Compensation matrices for transformer differential protection

- Apply one for each winding of the transformer
- Typical usage is:

$$\begin{pmatrix} I_{A.sec\_cor} \\ I_{B.sec\_cor} \\ I_{C.sec\_cor} \end{pmatrix} = MAT_{correction} \cdot \frac{1}{Tap_{HV} \cdot CTR_{HV}} \cdot \begin{pmatrix} I_{A\_Primary} \\ I_{B\_Primary} \\ I_{C\_Primary} \end{pmatrix}$$

- Matrices for commonly used transformer connections in the North America

  - Standard Y Connected winding (Y_0 using IEC clock position notation):

$$MAT_0 := \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

  - Δ connected winding, D_{AB} (D_1 using IEC clock position notation):

$$MAT_1 := \frac{1}{\sqrt{3}} \cdot \begin{pmatrix} 1 & -1 & 0 \\ 0 & 1 & -1 \\ -1 & 0 & 1 \end{pmatrix}$$

  - Δ connected winding, D_{AC} (D_{11} using IEC clock position notation):

$$MAT_{11} := \frac{1}{\sqrt{3}} \cdot \begin{pmatrix} 1 & 0 & -1 \\ -1 & 1 & 0 \\ 0 & -1 & 1 \end{pmatrix}$$

  - Zero sequence removal matrix:

$$MAT_{12} := \frac{1}{3} \cdot \begin{pmatrix} 2 & -1 & -1 \\ -1 & 2 & -1 \\ -1 & -1 & 2 \end{pmatrix}$$