



Joule is Africa's first electric vehicle from Optimal Energy. The silent passenger vehicle is manufactured as a standard five-seater offering an optimal, zero emission urban driving experience.

# Joule in the crown

By Dora Laine

Optimal Energy is setting new standards for the electric car with its stylish Joule – a more attractive, practical and comfortable electric car than most models on the market today. Relying on CATIA and ENOVIA V6 for product design and data management, Optimal Energy has a clear goal – transform the face of the urban transportation landscape with a dynamic, “real world” electric vehicle.

Improvements to the ultimate clean vehicle, the electric car, are making them more attractive to the ecologically minded. Among the benefits - they are about five times more energy efficient than gasoline or diesel vehicles and are virtually silent. But disadvantages remain: electric vehicles are often slower than their fuel-driven counterparts, are usually small, and have a driving range of about 100 – 150 km.

## AN ECO-FRIENDLY APPROACH TO URBAN DRIVING

Optimal Energy (Pty) Ltd aims to eliminate those disadvantages. The company's passion for renewable, clean energy is manifested in Joule, Optimal Energy's first product offering with which the company intends to change urban driving forever. Founded in 2005, Optimal Energy is a privately owned South African company based in Cape Town. It employs more than 100 people and is planning to expand this number to 200 by the end of 2010. Joule is

Africa's first battery-powered vehicle that boasts ample room space, a top speed of 135 km/h and a nominal range of 300km on a single charge.

Designed by South African-born Keith Helfet, previously head of design at Jaguar and designer of such automotive icons as the XJ220, the Joule is stylish and larger than most electric city vehicles. “There are not many electric cars on the market at the moment, but most of the concepts that have been seen are quite small cars,” said Anton Greeff, Chief Mechanical Engineer, Optimal Energy. “Ours are built to be an urban driving solution that's comfortable with a distinctive and attractive design.”

Several prototypes of Joule are already on the road, and the car will be available for sale to the public end of 2012. “Our biggest challenge is to bring Joule to market on time with respect to other manufacturers,” says Jaco van Loggerenberg, Media & Events Manager for Optimal Energy.

“We believe that by focusing 100% of our energies on creating an entirely electric car gives us an advantage with respect to automotive companies that create petrol and diesel cars as well.”

Optimal Energy chose to adopt the Dassault Systèmes solutions because they would give it the technical capabilities of an OEM, which has built its experience over many decades, in a short amount of time. “Because they're well oriented toward the automotive market, the DS solutions have sped up our learning curve tremendously,” said Greeff.

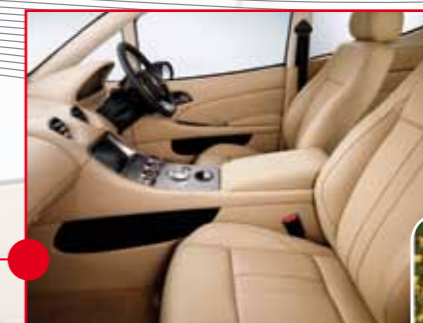
## A DISTRIBUTED WORKING ENVIRONMENT

Many of Optimal Energy's automotive suppliers and system developers are based in Europe or the Far East. The company therefore needs to collaborate extensively with a network of people all over the world. ENOVIA V6 running on Microsoft® SQL Server® 2008 provides Optimal Energy and its suppliers with an integrated collaboration platform and access to the single version of the truth, from initial requirements to production.

“It's tempting to dive into a design and store everything as you go along in whatever system you have available at the time,” said Greeff. “As a young company, we could have deviated



Joule, Geneva Show Car, March 2010



Anton Greeff  
Chief mechanical engineer  
Optimal Energy



## feature

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from the right path and acquired some bad habits by storing documentation in one place, CAD data in another and requirements somewhere else but working with ENOVIA V6 prevents all this. With ENOVIA, everything is in the same platform and interconnected and if someone needs information on the product, there is only one place they have to go and look.”

Security was also a major determining factor in Optimal Energy's choice of ENOVIA V6 and SQL Server 2008. “Any system that you open up significantly for collaboration means that security has to be very good. Since we are inherently a distributed organization we need to ensure that our data transits in a secure manner,” said Kern Page, IT Manager, Optimal Energy. “I am very confident in the security

of this system.” Cost was also a factor in choosing SQL Server 2008. “We find that the cost of ownership is more advantageous than other systems we looked at and for a young company, this is essential,” said Page.

## 3DLIVE REDUCES COSTS AND MAKES DATA EASILY ACCESSIBLE

Keeping costs down also means reducing travel. Since working with partners and suppliers from a distance is the norm, Optimal Energy chose ENOVIA 3DLIVE so that people can collaborate on the same model in real time over the Internet. “Using this solution to communicate visually with those responsible for building the car and not having to travel back and forth constantly to see the model on a CAD station is very important for us,” said Jako von Molendorff, Configuration Manager, Optimal Energy. “Even people who are not directly involved in the design and who have no particular technical skills can now feel more in touch with the product, thanks to 3DLIVE.”

## FROM STYLING TO RECYCLING

Optimal Energy engineers use CATIA to design Joule from the conceptual stage to manufacturing and tooling design, and ENOVIA V6 to manage

its entire lifecycle all the way to recycling. “As a green company, we feel a stronger obligation to not just make money but to make the least impact on the earth in the process. From a business perspective and an environmental responsibility perspective, Optimal Energy puts a lot of thought into how the car will be disposed of and how Joule's parts will be recycled,” said Greeff.

## LEAN PROCESSES FROM THE BEGINNING

The move to a PLM system has given Optimal Energy the impetus to formalize its processes. Since the company is so young, it is still establishing its production processes. Consequently, the company uses ENOVIA V6 as an out-of-the-box solution instead of “bending” it to conform to its way of working. “We believe that automating chaos will not result in a better product. We take an ENOVIA out-of-the-box process, see if it can work for us and if there is no compelling reason to change it, that's what we go with,” said Greeff.

Within the next few months, Optimal Energy will set up a collaboration server in Europe to collaborate with all its suppliers and contributors from the Continent and toward the end of 2010 it plans to achieve full integration with its ERP system. 3DVIA Composer is not far down the road as Optimal Energy will use this solution to create all its technical and marketing documentation • )



Joule rendering with CATIA



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