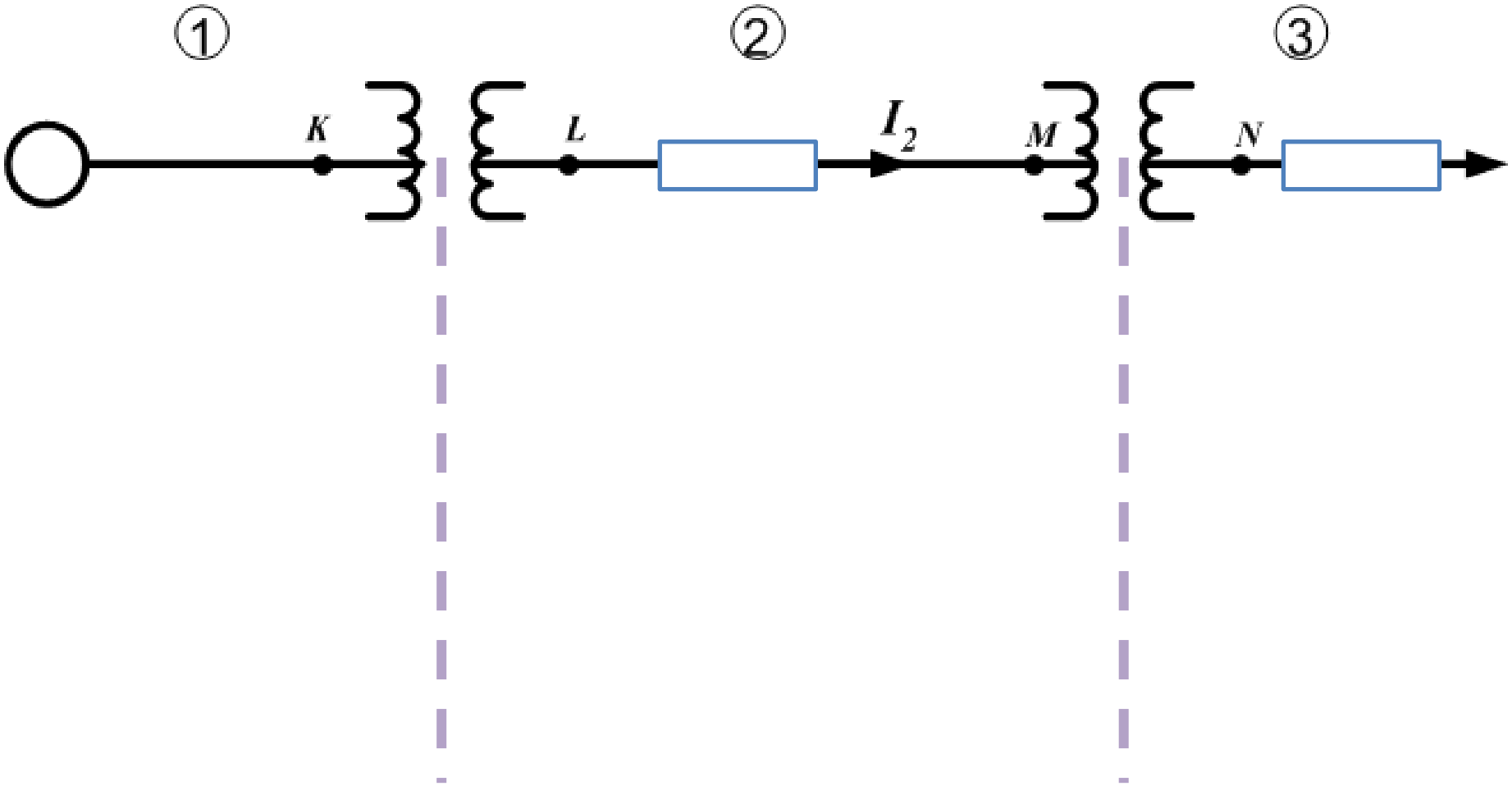
Example : 1Φ, Per Unit Analysis

- Three zones of a single-phase circuit are shown below. Use base value of 30 kVA and 240 V in zone 1, draw per unit circuit and find per unit value of source voltage and all impedances.



