

SWER

Basic concepts

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Eskom Distribution Technology

SWER System

22kV THREE PHASE BACKBONE

SINGLE WIRE EARTH RETURN MV
SUPPLY LINE

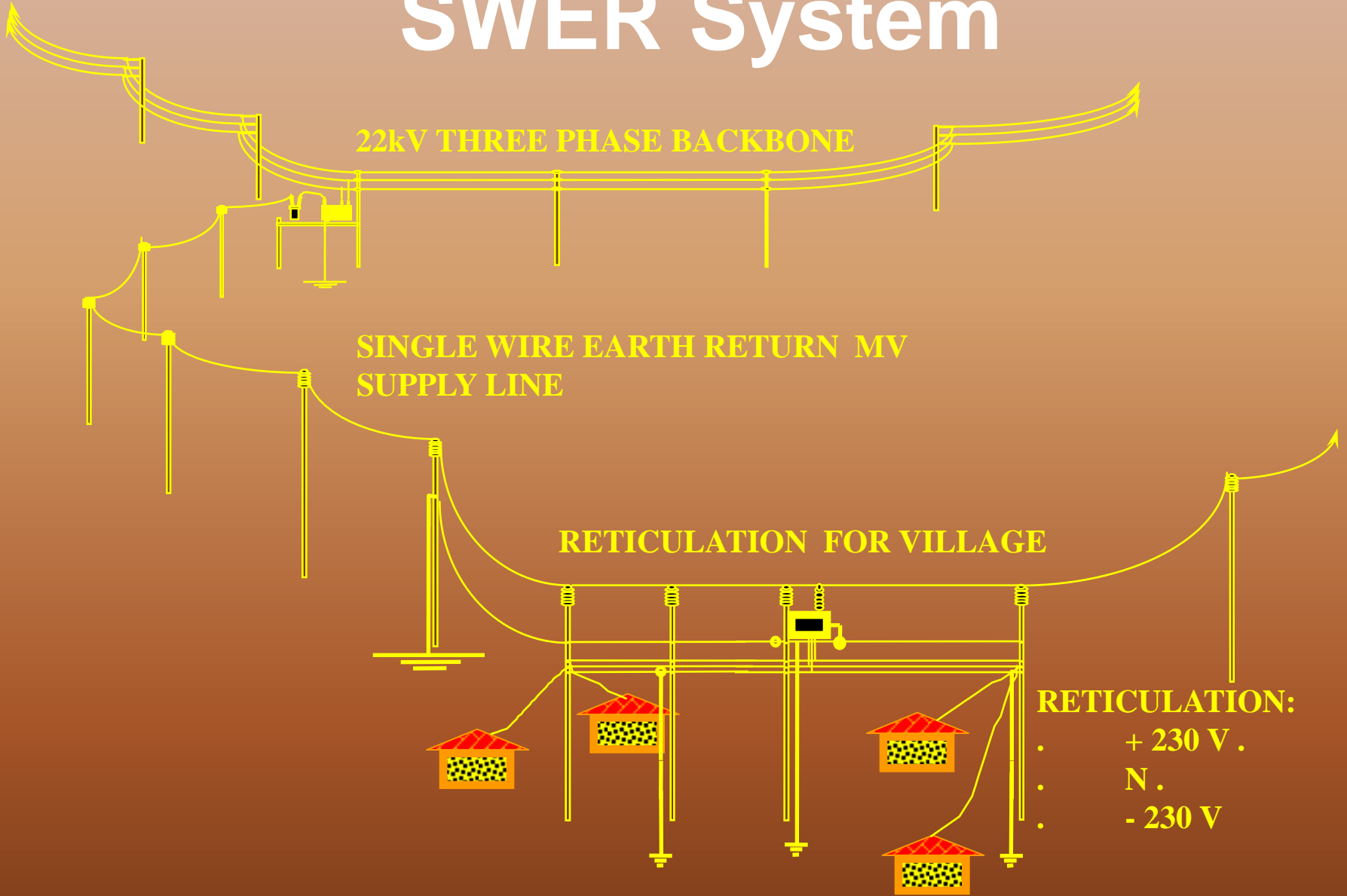
RETICULATION FOR VILLAGE

RETICULATION:

