

GEVCO a New Era



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GEVCO

Global Electric Vehicle Company

To provide a unique business proposition enabling
the viable introduction of a bespoke 2nd
generation global electric vehicle.



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Company Mission

To provide a unique business proposition enabling the viable introduction of a bespoke 2nd generation global electric vehicle.

Business

A number of major corporations have identified clear intent to participate in the Electric automotive sector, but individually recognise they do not have adequate volume requirements to bring to market a commercially viable mass market acceptable electric vehicle or develop systems for supply.

GEVCO, led by a highly experienced e-automotive team, has developed a proposition to enable these companies to bring to market commercially viable mass market electric vehicles. Conceived from the ground up for electric traction GEVCO vehicles will incorporate advanced e-mobility systems and technologies developed with a strategic supplier base.

GEVCO's business model will enable their international partners who participate in the venture to build competitively and sell a range of advanced Electric Vehicles under their own brands with exclusivity for their respective territories.

GEVCO is actively working with and looking for new partners based in Europe, India, China, USA, ASEA, M.E.

The creation of an international technology transfer network will be created by working closely with a Global supply chain network enabling a platform for new innovative technologies and vehicles to be developed and brought to market.



Collectively investing in design, individually contributing to the supply chain, production, and delivering local market sales – scaling together

Market & Background



The automotive industry is currently embracing one of the most significant and impactful periods in its history. Almost decimated by the global financial crisis it is now adjusting to new market and legislative drivers, adopting new technologies and practices across the value chain to meet step change reductions in CO2 emissions.

Given their scale and distribution, it is unlikely that the large automakers will be swept away. However, many are facing significant business challenges to enter this new market segment due to a dependency on the existing value chain and technologies, and a 'zero technology compromise' by the market for EV's vs conventional ICE powered vehicles. It is therefore predicted that there should be room for new entrants gaining market share, by additionally delivering lifestyle solutions and branding that suits the changing attitude to mobility.

Competitive Advantage

By aggregating the regional market volumes of the international partners, the critical mass necessary for economies of scale can be achieved, providing a high volume cost base.

GEVCO's innovative collaborative structure will enable its internationalist partner companies to participate competitively in this new growth sector, benefitting from a reduced component cost and investment amortisation over a larger volume.

Collectively investing in the design, individually contributing to the demand and delivering to meet the local market demands, the partners will scale together.

Collective investment in the design and pooling of demand enables:-

- Development of a range of commercially viable mass 'white label' designer styled, high quality, safe electric vehicles engineered to meet next level EU/US legislation and NCAP requirements.
- Inclusion of 'Mass production' leading edge technologies and supply chain solutions in to the vehicle design.
- Support of the partner to establish advanced regional assembly, infrastructure, distribution and sale of an 'own branded' product
- Vehicles conceived for electric traction so the layout is not influenced by the presence of an IC drivetrain and systems

To capitalize on the growing demand for electric and alternative, fuel-efficient vehicles, two concepts are being developed and offered on a global basis, these being a compact 4 seater and a mid range family vehicle (series hybrid). The Phase 1 study developed the concept for the i-Mav, a compact 4 seater EV intended primarily but not exclusively for urban use, for introduction to market on a global basis by 2015.

To meet the challenges of achieving the targets and drivers established, a philosophy adopted by the GEVCO/MIRA team was to design and engineer a vehicle from the ground up for electric traction with a clean sheet approach regarding all aspects of the vehicle, ensuring the application of best practice in applying the new EV technologies without inheriting constraints from legacy based compromises on ICE vehicles.



A market focus regarding the initial GenY user group and their needs reflected the necessity to design more than just another Electric Vehicle. Success would require the creation of a commercially viable technologically advanced vehicle that would be desirable and fun to drive reflecting the lifestyle and social values of the iPod generation, delivering a step-change in the way society views personal mobility.

Conclusions from studies & the focus group, were summarised to convey in simple words and images the philosophy of the product: **Technology** (Seamless integration and intuitive), **Simple** (less is more), **Responsible** (reflects the worlds future needs), **Individual** (allowing the user to reflect their lifestyle and personality).

These positioning statements formed the benchmark for assessing the design concept for relevance as it was developed.

A series of targets were established prior to the start of the programme which would be challenging to deliver and would ensure that i-Mav would be one of the most technologically advanced and visually exciting EVs developed, incorporating technologies that would make it an exciting and viable alternative to conventionally powered vehicles.

