

# **A fully robust home energy management model considering real time price and on-board vehicle batteries**

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## **Abstract-**

**On-board batteries from electric vehicles can be used in domestic installations as an auxiliary source of energy through their vehicle-to-home features. To properly manage this kind of assets, renewable generation, uncertain prices, uncertain demand as well as uncertain behaviour of electric vehicles. In this regard, further research should be conducted in order to develop advanced robust stochastic approaches, that may pose various issues, while other more sophisticated uncertainty models have not been sufficiently studied. In this regard, this paper proposes a fully robust Home Energy Management model, which accounts for all the inherent uncertainties that may arise in domestic installations. In contrast to previous researches, robust optimization is applied to all the uncertainties, resulting in a tractable, but robust yet paradigm model which allows to adapt the degree of robustness. A case study is conducted on a benchmark;**

**Index Terms- Battery energy storage; Electric vehicle; Home energy management; Robust optimization; Uncertainty**

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