

DYNAMIC WIRELESS CHARGING OF ELECTRIC VEHICLES IN MOTION USING RENEWABLE ENERGY SOURCE

By

KHALID M. ALDAHASY	1936002	PME
SAAD A. ALJEHANI	1936002	ECE
BANDER S. ALSULAMI	1936002	ECE

TEAM NO.: 15 WINTER-2022 INTAKE

Project Advisor

DR. KHALID SEDRAUI

Project Customer

DR. KHALID SEDRAUI

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
FACULTY OF ENGINEERING
KING ABDULAZIZ UNIVERSITY
JEDDAH – SAUDI ARABIA

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ABSTRACT

Electric vehicles have now hit the road worldwide and are slowly growing in numbers. Apart from environmental benefits, electric vehicles have also proven helpful in reducing the cost of travel by replacing fuel with electricity, which is way cheaper. However electric vehicles have two major disadvantages, which are long charging time and non-availability of power for charging stations in off city and remote areas. Thus, it is required to use the science and technology to design systems that could solve the limitation of power charging stations and provide shorter charging time to electric vehicles, which would help increasing the number of electric vehicles usage worldwide. Moreover, most electric vehicles consume power from non- renewable resources, which is very costly and consume natural resources as the number of electric vehicles usage increases over time. This project aims to design, simulate, and implement a dynamic wireless charging system for Electric Vehicles using renewable energy resources. Moreover, the project has a higher objective such as reducing the limitation of electric charging sources, transportation cost reduction, and facilitating the usage of electric vehicles to decrease pollution. On the other hand, the project's lower objectives are to build a system that enables EV to be charged while moving, and to cooperate with CEER company and support the kingdom vision in EV revolution. However, moving to the alternatives of the project, the team has developed three different alternatives which are different in terms of the used Wireless Power Transfer WPT technologies, DC-AC inverters configurations, and types of microcontrollers used and renewable energy resources. At the end, the baseline design will cover in detail how the system will work, circuit schematics of the circuits used in the prototype, circuit components' specifications, flowchart for the software needed in the prototype, and 3D drawing of certain components of the prototype.

Index Terms — *Dynamic Wireless Power Transfer Technologies, Power Electronics Technologies, Car Detection Technologies. Car Detection Technologies.*