- Max Speed:** 80mph (limited)
- 0-60mph:** 14 seconds (limited)
10 seconds unrestricted
- Emissions:** Zero (tailpipe)
- Distance (NEDC):** 430 miles/battery (Aluminium air)
70 miles/charge (Lithium)

- 4 Occupants:**
Front 2 x 6'2"
Rear 2 x 5'10"

- Composites:**
 - Glazing
 - Body panels

- Range Extender:**
 - High Efficiency



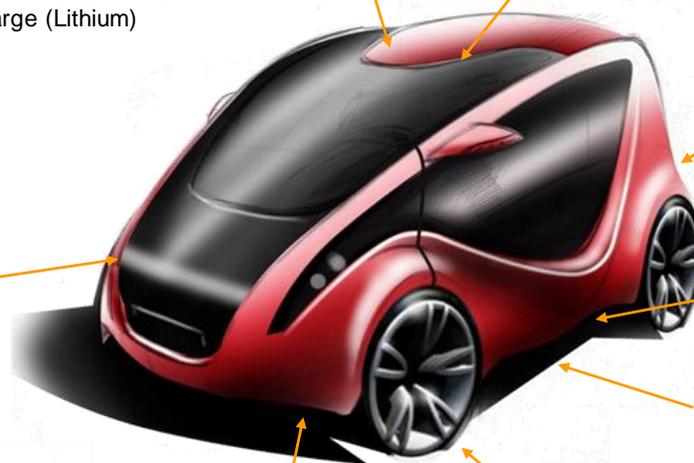
Designed to achieve 2012 EU/US 4 star NCAP
Advanced safety structure front & rear ensure compact dimensions

100% film wrapped to enable user expression



Modular aluminium structure (96kg)

- adaptable for multiple variants
- Lightweight /efficient
- Low Energy Joining Technology



Under floor induction charging plate

- Battery – Under floor Technology Ladder**
 - Metal Air
 - Zinc Air
 - Aluminium Air
 - Lithium Air

Advanced Electro Magnetic Geared Motor



A series of challenging dimensional and vehicle mass standards were achieved, which when considered in parallel with the requirements for safety, occupant comfort and styling set a benchmark standard.

l/w/h/wb (mm)	2850/1630/1671/1870
Mass (kerb)	760kg (exc driver)

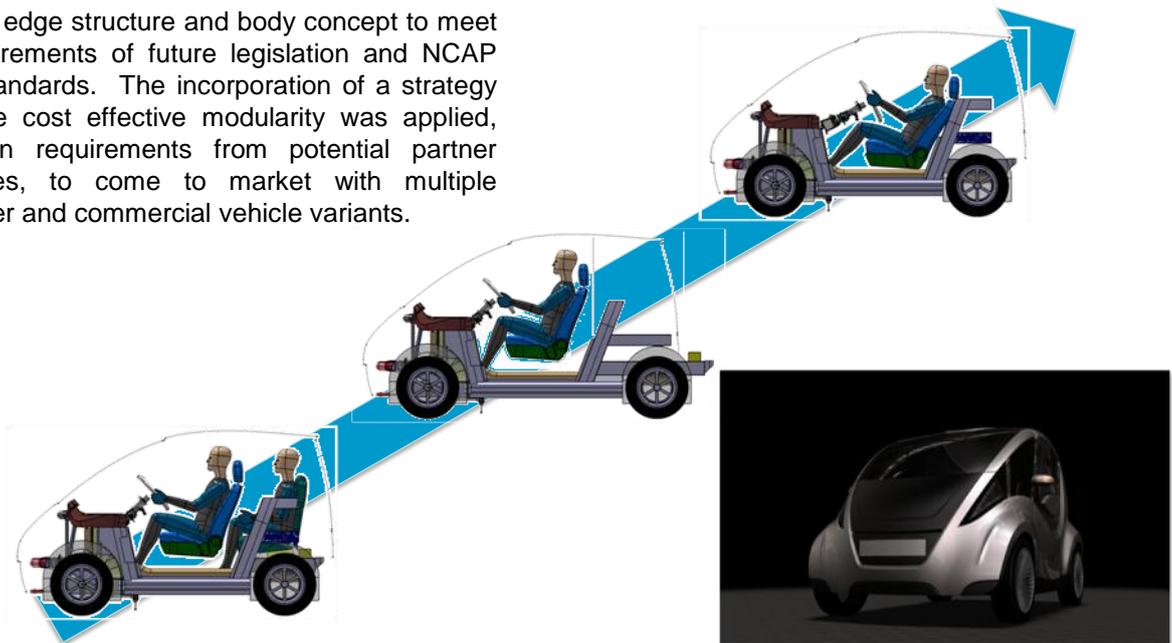
The iMav is currently specified to be 135mm shorter with a kerb weight 126kg lighter than a Toyota iQ, yet is expected to have improved occupant ergonomics.



