The Advanced Vehicle Research Center

HEAVY DUTY TRUCK, TRAILER AND BUS ELECTRIC CONVERSION

HEAVY DUTY TRUCK EV CONVERSION

AVRC is working with an Australian Technology Developer to develop a simple Heavy Duty Truck EV conversion technology that is compliant with EPA requirements and does not in any way adversely affect the ability of the vehicle to comply with meeting the exhaust and evaporative emission standards which the OEM met at the time of certification.

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HEAVY DUTY TRUCK EV CONVERSION

With the “Retrofit Electric Hybrid System” the OEM ECU requires no reprogramming. The independent control unit’s connection is purely mechanical.

The Mechatronic control unit initiates electric drive and regenerative braking modes of operation. The two main sensors used to control the retrofit electric hybrid system are;

- Accelerometer to initiate electric drive for acceleration and deceleration for regenerative braking.
- Inclinometer to initiate electric drive for ascending or descending a hill for regenerative braking.

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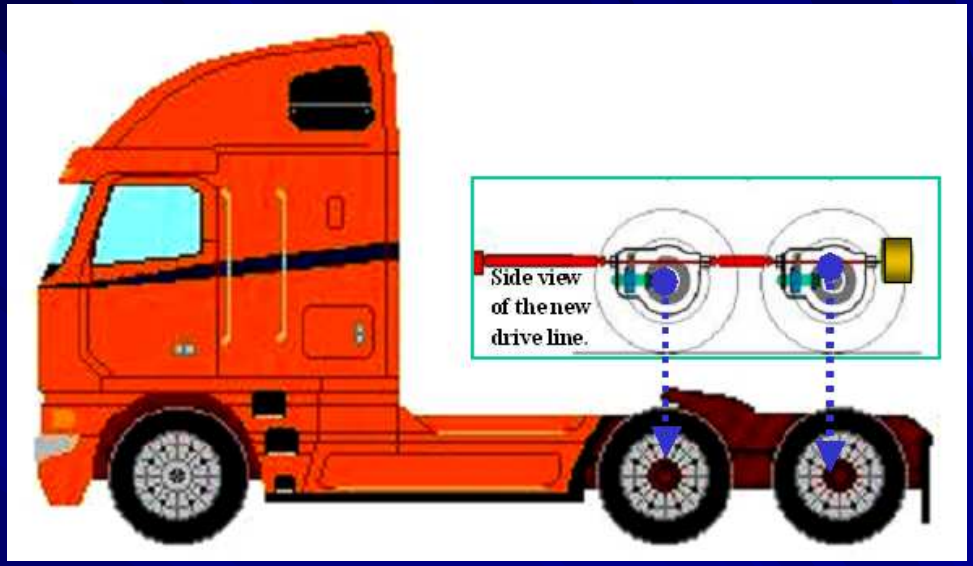
HEAVY DUTY TRUCK EV CONVERSION



This system is used as an electric assist to climb hills and standing starts or overtaking maneuvers as demonstrated on the following slide.

Regenerative braking is used to recoup the power used on the aforementioned actions. All our retrofit systems include on-board plug-in recharging units for the vehicles batteries. The “Retrofit Electric Hybrid System” is suitable for all rear wheel drive motor vehicles.

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HEAVY DUTY TRUCK EV CONVERSION DIAGRAM

Incline: Drive Power on

Electric drive is engaged to help maintain road speed or to accelerate up the incline.

Decline: Drive power off

Electric drive is disengaged

Regenerative braking.

Deceleration: Drive Power off

Electric drive is disengaged to allow

vehicle to coast. Regenerative braking can be applied via the break pedal or manual lever.

Acceleration: Drive Power on

Electric drive is engaged to help launch the vehicle from standing start.

