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Mobile Robotic EV Charging - no new infrastructure required

My company is an early-stage startup working on an approach to charging EVs with multiple small robots. A static charger is replaced by three robots working in rotation as a "bucket brigade" (one charging, one discharging, and one in transit). The number of robots required to cover an area is determined by the available power, and charge/discharge rates (which can be asymmetric). Asymmetric discharge can be used to provide fast-charging.

Initially, vehicles needing charged will use a "dongle" for robot access. Battery packs would be modified in future EVs (before and after market). Connection to the dongle/car uses our patent-pending high efficiency two-part transformer.

Target price for robots is $3000 each - commensurate with lawn-mower robot pricing, required power electronics/mechatronics, and ~ $1kWh of storage. A 3-robot installation would be of similar cost to a single static charging station.

Robot base (charging) stations will plug into standard 220Vac and charging uses the same interface as the EV/dongle.

Business model is "charging-as-a-service", so all costs are transferred into operation, and no new power distribution is required under most circumstances.

Where more power is required, it may be sourced using (off-grid) solar adjacent to where the EVs are parked (charging the robots directly).

Estimated lead time for providing robots is currently 18 months, from grant of funding.

In parking structures like Caltrain "Park & Ride", the robots can provide additional security in addition to EV charging. Street parking would be supported by modifying lampposts to charge robots.

The robots will be able to serve vehicles for the elderly and handicapped who are unable to handle standard EV charging equipment, as well as other robot services.

Thank you for your attention, please send questions by email to kc at hembus.com.