A REVolution for a Broken HART
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**Team REV**

Team REV's mission is to design and build a personally operated electric vehicle (EV) as a proof of concept to supplement the Honolulu Authority of Rapid Transit (HART) light rail system. With the careVAN proof of concept vehicle, the team strives to address current engineering problems faced by HART and take the next steps towards sustainable transport.

**FINAL RESULTS**

- Top Speed: 40 miles per hour
- Cargo Capacity: 164.5 cubic feet
- Range per Charge: 31 miles
- Payload Capacity: 700+ pounds

**careVAN Design**

- **Power Supply**
  - 48 lithium-ion battery cells packed into six individual modules
  - Repurposed Stow 'n Go seating compartment turned battery housing
  - Auxiliary 12-Volt system

- **Power Delivery**
  - Curtis AC-76 brushless motor and controller
  - Innovative “powertrain box” connecting motor to differential
  - Custom controller cooling system

- **Vehicle Integrity**
  - Safety and street legality
  - Spacious interior passenger/cargo cabin with “one-plus-one” seating arrangement
  - Preservation of vehicle handling and maneuverability

**EV Concept**

The purpose of the careVAN is to encourage the innovation of zero emission transportation options and apply this practice to take a proactive approach in solving existing problems pertaining to the future light rail system. The careVAN is a proof-of-concept electric vehicle designed to supplement HART's light rail system and bridge the transit gap from various rail stations to final destination for rail riders. It will also provide further development opportunities for undergraduates interested in EV design.

**Manufacturing**

- Fabrication of battery modules and housing

**References**


**Dr. A Zachary Trimble, Breman Yamamoto, Lewis Moore, Brendan Minei, Aaron Tsyma, Coston Galbric, Harry Wattland
Rebecca Herbert Allen, Anusima Campbell, Richard Huang, Aaron Niangomne**

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**Figures:**

- Figure 1: Team REV
  - Front Row: Kirsten Makanui, Bijan Mandanzadeh, Mark Tesoro, Shelby Patton
  - Back Row: Naish Harlan, Ryan Pierce, TJ Watanabe, Benliu He

- Figure 2: Projected HART rail line with stations

- Figure 3: SolidWorks render vs. manufactured battery housing (left) and “powertrain box” (right)

- Figure 4: Manufacturing process of battery modules and housing

- Figure 5: The careVAN in its full glory