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End Condenser Method in Medium Line Formulas

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List of 17 End Condenser Method in Medium Line Formulas

End Condenser Method in Medium Line

1) Admittance using A Parameter in End Condenser Method

Open Calculator

fx $$Y_{ecm} = \frac{2 \cdot (A_{ecm} - 1)}{Z_{ecm}}$$

ex $$0.020222S = \frac{2 \cdot (1.091 - 1)}{9\Omega}$$

2) Capacitive Current in End Condenser Method

Open Calculator

fx $$I_{c(ecm)} = I_{s(ecm)} - I_{r(ecm)}$$

ex $$1.3A = 16A - 14.7A$$

3) Impedance using A Parameter in End Condenser Method

Open Calculator

fx $$Z_{ecm} = \frac{2 \cdot (A_{ecm} - 1)}{Y_{ecm}}$$

ex $$9.1\Omega = \frac{2 \cdot (1.091 - 1)}{0.02S}$$

4) Impedance(ECM)

Open Calculator

$$Z_{ecm} = \frac{V_{s(ecm)} - V_{r(ecm)}}{I_{s(ecm)}}$$

$$9\Omega = \frac{400V - 256V}{16A}$$

5) Line Losses in End Condenser Method

Open Calculator

$$P_{loss(ecm)} = 3 \cdot R_{ecm} \cdot I_{s(ecm)}^2$$

$$84.48W = 3 \cdot 0.11\Omega \cdot (16A)^2$$

6) Medium Line A Parameter (LEC)

Open Calculator

$$A_{ecm} = 1 + \left(\frac{Z_{ecm} \cdot Y_{ecm}}{2} \right)$$

$$1.09 = 1 + \left(\frac{9\Omega \cdot 0.02S}{2} \right)$$

7) Receiving End Angle using Sending End Power in End Condenser Method

Open Calculator

$$\Phi_{r(ecm)} = a\cos\left(\frac{P_{s(ecm)} - P_{loss(ecm)}}{3 \cdot I_{r(ecm)} \cdot V_{r(ecm)}} \right)$$

$$89.59399^\circ = a\cos\left(\frac{165W - 85W}{3 \cdot 14.7A \cdot 256V} \right)$$

8) Receiving End Current in End Condenser Method

Open Calculator

$$I_{r(ecm)} = I_{s(ecm)} - I_{c(ecm)}$$

ex $14.7\text{A} = 16\text{A} - 1.3\text{A}$

9) Receiving End Voltage in End Condenser Method

Open Calculator

$$V_{r(ecm)} = V_{s(ecm)} - \left(I_{s(ecm)} \cdot Z_{ecm}\right)$$

ex $256\text{V} = 400\text{V} - (16\text{A} \cdot 9\Omega)$

10) Resistance using Losses in End Condenser Method

Open Calculator

$$R_{ecm} = \frac{P_{loss(ecm)}}{3 \cdot I_{s(ecm)}^2}$$

ex $0.110677\Omega = \frac{85\text{W}}{3 \cdot (16\text{A})^2}$

11) Sending End Current in End Condenser Method

Open Calculator

$$I_{s(ecm)} = I_{r(ecm)} + I_{c(ecm)}$$

ex $16\text{A} = 14.7\text{A} + 1.3\text{A}$

12) Sending End Current using Impedance in End Condenser Method

Open Calculator

$$I_{s(ecm)} = \frac{V_{s(ecm)} - V_{r(ecm)}}{Z_{ecm}}$$

$$16A = \frac{400V - 256V}{9\Omega}$$

13) Sending End Current using Losses in End Condenser Method

Open Calculator

$$I_{s(ecm)} = \sqrt{\frac{P_{loss(ecm)}}{3 \cdot R_{ecm}}}$$

$$16.04917A = \sqrt{\frac{85W}{3 \cdot 0.11\Omega}}$$

14) Sending End Power in End Condenser Method

Open Calculator

$$P_{s(ecm)} = P_{r(ecm)} - P_{loss(ecm)}$$

$$165W = 250W - 85W$$

15) Sending End Voltage in End Condenser Method

Open Calculator

$$V_{s(ecm)} = V_{r(ecm)} + \left(I_{s(ecm)} \cdot Z_{ecm}\right)$$

$$400V = 256V + (16A \cdot 9\Omega)$$

16) Transmission Efficiency in End Condenser Method

Open Calculator

fx $$\eta_{ecm} = \left(\frac{P_{r(ecm)}}{P_{s(ecm)}} \right) \cdot 100$$

ex $$151.5152 = \left(\frac{250W}{165W} \right) \cdot 100$$

17) Voltage Regulation in End Condenser Method

Open Calculator

fx $$\%V_{ecm} = \frac{V_{s(ecm)} - V_{r(ecm)}}{V_{r(ecm)}}$$

ex $$0.5625 = \frac{400V - 256V}{256V}$$

Variables Used

- $\%V_{ecm}$ Voltage Regulation in ECM
- A_{ecm} A Parameter in ECM
- $I_{c(ecm)}$ Capacitive Current in ECM *(Ampere)*
- $I_{r(ecm)}$ Receiving End Current in ECM *(Ampere)*
- $I_{s(ecm)}$ Sending End Current in ECM *(Ampere)*
- $P_{loss(ecm)}$ Power Loss in ECM *(Watt)*
- $P_{r(ecm)}$ Receiving End Power in ECM *(Watt)*
- $P_{s(ecm)}$ Sending End Power in ECM *(Watt)*
- R_{ecm} Resistance in ECM *(Ohm)*
- $V_{r(ecm)}$ Receiving End Voltage in ECM *(Volt)*
- $V_{s(ecm)}$ Sending End Voltage in ECM *(Volt)*
- Y_{ecm} Admittance in ECM *(Siemens)*
- Z_{ecm} Impedance in ECM *(Ohm)*
- η_{ecm} Transmission Efficiency in ECM
- $\Phi_{r(ecm)}$ Receiving End Phase Angle in ECM *(Degree)*

Constants, Functions, Measurements used

- Function: **acos**, acos(Number)
  Inverse trigonometric cosine function
- Function: **cos**, cos(Angle)
  Trigonometric cosine function
- Function: **sqrt**, sqrt(Number)
  Square root function
- Measurement: **Electric Current** in Ampere (A)
  Electric Current Unit Conversion
- Measurement: **Power** in Watt (W)
  Power Unit Conversion
- Measurement: **Angle** in Degree (°)
  Angle Unit Conversion
- Measurement: **Electric Resistance** in Ohm (Ω)
  Electric Resistance Unit Conversion
- Measurement: **Electric Conductance** in Siemens (S)
  Electric Conductance Unit Conversion
- Measurement: **Electric Potential** in Volt (V)
  Electric Potential Unit Conversion

Check other formula lists

- **End Condenser Method in Medium Line Formulas**
- **Nominal Pi-Method in Medium Line Formulas**
- **Nominal T-Method in Medium Line Formulas**

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