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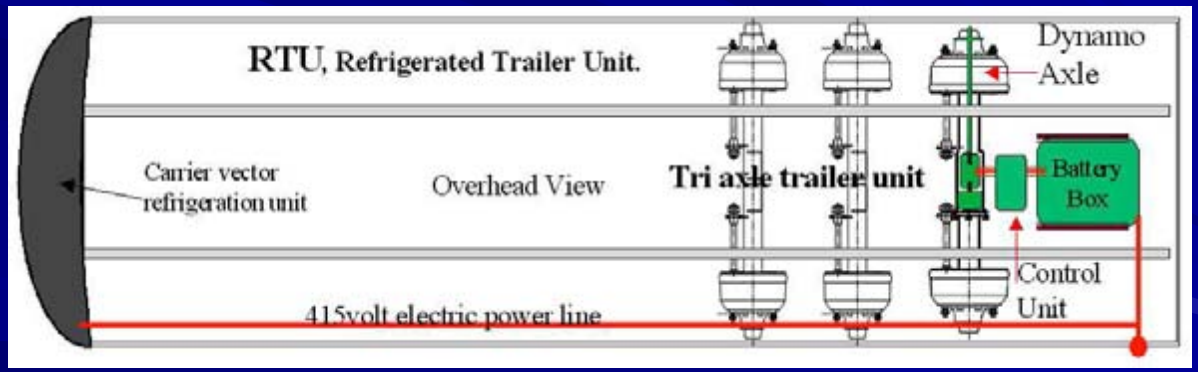
SUITABLE FOR RTUs

This technology is also suitable for Refrigerated Trailer Units. The Axle generates electricity to power the refrigeration unit.



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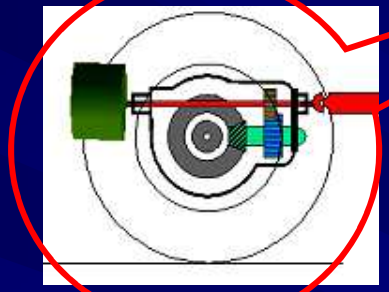
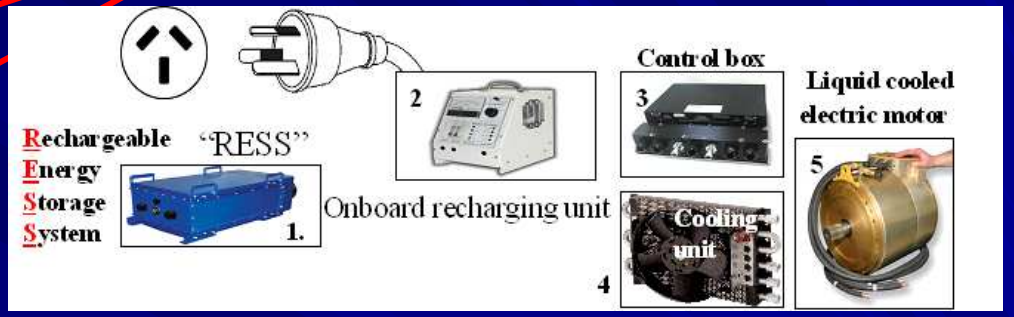
SUITABLE FOR TRUCK *AND* BUS





Replacement rear axle with a close coupled electric motor – this technology is suitable for both heavy duty trucks AND buses.

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SMALLER TRUCK RESEARCH
Transportation Energy, Technology and Development

F150 Ford "electric hybrid conversion"

"Zed drive" is a simple conversion for a live rear axle. It uses an additional pinion gear assembly in a custom made housing to attach the electric motor. This housing replaces the rear cover plate on the existing rear axle. Ultra-capacitors and batteries are fitted below floor of the tray bed or pickup body.

The system can be recharged via the grid and regenerative breaking.