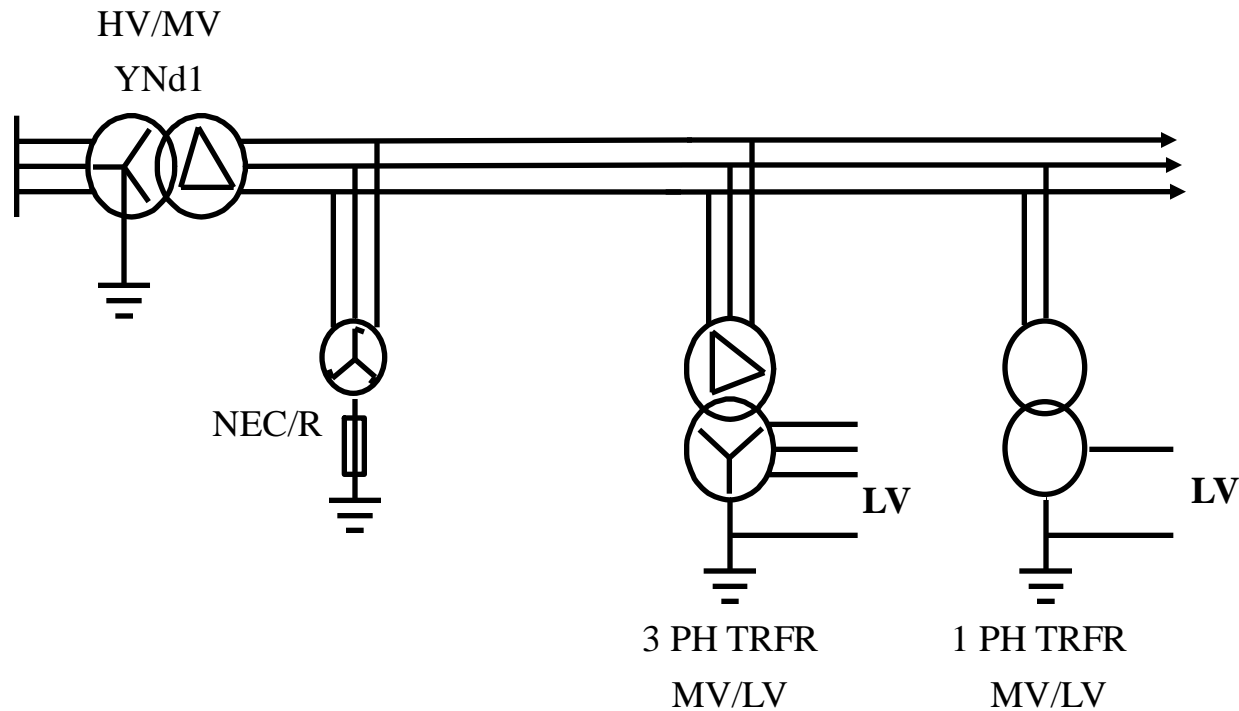
. + 230 V .

. N .

. - 230 V .

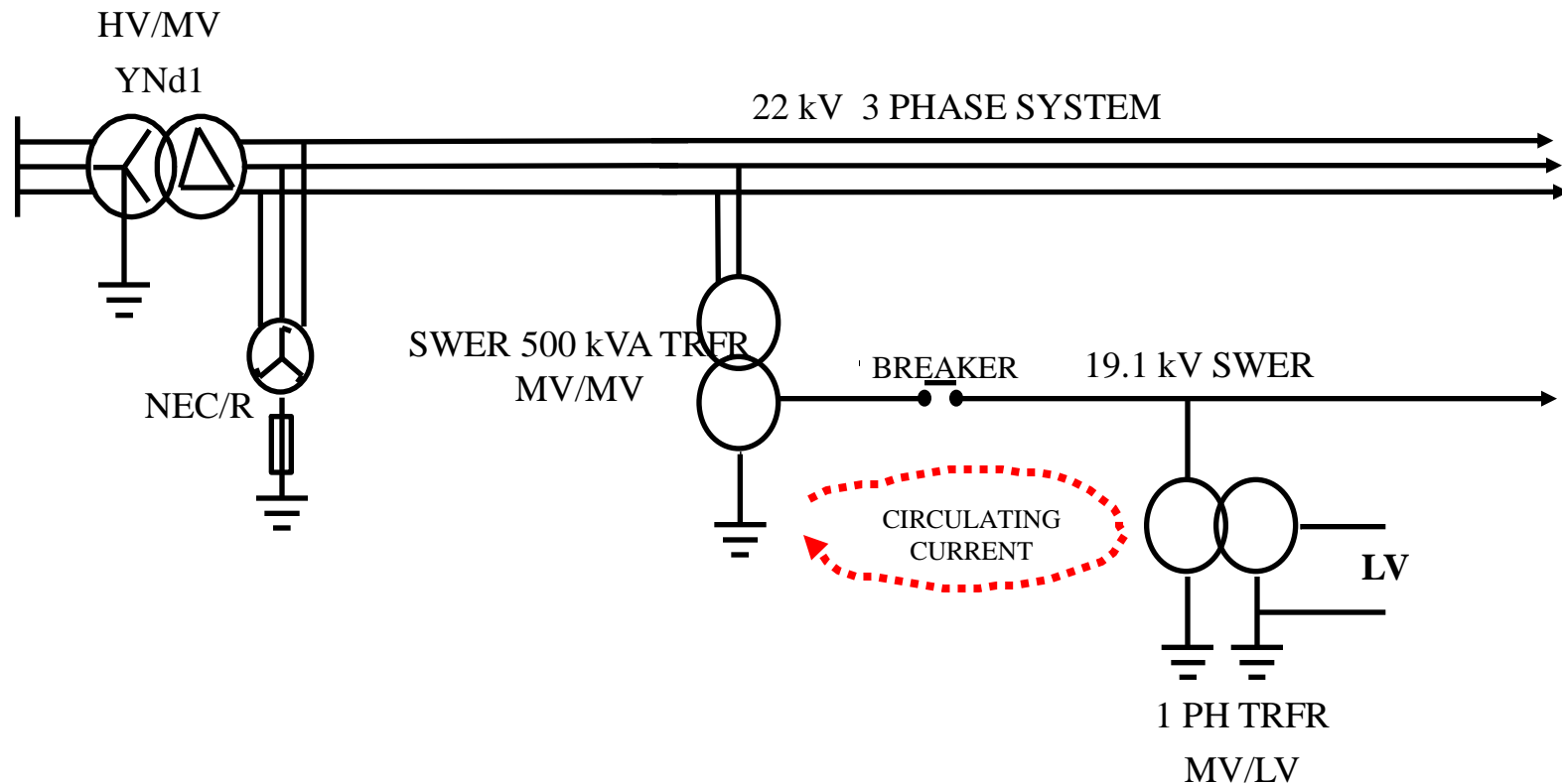


Conventional Eskom MV System.



