CODA – Brain Power

To get serious about building electric cars you would take a clean sheet of paper and start from scratch.

First you come up with the vehicle requirement – people need an average sized vehicle with comfortable seats and trunk space, one that gets a reliable range on a full charge, and one that sells at a reasonable price. Next you determine how much energy is required, and then the modeling and packaging exercise of putting together mass aerodynamics-rolling requirements.

Do you now run around to find microelectronic batteries to piece together and power the car? No, because it won't perform. The objective is to create a purpose-built automobile with an advanced battery and thermal management system. A configuration that would allow a driver in Minnesota to use the car in the dead of winter, or a driver in Palm Desert in the heat of summer.

Next you organize a brilliant and diligent team working around the clock to transform the electric car from a dream to a reality.

CODA – Battery Power

Fifteen years ago, the best electric car battery option included led-acid batteries that weighed an absurd amount with only a low energy density. Later, Toyota put a nickel-metal-hydride battery in the RAV 4 EV, but still there remained an energy deficiency. Lithium-ion battery systems solved the energy and weight problems, but Toyota only used low precision manufactured microelectronics that failed to function in a systematic way.

...you organize a brilliant and diligent team working around the clock to transform the electric car from a dream to a reality.

1. Electronic Stability Control > Continental
2. DC/DC Converter > Delphi
3. Inverter > UQM
4. Motor > UQM
5. Transaxle > Borg Warner
6. Electric Power Steering > Delphi
7. Electric Vacuum Pump > Hella
8. Battery Management System > Energy CS
9. Charger > Lear
10. Main Controller > OMITEC
11. Battery > CODA Battery System
12. Electric AC Compressor > Mitsubishi

CODA's team is made up of a broad range of experience and expertise. First is Phil Gow, vice president of Battery Systems. Phil has 17 years experience focusing on the development of advanced battery systems and owns nine battery patents. Phil spent many years working with General Motors on the belated EV1 project.

Second is Broc TenHouten, CODA's Senior Vice President of Engineering & Project Management. Broc and his core team engineered and developed a safe and affordable all-electric vehicle quicker than the automotive giants with their thousands of engineers.

Third is Bruce Shibuya, Chief Quality Officer. Bruce is the man behind Hyundai's unprecedented quality improvements and joined CODA to lead its manufacturing efforts and redesign the customer service infrastructure.

To date, CODA has raised more than $125 million from a mix of private and institutional investors. This allotment of funds has allowed the company to take the key enabling technology and the battery system to mass production.

The CODA battery pack is a lithium-ion iron phosphate 700lb-728-cell battery system. Each system stores 33.8 kWh of energy at 333 volts. The packs are situated underneath the car for a low center of gravity – as opposed to other EVs that consume trunk space with batteries that weigh hundreds of pounds. As a new American car company, instead of spending millions in metal bashing, CODA focused on battery intelligence and innovation.

Porsche Design Studios helped CODA design the car that uses components supplied by U.S. manufacturers such as Borg-Warner, Delphi, Nexteer and UQM Technologies. The engineers modified a Mitsubishi-licensed chassis and thoroughly re-engineered and re-designed it. In the end, the CODA sedan is a four-door, four-passenger fully loaded affordable, all electric, zero emissions car with more trunk space than an average mid-size vehicle.

The first wave of CODA cars will be available in 2011 at a sticker price in the $30K-$35K range after Federal and State incentives, that of an average mid-size sedan. The only other regular cost is about $2.50 per full electric charge at $0.08 per kWh, based on Southern California Edison's nighttime electricity rate. And with a 220V (30AMP) outlet the car takes under six hours to fully charge. So, for less than the cost of one gallon of gas you can drive for 90-120 miles.

The on-board Green-Screen monitors driving efficiency and comes equipped with a standard navigation system. Also, roadside and emergency assistance is just the push of a button away. Not to mention included in the vehicle are the Bluetooth system, satellite radio, and media connectivity.

(Continued on page)