

Active Response to Distribution Network Constraints

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Introduction

The Active Response project aims to demonstrate active reconfiguration of distribution networks with an advanced automation and optimisation platform and the use of power electronics to create additional capacity in the network.

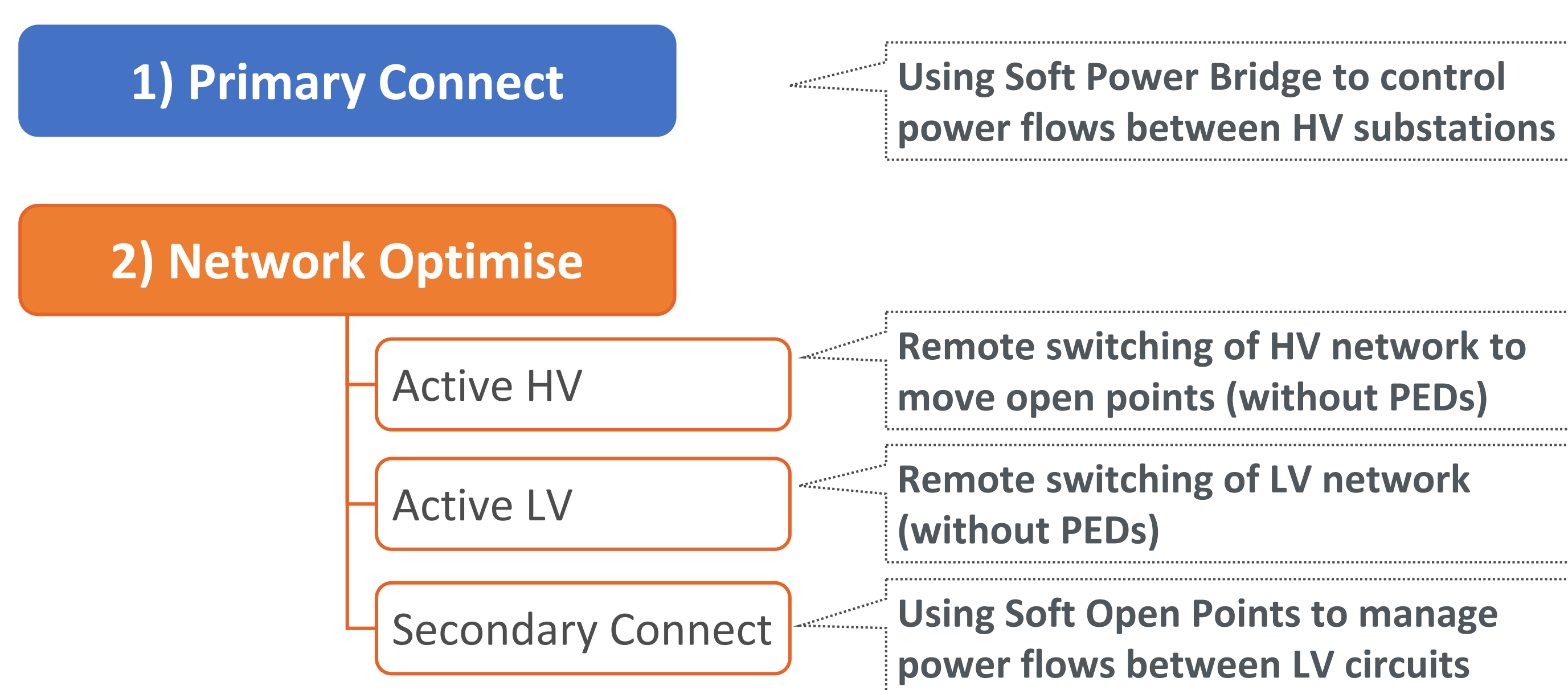


Figure 1 – Diagram of the Active Response solutions

Network Optimise

Optimisation and automatic reconfiguration of HV and LV networks in combination using remote controlled switches and soft open points. HV open points are moved to balance feeder loadings. The LV network is reconfigured to optimise and reflect any changes in HV network boundaries.

