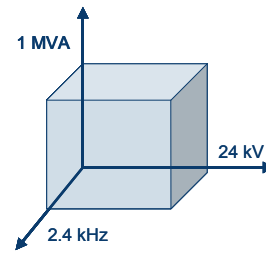


FLEX POWER GRID LAB

SUMMARY OF TECHNICAL POSSIBILITIES

Overview of electrical capability

- Voltage level up to **24 kV**
- **DC to 75 Hz** frequency range
- Continuous power up to **1 MVA**
- Up to **25th** harmonics
- Synchronization with external sources
- Controllable **bi-directional power flow**
- Adjustable passive loads (0.5MW, 1MVA_r):
 - Voltage range up to 4 kV, in a multitude of possible combinations



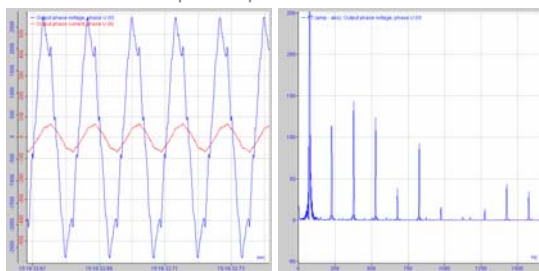
	Resistors	Inductors	Capacitors
Power	500kW	1MVA _r	1MVA _r

Stationary voltage phenomena

Available network phenomena

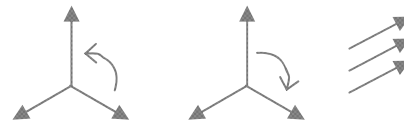
Harmonic voltage distortion

- 6 closed loop (resonant) controllers
- >6 open loop controllers



Voltage unbalance

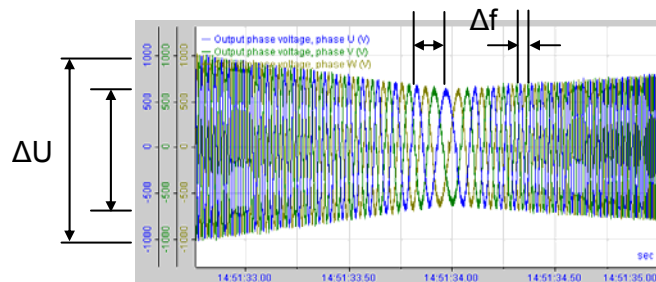
Negative sequence voltage
10 % of positive sequence voltage



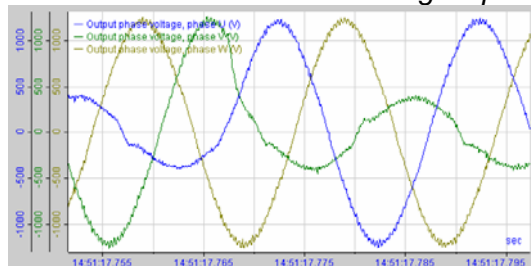
Zero sequence freely adjustable

Dynamic voltage phenomena

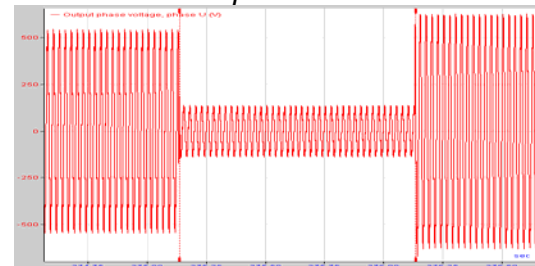
Dynamic system voltage variations, both amplitude and power frequency variations

