

Optimal Power Management and Dispatching of Renewable Resources in a Prosumer-Centric Environment

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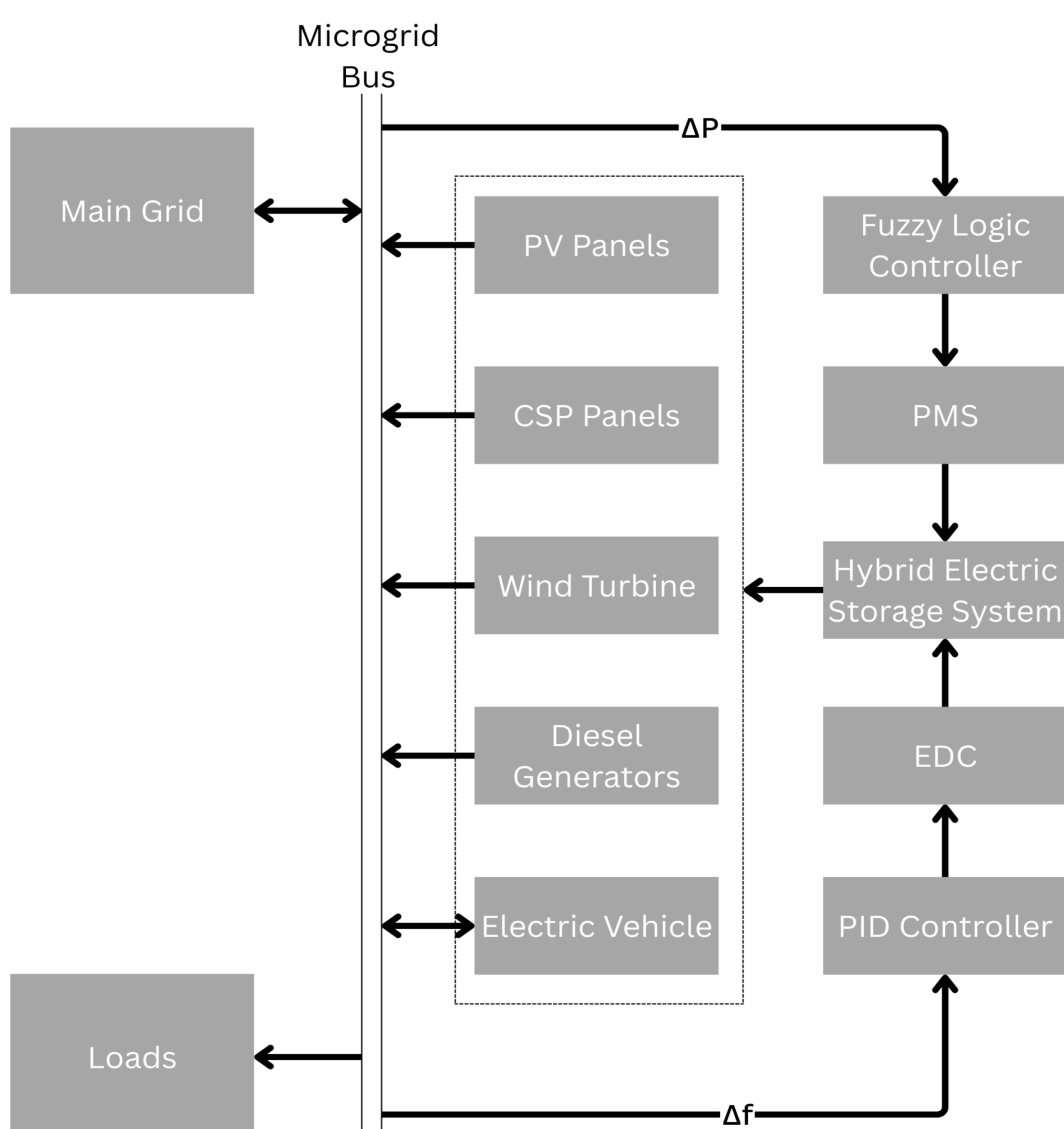
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INTRODUCTION & AIM