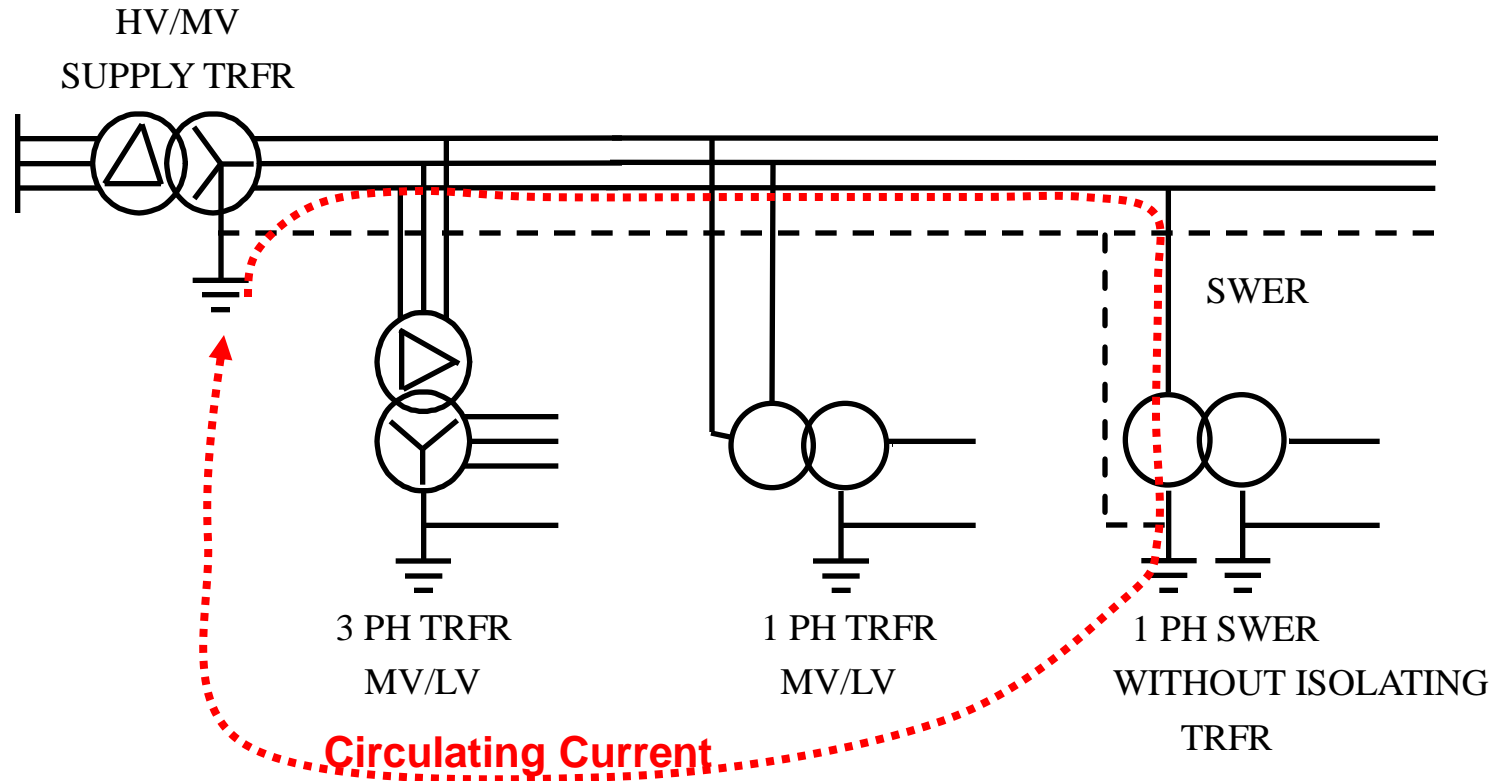
A conventional 22kV Eskom distribution system.

SWER on a Eskom 22 kV System



A conventional 22kV Eskom distribution system with SWER derived from an isolating transformers.

33 kV Solidly earthed MV System



33kV Solidly earthed MV distribution system with directly derived SWER lines.

