

# Strategi Keberlanjutan Hybrid Charging station Electric Vehicle Dengan Pendekatan Life Cycle Thinking = Sustainability Strategy of Hybrid Charging station Electric Vehicle With Life Cycle Thinking Approach

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## Abstrak

Pengembangan kendaraan listrik tentunya perlu didukung oleh sistem charging station yang bisa menjangkau pengguna kendaraan listrik secara umum dan di samping itu juga bermanfaat dalam pemanfaatan energi terbarukan. Masalah dalam penelitian ini adalah mengkaji pemanfaatan energi terbarukan sebagai sumber energi CS. Idealnya kendaraan listrik menggunakan sumber energi terbarukan yang ramah lingkungan. Tujuan dari penelitian ini mengkaji strategi keberlanjutan dari Hybrid Charging station (HCS) dengan metode Life Cycle Costing (LCC), Life Cycle Assesment (LCA) dan analisis SWOT (Strengths, Weaknesses, Opportunity, hreat). Metode penelitian menggunakan metode gabungan. Hasil penelitian menunjukkan bahwa pada aspek ekonomi HCS tergolong efisien, kemudian pada aspek lingkungan komponen photovoltaic yang memberikan kontribusi terbesar terhadap dampak yang ditimbulkan. Stategi keberlanjutan HCS perlu didukung oleh seluruh stake holder yang berperan dalam pengembangan kendaraan listrik dan infrastruktur pendukungnya. Kesimpulan penelitian adalah strategi pengembangan HCS yang tepat dapat mengurangi dampak lingkungan, meningkatkan efisiensi dan memudahkan pengembangan charging station yang ramah lingkungan.

.....The development of electric vehicles certainly needs to be supported by a charging station system that can reach electric vehicle users in general and besides that is also beneficial in the use of renewable energy. The problem in this research is to examine the use of renewable energy as a CS energy source. Ideally electric vehicles use renewable energy sources that are environmentally friendly. The purpose of this study is to examine the sustainability strategy of the Hybrid Charging station (HCS) using the Life Cycle Costing (LCC) method, Life Cycle Assessment (LCA) and SWOT analysis (Strengths, Weaknesses, Opportunity, Threat). The research method uses a combined method. The results showed that on the economic aspect HCS was classified as efficient, then on the environmental aspect the photovoltaic component contributed the most to the impact. The HCS sustainability strategy needs to be supported by all stakeholders who play a role in the development of electric vehicles and their supporting infrastructure. The conclusion of the research is that the right HCS development strategy can reduce environmental impact, increase efficiency and facilitate the development of environmentally friendly charging stations.