method is applied at $t = 5s$, the fundamental, third, and fifth harmonic virtual impedances are regulated adaptively [see Figs. 6(a)-(c), respectively]. Consequently, the perfect active, reactive, and harmonic power sharing are achieved regardless of load condition as clearly verified in Fig. 5.

5. Conclusion

In this paper, an adaptive virtual impedance control approach has been proposed by means of the consensus algorithm to achieve accurate power sharing for islanded microgrids. With the proposed method, the active, reactive, and selected harmonic power sharing are always guaranteed irrespective of load conditions. The virtual impedance control can be implemented directly in practice without any information about physical feeder impedance, detailed microgrid configuration, and load powers. Furthermore, the proposed approach uses only a sparse communication network which is less sensitive to the communication link failure. Therefore, the system becomes more reliable. Simulation results are also provided to validate the feasibility and effectiveness of the proposed control method.

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