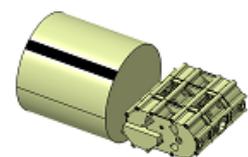
STEP CHANGE TECHNOLOGIES

The result of this clean sheet approach to the development of an EV from the ground up for electric traction is that the i-Mav incorporates new technologies never before seen on a production vehicle including:

- An electro-magnetic drive motor removing the need for a gearbox, reducing cost and complexity,
- A range of unique metal air batteries with significant cost and technical advantages over conventional lithium based solutions were qualified for further development, supporting a technology ladder approach enabling continuous evolution of the GEVCO vehicles to meet market needs. Of significant interest was the evaluation of aluminium air technology available as a primary battery. With a simulated NEDC cycle range of 430 miles per battery and an exciting cost model that could revolutionise the way we think of EVs, this technology was highlighted as a step change technology.
- A cutting edge structure and body concept to meet the requirements of future legislation and NCAP safety standards. The incorporation of a strategy to enable cost effective modularity was applied, based on requirements from potential partner companies, to come to market with multiple passenger and commercial vehicle variants.



- The basis for the intelligent car to enable the car to be a communications hub with intuitive display and control of information
- GEVCO has identified a revolutionary engine design that is ideally suited to application as a range extender. The design is elegant in its concept, delivering best in class weight and volume, a low part count and efficiency. GEVCO is working closely with the supplier to develop it for application in a series hybrid configuration for the i-Mode.



The resulting designs, engineering strategy and commercial data demonstrate exciting and positive foundations for the project to set new standards in the EV sector and meet the business targets for the collaborative partners.

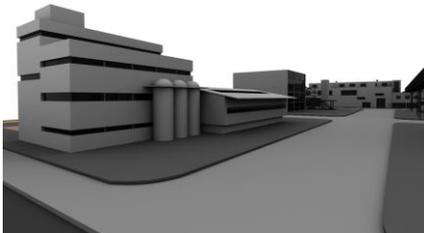
NEXT STEPS: 10 MONTH PROGRAMME TO INCLUDE

Based on the successful completion of this phase, GEVCO and MIRA working closely with a number of international automotive companies and investment groups looking to enter the EV sector are about to commence the next phase in this ground breaking venture to:



- Design & Build 2 running concept demonstrator vehicles
 - i-MAV (Battery EV)
- Develop the user interface incorporating new concepts using an HMI environment
- Design and Build a driveable aluminium rolling chassis
- Incorporate technologies intended to be developed for inclusion in the production designs in to the demonstrators
- i-Mode static exterior scale model
- Technical and commercial product development of i-Mav and i-Mode
- Establish a strategy for Global micro plants and value chain
- Technology appraisal to support the ZTC philosophy

GEVCO – CENTRE OF EXCELLENCE



GEVCO's headquarters and centre of operations will be located in the UK on the MIRA technology site, leveraging extensively on the UK and European automotive technical skill base and include a Centre of Excellence for the development of EV technologies and their application.

New innovative technologies and vehicles will be developed and brought to market by working closely with the global partner companies and academic institutes to create an international technology transfer network

COLLABORATION – THE WAY FORWARD

A Unique Proposition	An innovative business model & exciting product range of electric vehicles designed to successfully compete on quality, price & performance with IC vehicles.
Reduced Cost & Risk	Development costs shared across the collaboration supporting the investment required to design and develop cost effective, safe quality EVs
Profitable Manufacture	Mass production component costs by combining the demand from each regional partner's local 'low'volume production (i.e 5 partners x 20kpa = 100kpa)
Partner Growth	Growth in market demand supported by investment in mass production design & tools.
Market exclusivity	Each partner 'owns' the exclusive rights to indigenous assembly for their market
Technology Transfer	Open access to leading edge Electric Car Designs, Technologies & Production Processes developed using rigorous automotive design methods.
Market Competitiveness	Access to a high calibre supply chain network that would not be developed through traditional in-house methods with mass production economies of scale
Regeneration	Creating an Automotive Centre of excellence for Electric Vehicles, creating jobs, innovation & growth of clean-tech suppliers around the manufacturing business.
Must Have Products	Designs focussed on market needs and tailored to the partner brand DNA

The securing of interest from a number of major international companies wishing to participate in our unique 'white label' business structure and leap-frog the competitors in their markets, clearly demonstrates the advantages of the collaborative structure to build and own brand a technologically advanced vehicle such as the i-Mav with reduced set-up costs and risk."

With the addition of new infotainment and HMI based projects, GEVCO welcomes investors, technology providers and potential new market entrants to discuss their interest to collaborate in the creation of a range of exciting 'must have' white label EVs, based on GEVCO's philosophy of Zero Technology Compromise

