

Island microgrids porto novo

FIGURE 3. Grid-forming voltage and current control block diagram with over-current detection and regulator. (A) complete control loop, (B) over current detection state machine, (C) output voltage PI, and (D) current control loop.

FIGURE 4. Representation of the grid-forming converter droop curves. (A) is the  $P/SoC \rightarrow V$  droop, (B) the  $Q \rightarrow V$  droop.

FIGURE 6. Representation of the grid-support converter droop curves. (A) is the  $V \rightarrow P/SoC$  droop, (B) the  $V \rightarrow Q$  droop and (C) example of an external power reference impact on the droop curve.

TABLE 1. Converters ratings and LCL filters parameters.

FIGURE 10. Active power and storage system SoC for test three and 4. (A) test three results with no load and (B) test four results with load power.

FIGURE 12. Transient during heavy load change-induction motor startup. Line-neutral voltage at reference phase (yellow), reference phase current of grid-forming converter (blue), and reference phase current of grid-support converter (magenta). (A) initial transient, and (B) total transient.

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