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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

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

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

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

2) Capacitive Current in End Condenser Method

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

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

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

3) Impedance using A Parameter in End Condenser Method

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

[Open Calculator !\[\]\(f60b7a900783ac3fd531bfd9c111be6d_img.jpg\)](#)

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



4) Impedance(ECM)

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

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

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

5) Line Losses in End Condenser Method

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

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{ex } 84.48\text{W} = 3 \cdot 0.11\Omega \cdot (16\text{A})^2$$

6) Medium Line A Parameter (LEC)

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

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

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

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

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

[Open Calculator !\[\]\(b64b40baaee5acddc1eab8538ba84754_img.jpg\)](#)

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



8) Receiving End Current in End Condenser Method 

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

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)


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

9) Receiving End Voltage in End Condenser Method 

$$fx \quad V_{r(ecm)} = V_{s(ecm)} - (I_{s(ecm)} \cdot Z_{ecm})$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$ex \quad 256V = 400V - (16A \cdot 9\Omega)$$

10) Resistance using Losses in End Condenser Method 

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

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

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

11) Sending End Current in End Condenser Method 

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

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\)](#)

$$ex \quad 16A = 14.7A + 1.3A$$



12) Sending End Current using Impedance in End Condenser Method

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

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)

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

13) Sending End Current using Losses in End Condenser Method

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

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

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

14) Sending End Power in End Condenser Method

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

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

$$\text{ex } 165\text{W} = 250\text{W} - 85\text{W}$$

15) Sending End Voltage in End Condenser Method

$$\text{fx } V_{s(\text{ecm})} = V_{r(\text{ecm})} + (I_{s(\text{ecm})} \cdot Z_{\text{ecm}})$$

[Open Calculator !\[\]\(7bc43b319a082987e20f7bf78f4bab80_img.jpg\)](#)

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



16) Transmission Efficiency in End Condenser Method

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

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0_img.jpg\)](#)

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

17) Voltage Regulation in End Condenser Method

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

[Open Calculator !\[\]\(e1d6102fe77919492c04879c8450f1f5_img.jpg\)](#)

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









Variables Used

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



Constants, Functions, Measurements used

- **Function:** **acos**, $\text{acos}(\text{Number})$
Inverse trigonometric cosine function
- **Function:** **cos**, $\text{cos}(\text{Angle})$
Trigonometric cosine function
- **Function:** **sqrt**, $\text{sqrt}(\text{Number})$
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 ($^{\circ}$)
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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