T1: 30 kVA
240/480 V
Xeq = 0.1 p.u.

T2: 20 kVA
460/115 V
Xeq = 0.1 p.u.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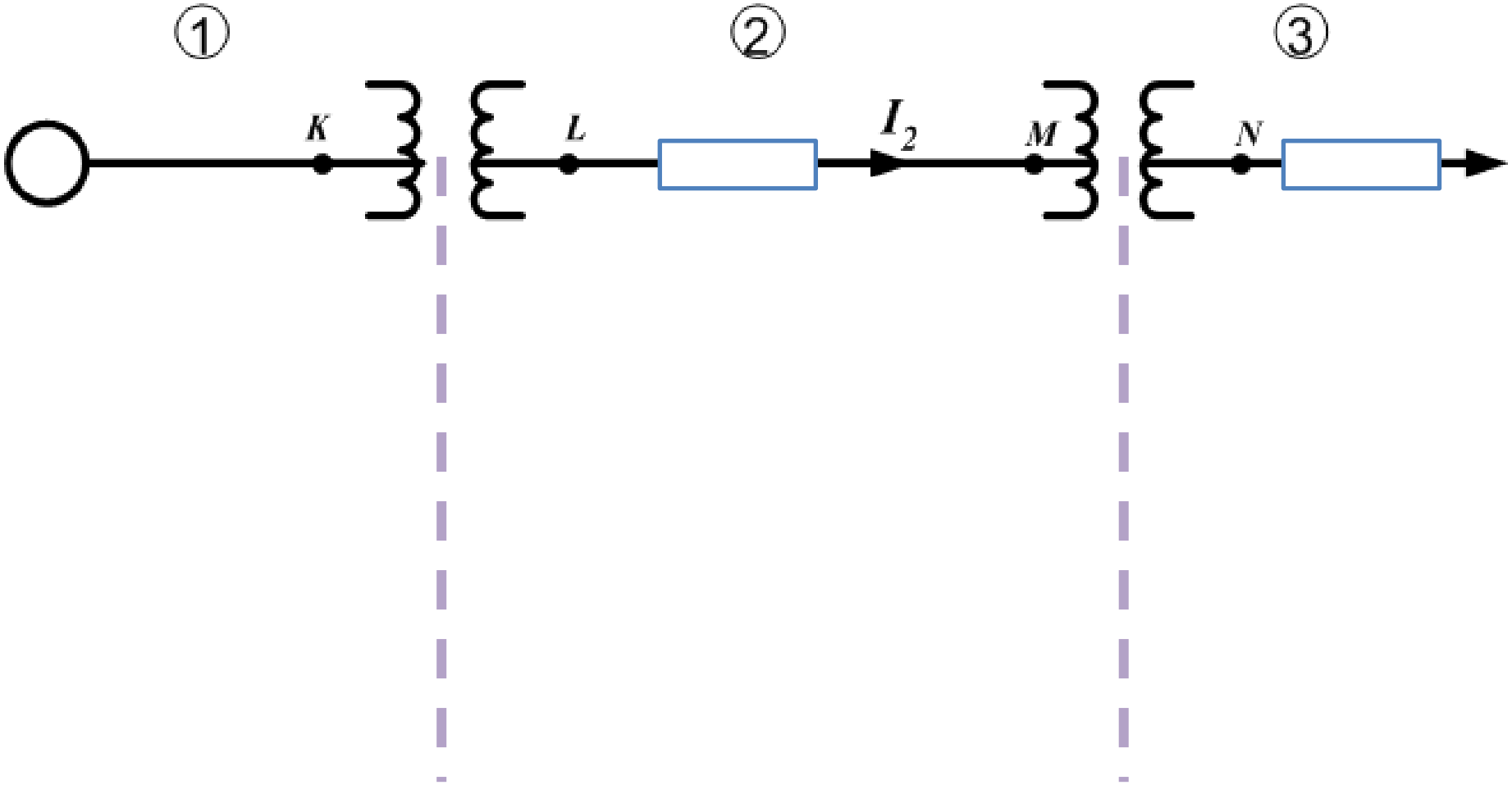
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Summary