

For Immediate Release: September 27, 2022

PRESS RELEASE

IIT (ISM) researchers develop Hybrid charging system for e- vehicles that allows charging in static as well as dynamic condition; Technology for which the patent application has been filed can herald a new era for adoption of electric vehicles as principal mode of road transport

At a time when lack of reliable, accessible and affordable commercial charging infrastructure is proving to be hurdle in the adoption of electric vehicles as the principle mode of road transport, a group of researchers of Electrical Engineering Department of IIT (ISM) have developed the model of a hybrid renewable energy driven bidirectional wireless charging system, that ensures charging of vehicle in static as well as dynamic condition.

The Wireless Charging System developed by the group of seven, including five faculty members and two others, including a research scholar and a former M Tech student, that has already underwent trial at laboratory scale enables charging of vehicles through renewable sources of energy, including solar and wind energy and simultaneously allows Electric charging of vehicles through power Grids.

This enables charging of dynamic charging vehicles through renewable energy during the day time when the sunlight is available as well during the night when the sunlight is not available through the electricity drawn from the power grid.

The hybrid renewable energy driven bidirectional wireless charging system, developed by the group led by Professor Pradip Kumar Sadhu of Electrical Engineering as part of more than 30 months long hard work carried out under the IIT (ISM) funded project beginning February 17, 2020 for which the patent application has already been filed has the added feature of being adjustable to increase or decrease in height of vehicle ensuring charging of lower height as well as higher height (ground Clearance) vehicles. The researchers' further to plan make the technology adjustable to length of vehicle.

It is worthwhile to mention here that professor Sadhu has received five granted patents in the field of Wireless Power Transfer (WPT).

The group, comprising of faculty members, including Prof, Nitai Pal, Prof Kartick Chandra Jana, Prof Arijit Baral and Prof, Anirban Ghoshal besides Anik Goswami, Senior Research Fellow (SRF) of Prof Sadhu and Sonal Mishra, M Tech Student of Prof Sadhu as part of the research team also suggested development of a dedicated road infrastructure equipped with electrical coils laid underneath the road track for ensuring the power transfer to coil attached to the lower portion of vehicle.

Elaborating over the advantages of the Wireless Charging system, Professor Sadhu averred, "The newly developed model of Wireless Charging System also allows transfer back of the extra stored power charged by the battery of the vehicle to the grid and thus helps them to earn power credits for the transferred power to grid which they can later utilize."

He further added, "The transfer back of extra power by the vehicle to power grid can take place only when the vehicle plies in the dedicated lane connected to power grid" said Professor Sadhu.

"Moreover, No Vehicle detection system is also developed in the laboratory as it results to restrict the wastage of power in the green powered highway as well as it increases the life of the components used" said Prof Sadhu while enumerating about its advantages.

Highlighting the background of the research, Professor Nitai Pal said, "the hybrid renewable energy driven bidirectional wireless charging system was developed to expand the driving range for electric vehicles to avoid frequent charging at charging stations. "As the focus of the Government of India is also on replacing all traditional vehicles with the Electrical Vehicles by 2030 so the development of the hybrid renewable energy driven bidirectional wireless charging system by our team is in direction of realizing that plan" said Professor Arijit Baral.

Further elaborating about the advantages of the newly developed Wireless Charging System over the existing vehicle charging system, Professor Ghoshal said, "While the available wireless charging system allows power transfer to the vehicles only at the charging stations on the other hand the technique developed by us allows power transfer during the static as well as dynamic condition thus ensuring the longer distance travel of the vehicles.

"This wireless charging system is also revolutionary in the sense that it will drastically reduce the battery size, thereby cutting down the cost of the vehicle said" up Professor Sadhu.

He also thanked Director of IIT (ISM) Dhanbad, Prof Rajiv Shekhar for the guidance and motivation for the project.

Director of IIT (ISM) Dhanbad Prof Rajiv Shekhar on the other hand said, "Wireless Hybrid Charging System for EVs for both Dynamic and Static condition is a novel research carried out by Prof Sadhu and his team"

"This will increase the driving range of EV and these would simultaneously get rid of heavy batteries" further added the Director.

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