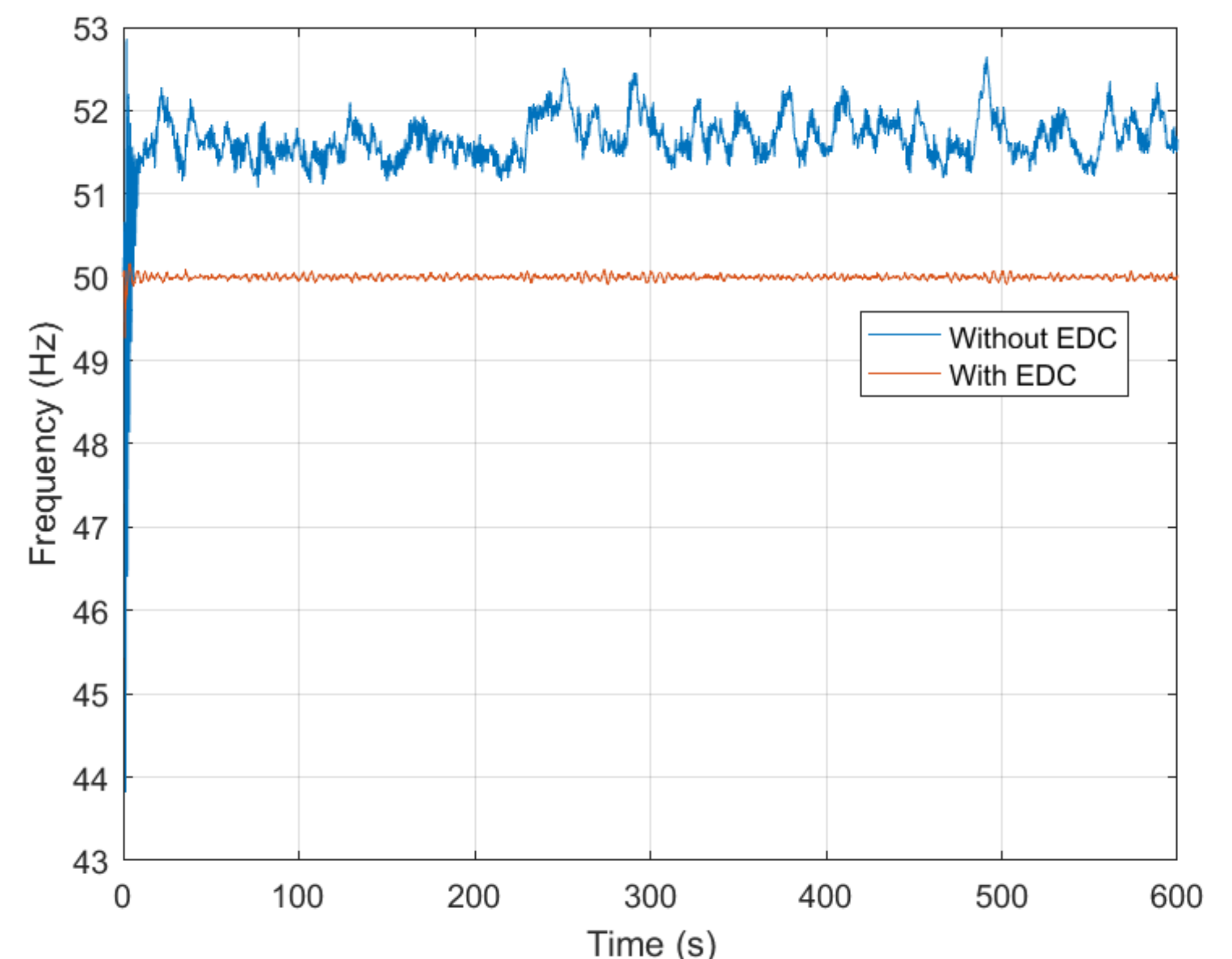
- Increasing renewable energy integration requires advanced management strategies.
- Prosumers (producers + consumers) reshape energy flow and market interactions.
- Aim: Develop and test an optimal dispatch strategy for renewable energy in a prosumer-based microgrid.

METHOD

The proposed method consists of controlling the HESS through a PMS control and a EDC control.



RESULTS & DISCUSSION



The proposed method established frequency stability around nominal value.

CONCLUSION

Proposed dispatching strategy improves both economic efficiency and grid stability. Prosumers actively participate in energy markets and management. Demonstrated strong potential for sustainable smart microgrids.

FUTURE WORK / REFERENCES

References :

- 1) Djamel Selkim, Nour El Yakine Kouba, and Amirouche Nait-Seghir, *Optimal Effective Electricity Markets Monitoring in Deregulated Environment Including Renewable Energies*, Proc. 1st Int. Conf. On Green Engineering (ICGE25), Algiers, Algeria, 2025.
- 2) Gbadega, Peter & Sun, Yanxia & Balogun, Olufunke. (2024). *Advanced Control Technique for Optimal Power Management of a Prosumer-Centric Residential Microgrid*. IEEE Access