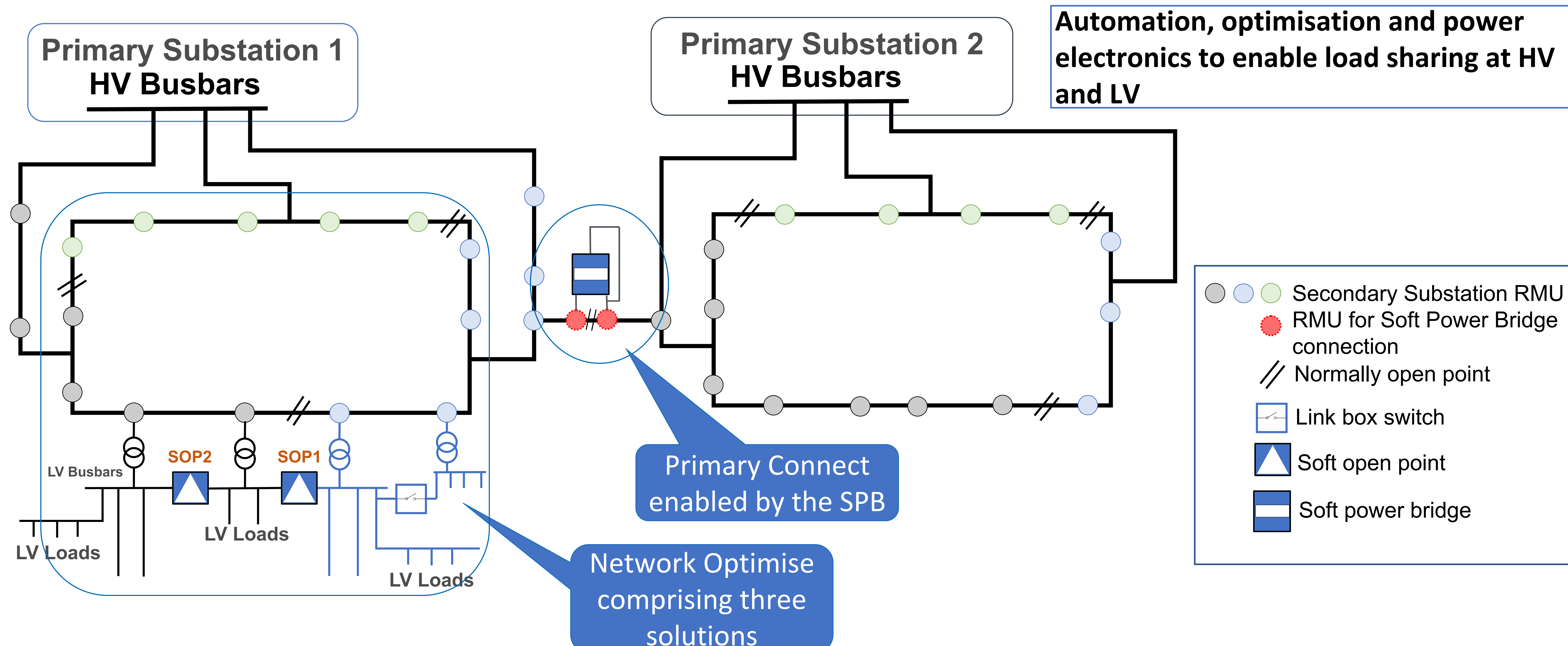


Figure 3 – Diagram of the Active Response solution in the network

Primary Connect

Controlled transfers between primary substations using a Soft Power Bridge (SPB) to share load and optimise capacity. Periods of high demand at B are supported by importing power from A through the SPB, and vice versa.