SWER Isolation Transformers



Isolation Transformer and protection



SWER Main Protection Recloser



SWER Fuse Protected T-off



Customer Supply Transformer

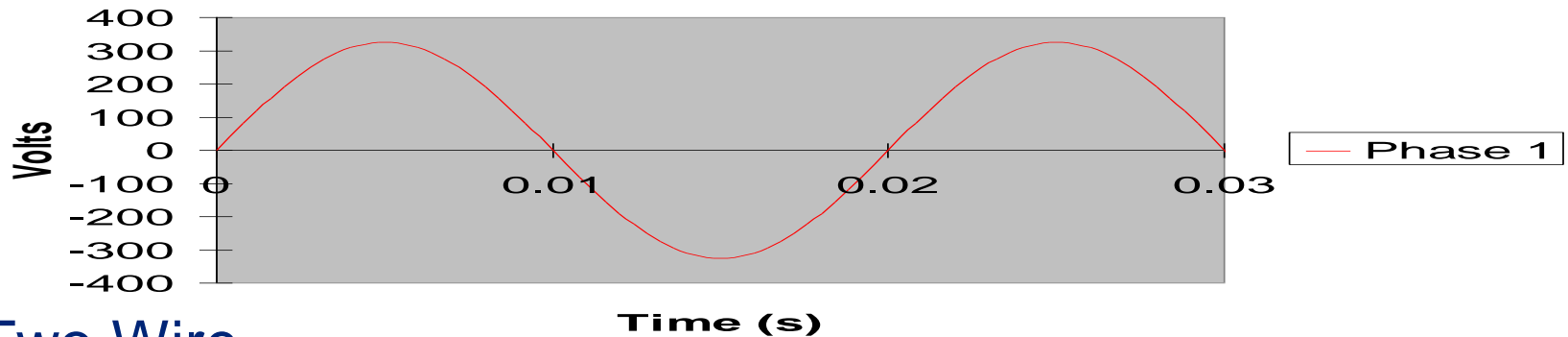


LV Feeders

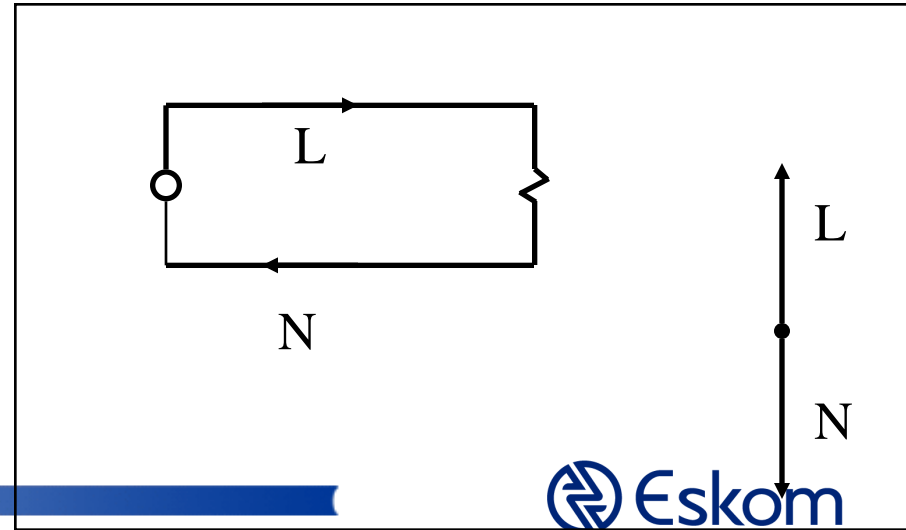
- SWER provide a single phase supply
- LV feeders are therefore limited to single phase
- To enhance the power transfer capability of LV feeders the “Dual Phase” system was developed
- This is capable of almost the same

