STREETLAMP ELECTRIC VEHICLE (EV) CHARGER

PROJECT BY:

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PROJECT OBJECTIVE

Presently, the deployment of electric vehicle (EV) chargers in Singapore is constrained by factors such as high costs and land scarcity, which in turn affects the take-up rate of EVs. Our proposed solution reduces the costs and complexity of EV charger installation by tapping on existing streetlamp infrastructure. If replicated on a large scale, this project has the potential to contribute to the Singapore Green Plan 2030.

PROJECT SUMMARY

The EV chargers can be installed on streetlamps in existing open-air carparks and by the roadside, together with the solar panels and batteries. During the day, solar energy from the sun is stored in the batteries while grid power is used to power up the EV chargers. At night, the solar energy stored in the batteries is converted into electrical energy and used to power the streetlamps. When the streetlamp batteries run low, power from the grid will be used to charge them up and also provide power for the EV chargers.

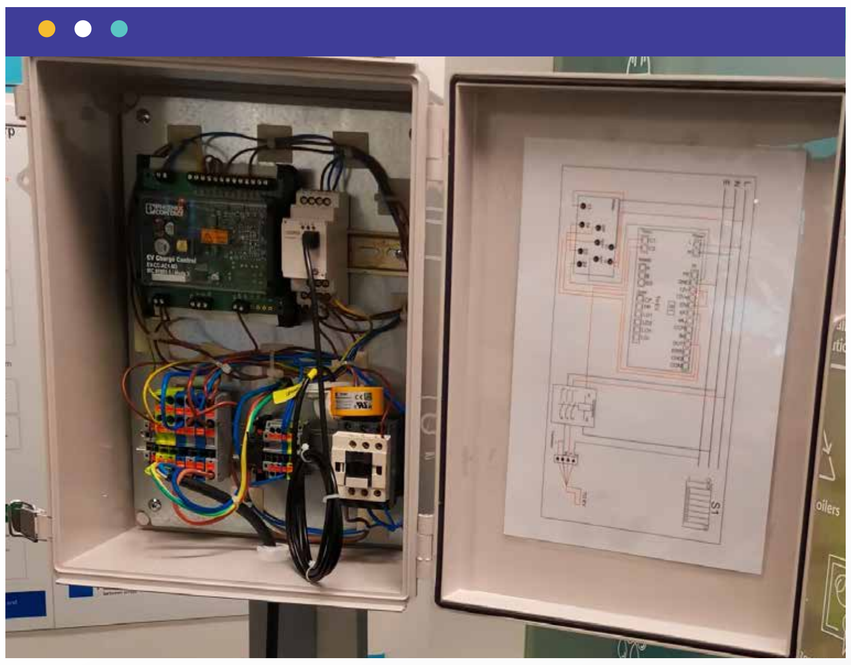
When charging up the EV, the user will be able to leave the vehicle unattended in the open-air carpark or by the roadside.

In cases where an EV's battery is running low during a journey, the EV user can easily locate a streetlamp EV charger to charge up the vehicle. As an improvement for this project, team plans to install metering with integrated cash-card and GPS system.

The proposed EV charger has been tested under the following scenarios:

- Start-up of charging process
- Power outage
- Earth fault in EV charger
- Earth fault in charging cable
- Fault detected in EV (via comms)
- Auto-stop charging when EV is fully charged
- Sudden disconnection of cable

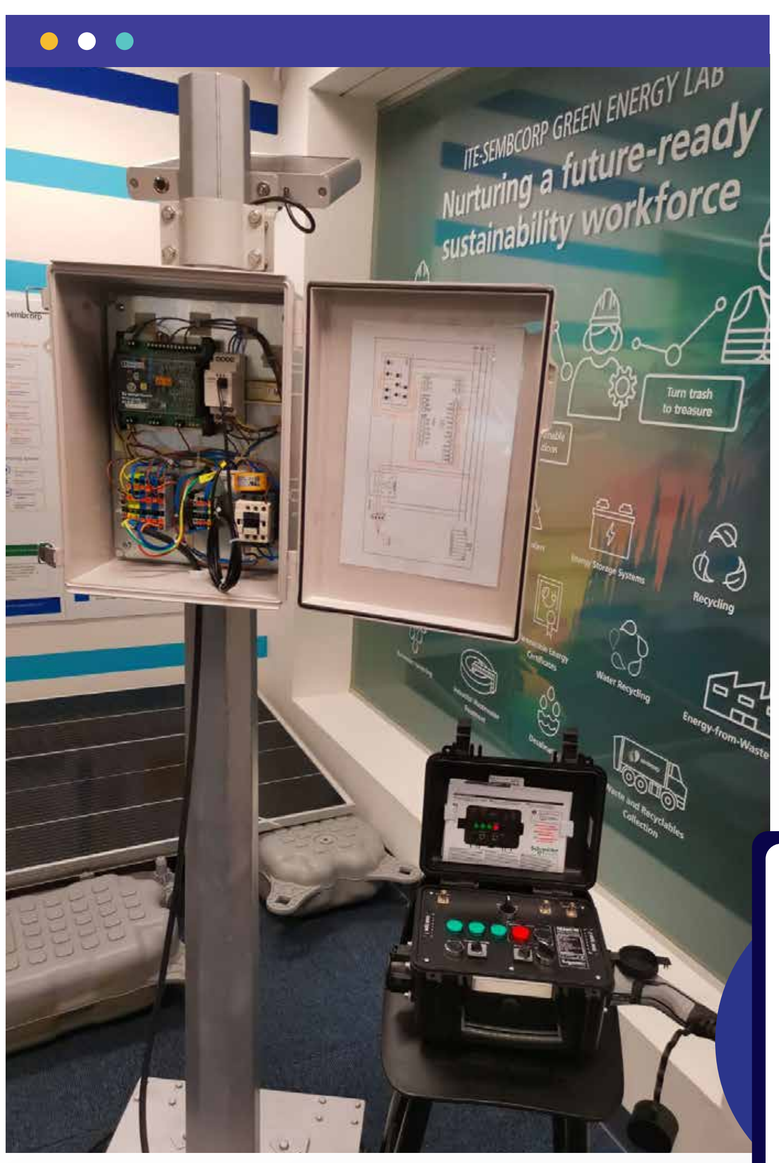
EV CHARGER CONTROL PANEL



PROJECT OUTCOMES

- Retrofitting existing streetlamps that are already connected to the power grid. This is cheaper and potentially less complex than installing standalone EV chargers in different locations.
- Providing EV users easy access to an EV charger whenever required.

OVERVIEW OF THE PROTOTYPE



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