Three-converter system with three different types of Grid Forming Converters

Test case description

The studied test case is a simple system with three converters and one fully resistive load, as depicted in Fig. 1.

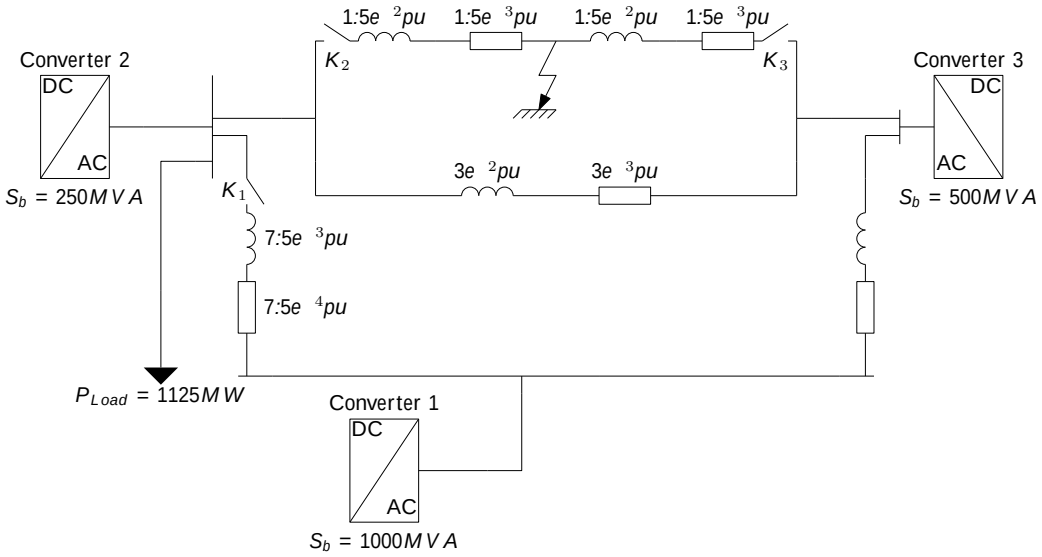


Figure 1: Structure of the three-converter system

Each converter has a different control: the 1 000 MW converter is using a matching control, the 500 MW a dVOC control and the 250 MW an improved droop control. The network consists in four RL lines, linking together the different converters.

The general structure of the converters and their control is presented in Fig. 2. The current and voltage loops are common to the three converters while the external loop is different.

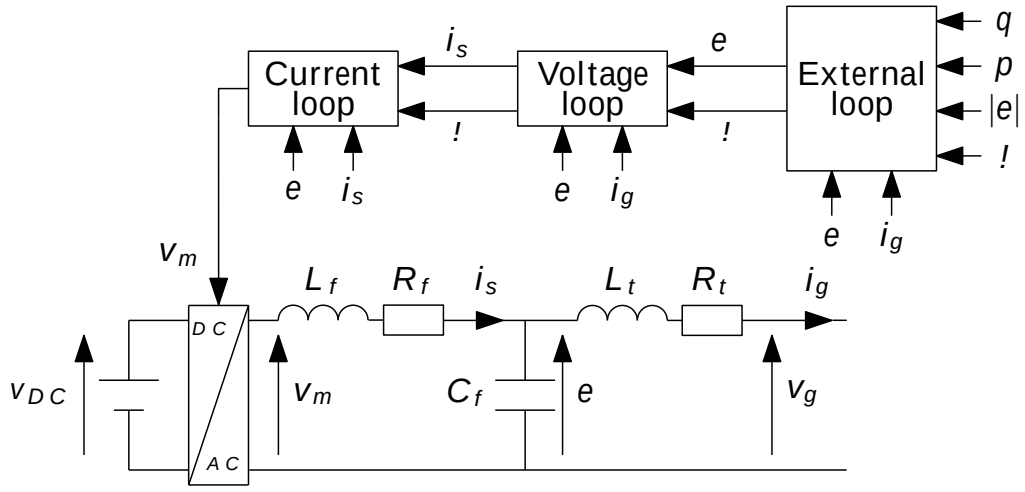
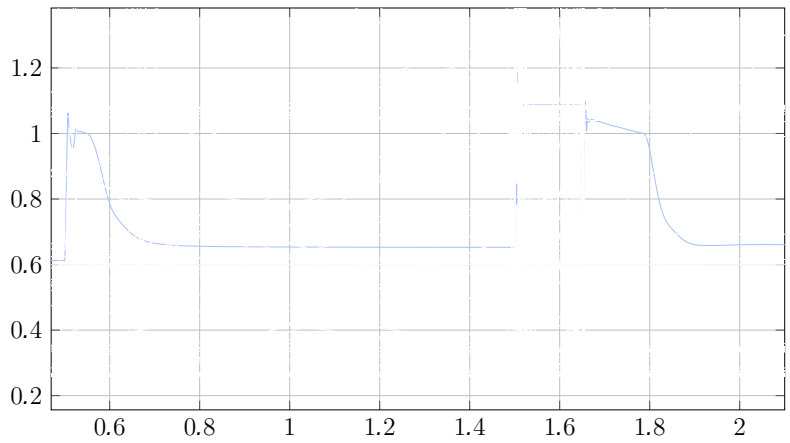


Figure 2: Structure of the grid forming converter and its control

Three events are simulated:

- At $t = 0.5s$, the line connecting the bus 1 and the bus 2 is disconnected (K_1 is opened).
- At $t = 1.5s$


1.2
1
0.8
0.6
0.4
0.2
0.6
0.8
1
1.2
1.4
1.6
1.8
2