Typical 3-Phase Wiring Diagrams and Equations

Definitions

<table>
<thead>
<tr>
<th>For Both Wye and Delta (Balanced Loads)</th>
<th>Wye and Delta Equivalent</th>
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</thead>
<tbody>
<tr>
<td>$V_p$ = Phase Voltage</td>
<td>$W_{\text{DELTA}} = 3 W_{\text{WYE}}$</td>
</tr>
<tr>
<td>$V_L$ = Line Voltage</td>
<td>$W_{\text{DELTA}} = \frac{2}{3} W_{\text{DELTA}}$</td>
</tr>
<tr>
<td>$I_p$ = Phase Current</td>
<td>$W_{\text{WYE}} = \frac{1}{2} W_{\text{WYE}}$</td>
</tr>
<tr>
<td>$I_L$ = Line Current</td>
<td></td>
</tr>
<tr>
<td>$R = R1 = R2 = R3 =$ Resistance of each branch</td>
<td></td>
</tr>
<tr>
<td>$W =$ Wattage</td>
<td></td>
</tr>
</tbody>
</table>
Equations

3-Phase Wye (Balanced Load)

\[ V_p = V/\sqrt{3} \]
\[ W_{WYE} = V/\sqrt{3}/R \]
\[ W_{WYE} = 1.73 V/L \]

3-Phase Open Wye (No Neutral)

\[ I_{PO} = I\sqrt{3} \]
\[ V_{PO} = V/\sqrt{2} \]
\[ W_{WYE} = V/\sqrt{3}/R \]
\[ W_{WYE} = 2(V_{PO}^2/R) \]
\[ W_{WYE} = V/LO \]

Equations For Wye Only

3-Phase Delta (Balanced Load)

\[ I_p = I/\sqrt{3} \]
\[ V_p = V/L \]
\[ W_{DELTA} = 3(V_p^2)/R \]
\[ W_{DELTA} = 1.73 V/L \]

3-Phase Open Delta

\[ I_{PO1} = I_{PO2} \]
\[ I_{PO3} = I_{PO1} \]
\[ I_{LO1} = I_{LO2} \]
\[ I_{LO3} = I_{LO1} \]

Equations For Delta Only

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