Single Phase Low Voltage

Single Phase 50Hz Waveform

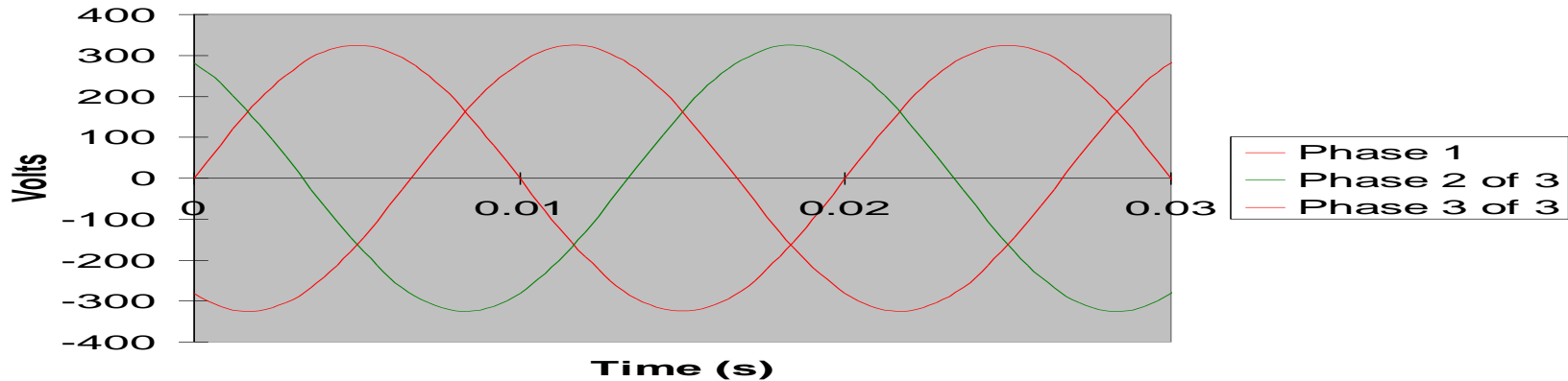


- Two Wire
- Neutral Return
- Load vs Vdrop : 1

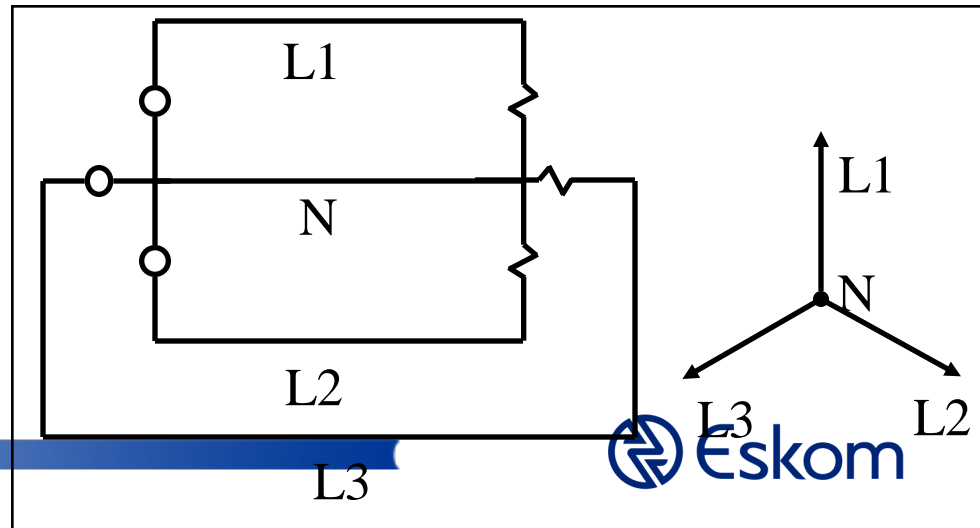


Three Phase Low Voltage

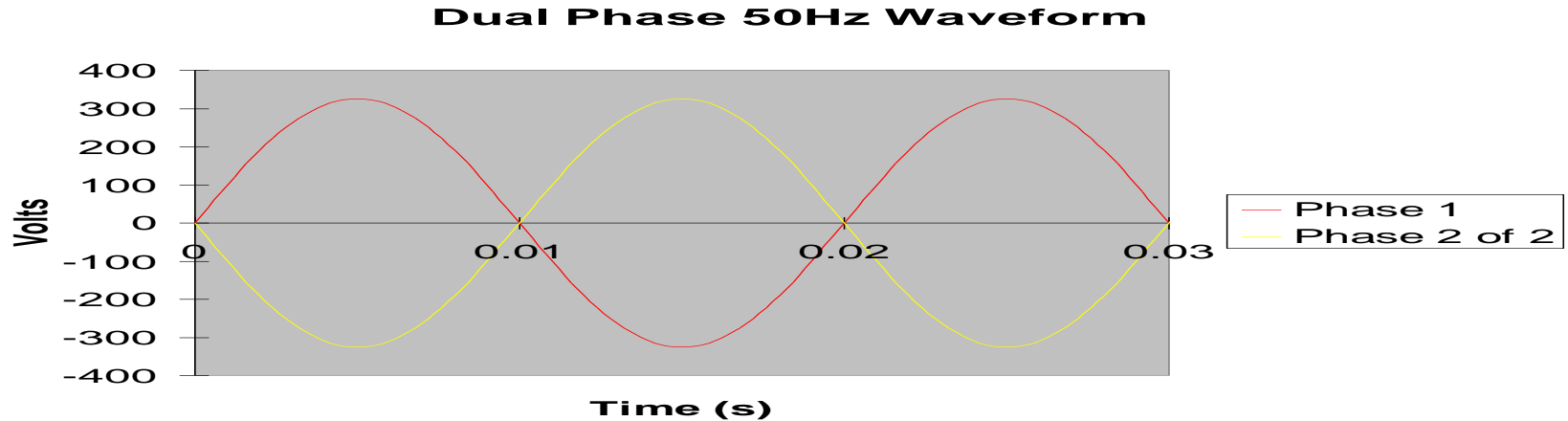
Three Phase 50Hz Waveform



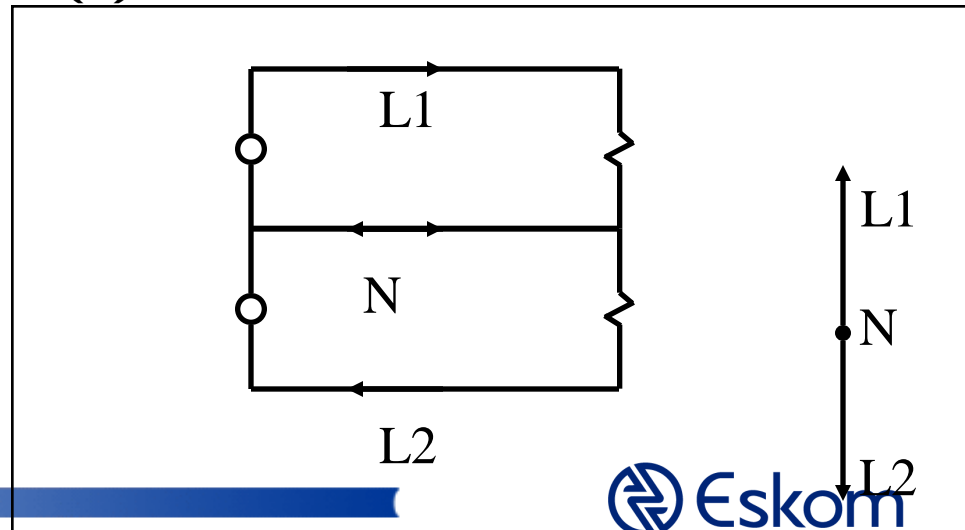
- Four Wire
- No Neutral Return
- Load vs Vdrop : 6