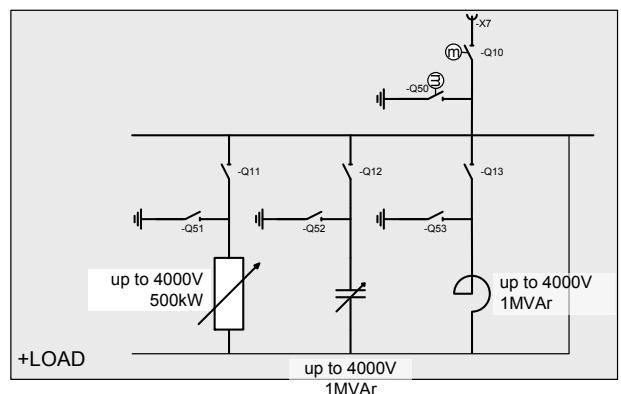
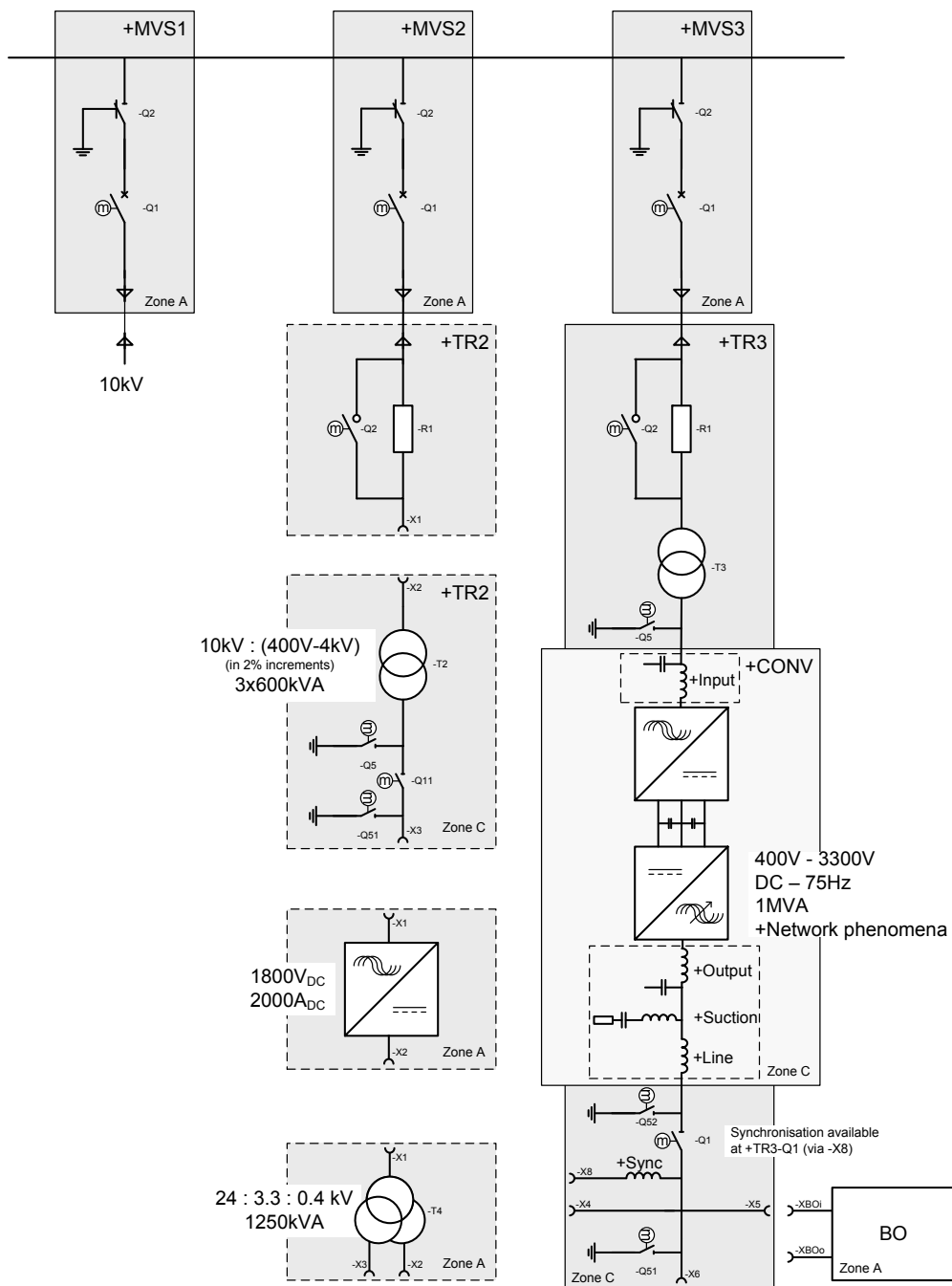


Balanced and unbalanced voltage dips



Short interruptions





Single-line diagram of facility

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