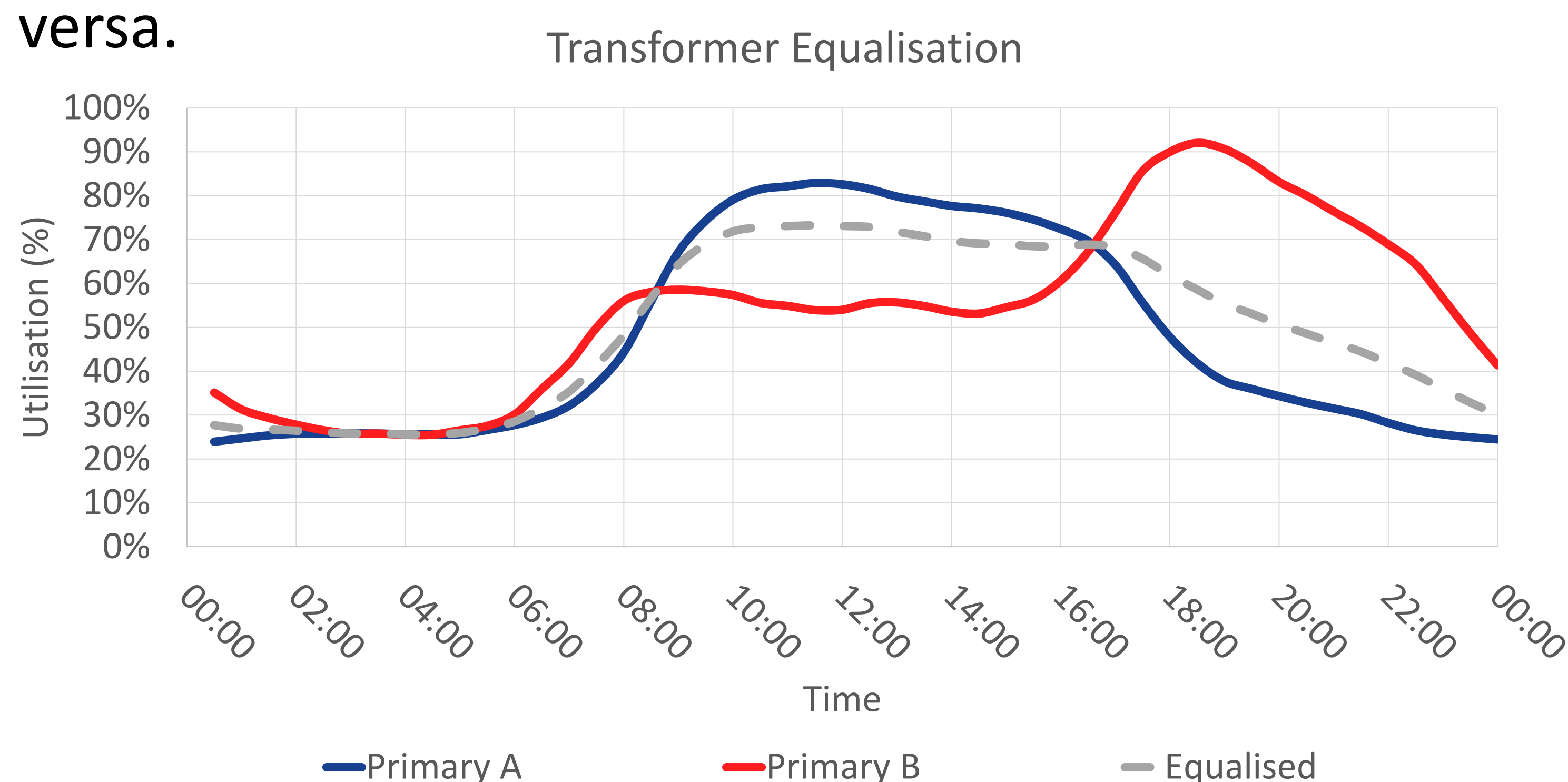


Figure 2 – Using the SPB to equalise the transformer loads to provide extra capacity

Trials

Four trials to demonstrate Active Response solutions:

- Trial 1: HV network optimisation.
- Trial 2: Network Optimise method.
- Trial 3: Primary Connect method.
- Trial 4: Network Optimise and Primary Connect in combination.