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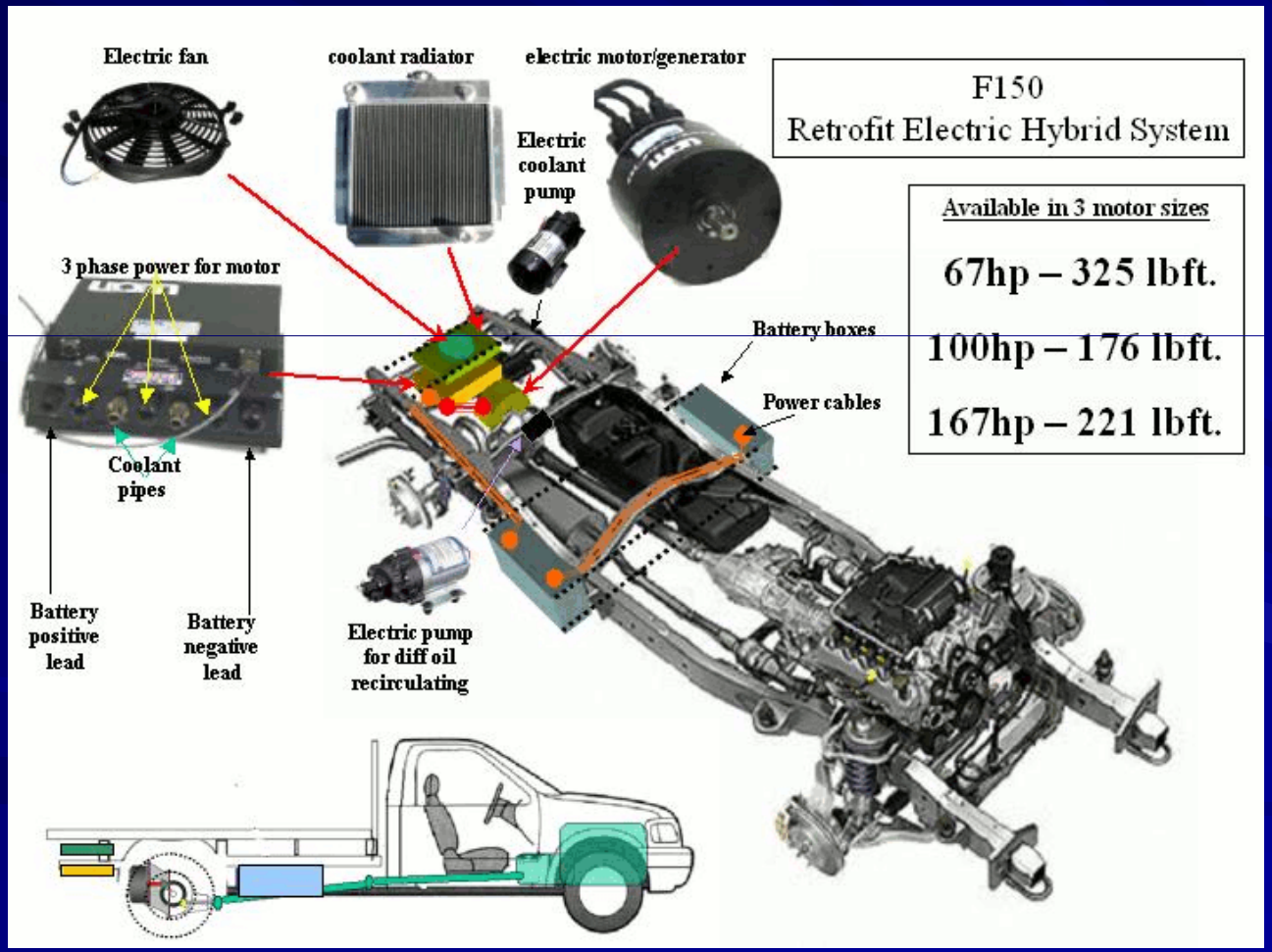
RESEARCH
Transportation Energy, Technology and Development



F150 Ford "electric hybrid conversion"

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OTHER COMMERCIAL PRODUCTS and services

- Engine driven or PTO - 8 kW or 16 kW Solid State power generation - fits under hood and provides an excellent mobile- in use as the ‘Viper’ in Iraq and Afghanistan, robust power source- ideal for utility vehicles, construction, military, etc.
- Battery Electric Refrigeration Units for refrigeration trucks to save fuel, eliminate idling.

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OTHER COMMERCIAL PRODUCTS and services

Compressed Natural Gas conversions for the Ford Focus and Fusion from Altech-Eco.

