\[ V_{base1} \quad V_{base2} \]

- \[ V_1: V_2 \]

- \[ 3 \% \quad +2.5\% \quad \text{Nominal} \quad \text{of - nominal} \]
Passive cooling 15 MVA
Circulating 20 MVA
Circulating + fans 25 MVA
Summary - Chapter 1:

Why AC over DC?

- Larger distance with AC due to voltage drop.
- Lower losses $I^2R$.

Thanks to transformers.

Chapter 2: Instantaneous $i(t), v(t)$

- $V_{max} / V_{rms}$
- $P_{1f}(t)$ & $P_{3f}(t)$.
P. J. Q. S

Real power
Apparent power
Power factor correction
Power Triangle
Lagging or leading
\[ E_{\text{un}} = 1 L^2 \]
\[ E_{\text{bn}} = 1 L^{240} \]
\[ E_{\text{cn}} = 1 L^{-240} \]

Positive

Negative

\[ E_{a,b} = \sqrt{3} \cdot 1 L^{-30} \]
Chapter 3:

\[ y_{11} = y_{\text{Line 1}} + y_{\text{Line 2}} \]

\[ y_{12} = -y_{\text{Line 2}} \]
Single phase transformer:

\[ V_1 : I_1 \rightarrow \text{Load} \rightarrow I_2 : V_2 \]

\[ V_1 : V_2 = N_1 : N_2 \]

\[ \frac{V_1}{V_2} = \frac{N_1}{N_2} \quad \frac{I_1}{I_2} = \frac{N_2}{N_1} \]

Positive Sequence

D-Y: HV side leads LV side by 30°.

Voltage ratio (\(\sqrt{3}\) included).
\( Z_{\text{load}} = Z_{\text{load}} \left( \frac{N_i}{N_t} \right)^2 \)

SC Test, DC tech:

\[
\frac{Z \_ \text{rated}}{Z \_ \text{measured}} \times \frac{P \_1}{P \_1 \_ \text{rated}} \times \frac{R \_2}{R \_2 \_ \text{rated}} \times \frac{M \_1}{M \_1 \_ \text{rated}}
\]
\[ Y_{oc} = \frac{I_{oc}}{V_{oc}} \]

- PV analysis: Review.
- 3 winding transformers: Review.