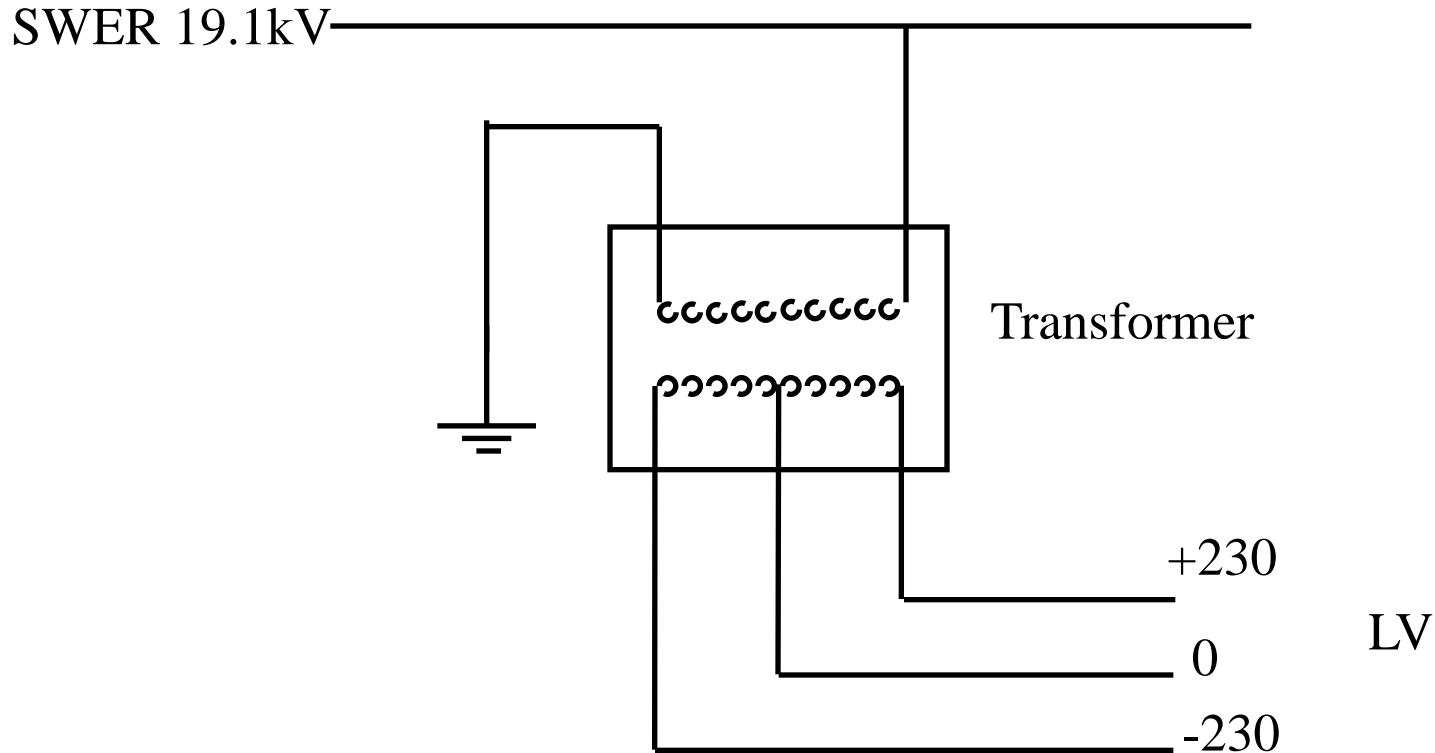
Dual Phase Low Voltage



- Three Wire
- No Neutral Return
- Load vs Vdrop : 4



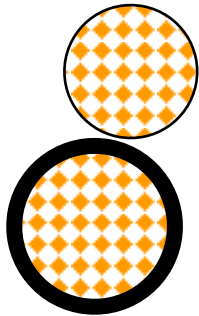
Dual Phase Transformers



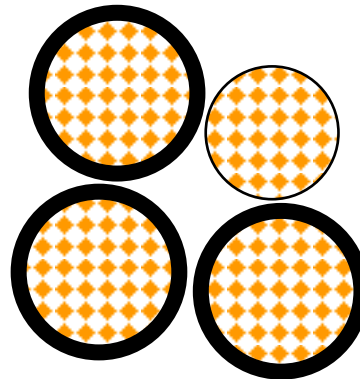
LV Bundle Technologies

SINGLE PHASE

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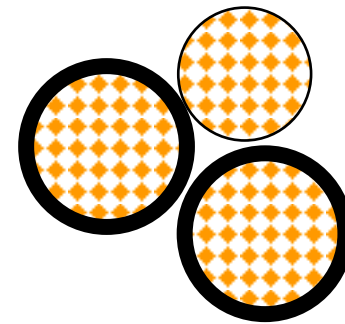