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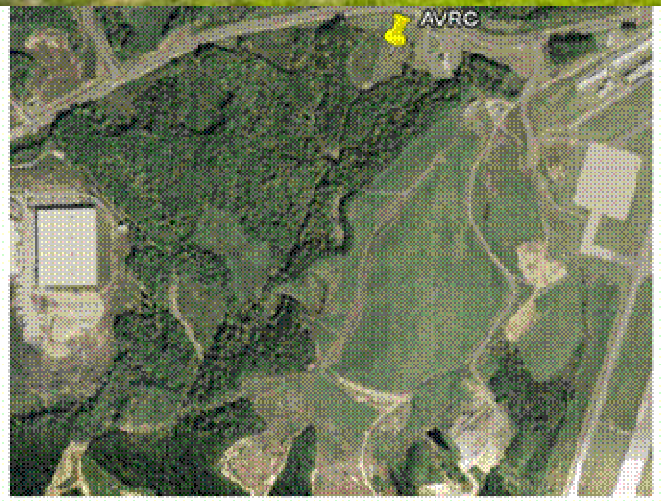
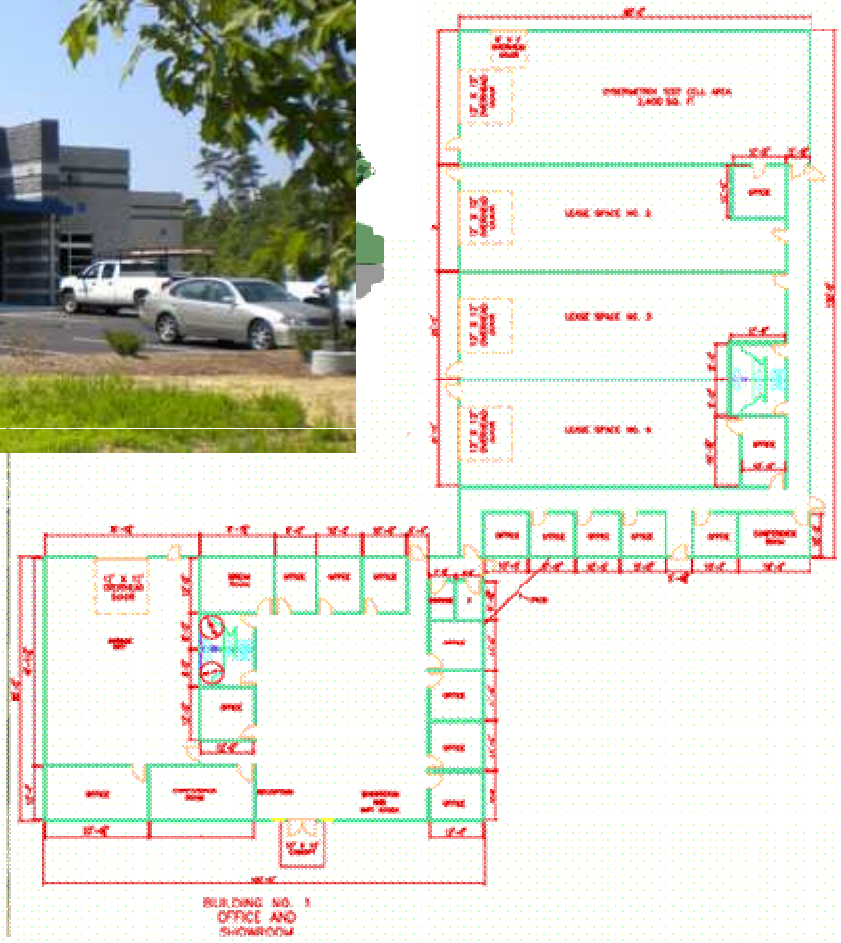
in Danville Virginia

Danville AVRC

- 16,000 s.f. engineering building on 14 acres in the Cyberpark
- Will incorporate grid compatible engine test cells
- Other automotive and transportation companies will lease space and use services in near term
- Adjacent 266 acres for military and off-road testing to mil specs.

AVRC Virginia, Danville





The Danville location is served by Danville regional airport and RDU International

AVRC Virginia, Danville