

# Project Chimera

Team Chimera was founded by a group of students during their 3<sup>rd</sup> year of engineering at the R.V. College of Engineering in Bangalore, India. The idea was to get involved in a project which would maximize learning, as well as tackle an everyday problem that we as citizens of the world constantly face – environmentally friendly transportation.

With this in mind, a multi-dimensional team comprising students with back grounds in various engineering disciplines such as Electrical & Electronics, Mechanical, and Computer Science was formed.

Project Chimera aimed to improve on the REVA Electric Vehicle, by converting it into a hybrid electric one, which would improve the range, power and speed. The car, which presently runs on pure electric power from on-board batteries, would now be fitted with a diesel engine running on a blend of bio-diesel. Bio diesel is a mix of regular diesel and the (Jathropha) plant oil. Increasing percentages of the mixed plant oil would lead to a reduction in the sulphur content in the exhaust gases, and this was the approach that was adopted. The aim was to run the car on clean electric power provided by the on-board battery pack. Once the charge ran sufficiently low, an on-board hybrid controller would start the engine, which would provide power for driving the car, as well as charge the batteries. Once the battery was charged to a particular level, the controller would switch off the engine and the car would once again run on clean battery power in order to have as long a run on clean power as possible.

With the help of our sponsors, Robert Bosch Engineering & Business Solutions Ltd, National Instruments and Reva Electric Car Company, Team Chimera set about the task of procuring various parts to successfully implement our hybrid model. Parts such as a diesel engine from Lombardini India, a Lynch motor from Agni Motors, and a data acquisition system and processor which would serve as the brain of the car, were among the most integral components we obtained.

Our first task was to mechanically alter the chassis of the REVA car to hold an additional 60 kilos of weight in terms of the engine. We also had to accommodate a fuel tank in the car to ensure that the car could cover at least 300 km on a full charge of batteries and a full tank of bio fuel.

Next, in order to make the in-built electrical system work in tandem with our mechanical alterations, we needed to have a control device which would monitor and regulate all the various functions of the hybrid system. This was done by programming the National Instruments components, and developing our own Hybrid-Controller in the process. This controller took in various analog and digital inputs from the various on-board systems and controlled the functioning of the hybrid system according to a set of parameters that our team programmed.

In all, our project took close to 18 months from start to finish; with the ultimate goal of participating in an international competition called the 21<sup>st</sup> Century Automotive Challenge in New Jersey, USA. Although we could not participate in the competition due to unforeseen circumstances, our project became a reality only because of the constant backing and support of our sponsors.

Team Chimera is now in its second avatar, with control of the project being handed over to another team of students from the R.V. College of Engineering. Under the Chimera Club started by the initial team, the second group will handle and build on our platform, to fine tune our initial prototype and get it ready for international competitions in the coming years.

The members of Team Chimera are all graduates of the R.V College and are now in various parts of the world. 4 of the team members are currently pursuing our higher education in India and USA, and the remaining members of the team are well on their way to successful careers with companies like Toyota, IBM, Bank of America and Oracle just to name a few.