THREE PHASE



DUAL PHASE

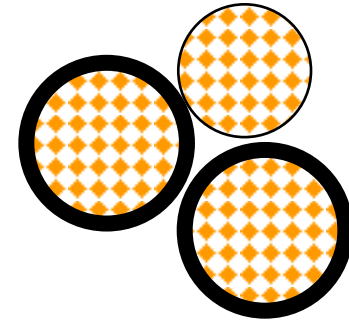
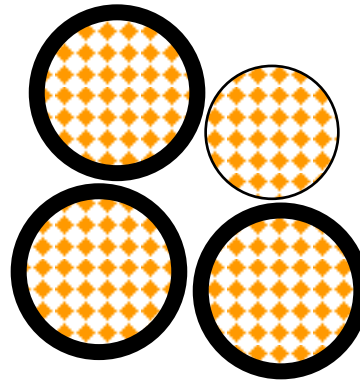
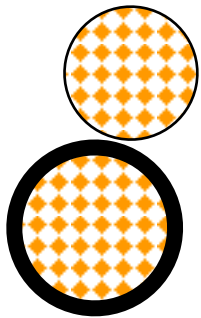
+230V, -230V



LV Bundle Technologies

POWER TRANSFER CAPABILITY

1 : 6 : 4



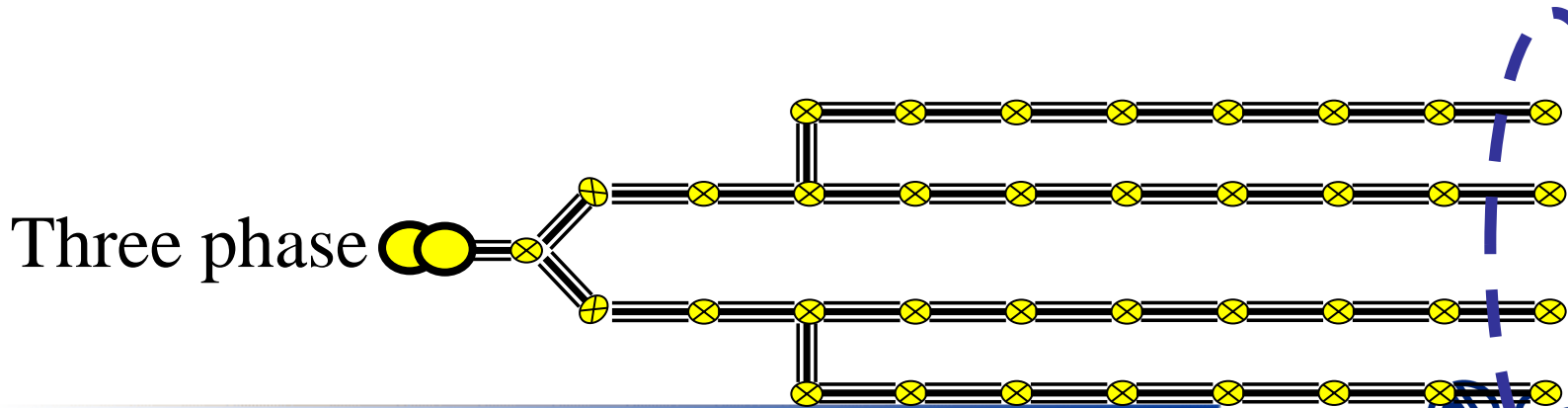
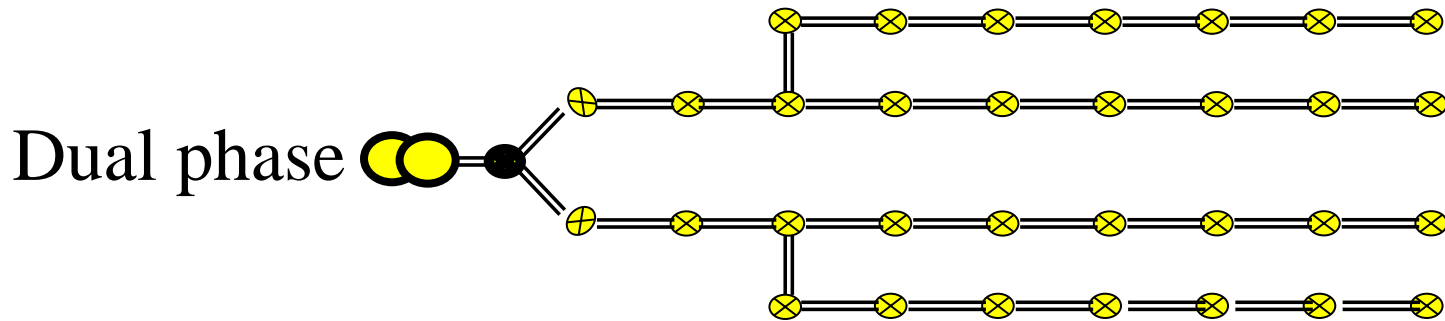
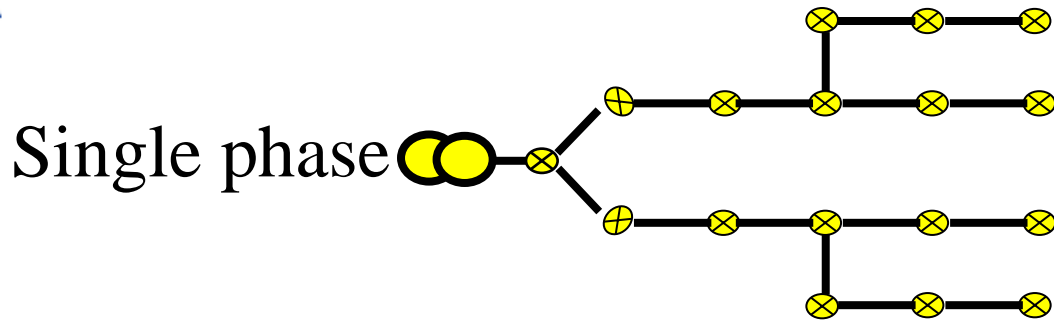
SWER & LV on Structure



SWER & LV Bundle Conductor



Comparison of LV Technologies



SWER System

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SINGLE WIRE EARTH RETURN MV
SUPPLY LINE

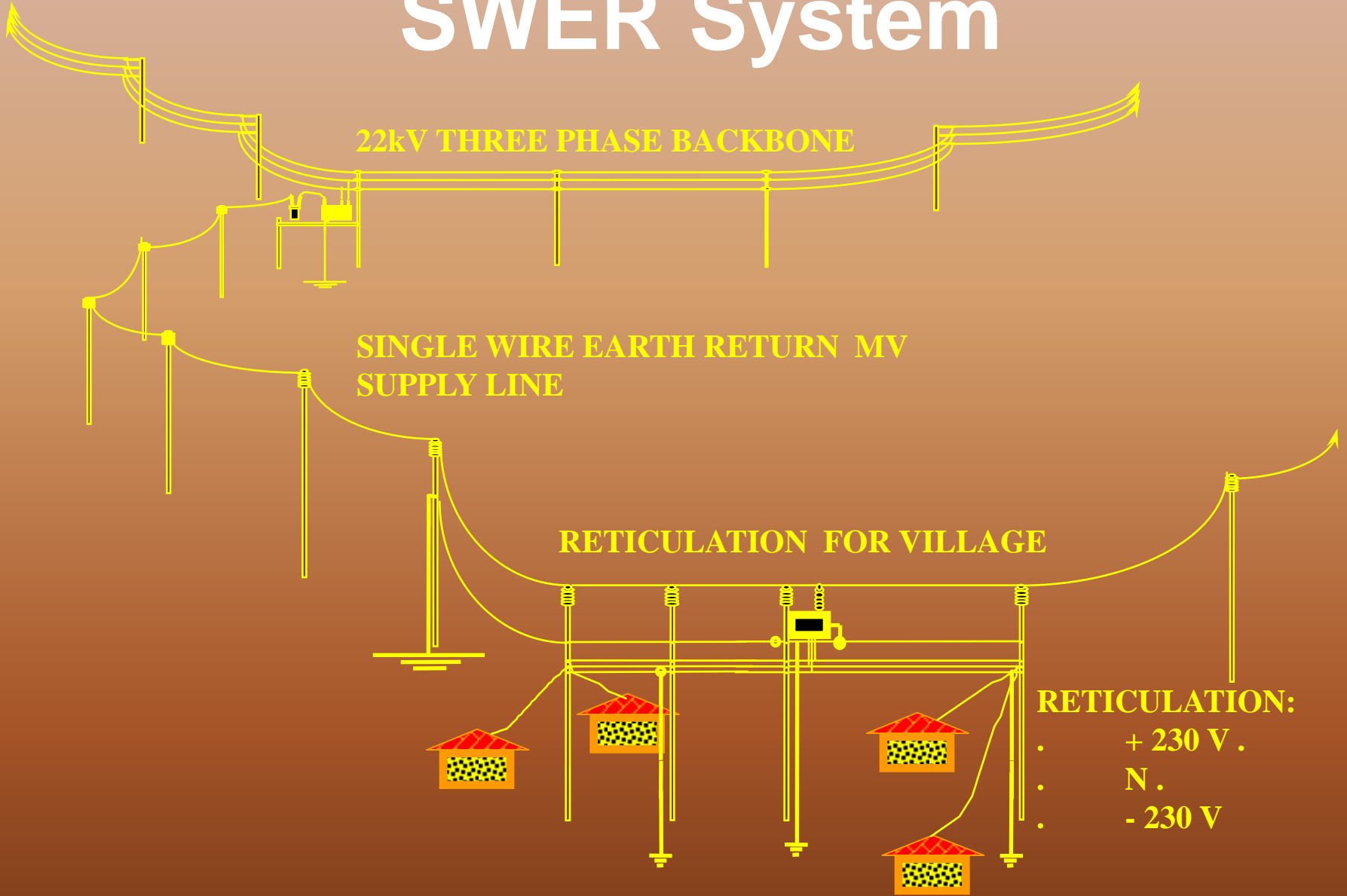
RETICULATION FOR VILLAGE

RETICULATION:

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End of Introduction