

12:grn:hrs - design a green car in a day! Morning Session

Hannah Macmurray | 30 September 2011

Design is becoming more social. Co-creation is disrupting the traditional design process and relationships between designer and manufacturer are changing as a result. In this time of movement there is one industry that still finds it difficult to adapt and react to social changes - the automotive industry. Partly due to consumer's conservative demands and expectations on one side and the industry's insular status quo on the other car design often finds itself stuck in the middle. The recent Frankfurt Motor Show was a clear example, designs were erratic and concepts were incoherent; you just need to take one look at the Mercedes F125 concept to get what's going on!

In light of this lack of direction and in order to encourage ecologically motivated design **Green Car Design**, the online eco-design car magazine, held a 12-hour workshop, **12:grn:hrs – design a green car in a day!** where the consumer and the industry met to design a truly unique green car design concept. The event coincided with the ever growing and influential **London Design Festival 2011** to highlight the need to look outside the automotive design box. The Covent Garden location of the **Design Council** offered participants immediate access to one of London's best social and artistic hubs with Soho and Neil's Yard minutes away plus the added benefit of London Design Festival events.





The morning started off with an open Morning Session of speakers from different industries with a focus on green materials and services. **Kenny Schachter**, writer, curator, and art dealer, set the tone with his keynote speech. Clearly not from the automotive industry yet passionate about cars his words ideally opened the door for creativity. "Facebook changed the way we communicate and the Prius changed the way we consider cars; the sky is the limit as to what's next so better we try and keep it less polluted" he surmised "...Personally, I don't differentiate between a painting, sculpture, chair, spoon or a 70's Porsche; whether a van Gogh, Picasso, or a vehicle, it's a holistic notion of a lifestyle. We all want to live longer, cleaner and more efficiently and cars are a good place to start to clean things up. There is a lot of making up to do, [but] cars are the most ubiquitous form of design in society; as my friend Sam Livingstone, a consultant and tutor at Royal College where I lecture on occasion, said, we see more than 2,000 of them a day. So I say, why not make them nice, or at least nicer. Cars will be more and more efficient not only because they have to be but also because they can. And not just in the near future but now." (you can view full speech [here](#)).

Dr. Siavash Mahdavi from Within Lab



Schachter's speech was then followed by **Dr. Siavash Mahdavi** from **Within Lab**, 3D Printing experts and manufacturers. To say that the audience was blown away with this technology is an understatement, everyone in the room sensed that our futures will change dramatically due to 3D Printing. Not only does it solve huge issues about waste because it can reduce the use of material by over 80% but also because it makes transporting masses of material, namely metals, from location to location redundant. Dr. Mahdavi explained different uses for the process, amongst them porous finger implants made out of cobalt chrome or titanium that encourage bone in-growth (osseointegration) and a lightweight load bearing engine block built with a liquid lattice design where the software removed any excess material by building it inside out and maintaining function and performance with a lattice structure. In passing samples around the room brains were already warming up for the task ahead...imagine reducing the weight of your car by 80%!

Iain Taylor from Sage Automotive Interiors



Next up was **Iain Taylor**, Design and Development Director for **Sage Automotive Interiors**. Not only does his company strive to be sustainable but he has also personally taken to lightening his own carbon footprint where he can...and loving his Prius! The main idea that Taylor resounded was that design should **Design for Disassembly**. This means that when considering the design of a vehicle the designer and company should not only think about materials in terms of recycled and recyclable but also how those materials are disassembled at the end of use. Currently the metal and glass components in cars can be recycled at the end of life but there always remains a huge amount of 'fluff' from seating and other interior parts. If seats could be designed with zipped on covers or foam could 'unglue' itself from fabric after use then he feels this could help our environment immensely...simple.

Mike Hardcastle from Light Tape UK



The topic of light and lightness was essential to the next speaker **Mike Hardcastle**'s work as Managing Director of **Light Tape UK**. Despite its many uses Light Tape is probably most widely known from its extensive use in the recent movie **Tron Legacy**. Hardcastle says that one of his most popular selling items is the Tron costume pack which they will be upgrading with a smaller battery pack! But entertainment aside this product has serious applications in the automotive industry, specially in eco cars that are looking to economise on weight and energy use. With a profile of less than 0.7mm thick, consumption rate of 1watt/1meter/1 inch of material, and recyclable qualities Light Tape is set to become a viable lighting alternative for the automotive industry. Where LEDs drain the battery Light Tape can be powered by the simplest of solar panels with energy to spare. The portability of the material was an instantaneous hit with the audience as brains were flexing about its possible use in the upcoming design challenge.



Sue Connelly from Camira Fabrics



Camira Fabrics was invited to show their wonderful fabrics made from mother nature itself, and presenting was **Sue Connelly**, Corporate Sales Manager. **Nettles** seem like a strange plant from which to harvest fabric but in fact they can be harvested locally, in Camira's case in Leicestershire, and the bast fibre that is contained within the stem can be blended with wool into yarn. The resulting fabric has been appropriately called **Sting**, Sustainable Technology in Nettle Growing. Another fabric Connelly showed is known as **Hemp**, Higher Environmental Manufacturing Protocol, and whilst the name is a mouthful the fabric is simply manufactured in the same way as Sting but from Hemp plants. Their revolutionary fabric derived from recycling Starbuck's jute bags and re-purposed with wool to create **WoJo**, the fabric that now covers many seats in Starbuck's coffee shops, exemplifies Camira's commitment to style with substance.

Micol Costi and Claudia Reder from Material ConneXion



Material ConneXion is an enviable fountain of information in a one-stop format, a library of materials sourced worldwide. **Micol Costi**, Director of Library and Materials Research, and **Claudia Reder**, Senior Materials Specialist, both opened up a window of possibilities on a number of uses from their stock of innovative and sustainable materials. Materials ranged from the exotic like rotten carrots in the form of **CURRAN®** that offers properties close or better than those found in carbon fibre composites to the natural like **AGRIPLAST®**, an injection moulding granulate made from slightly less than 50% field grass. With growing concern about the use of food crops being used as building materials or alternative fuels it was very interesting to learn of **pebax® Rnew**, a high-performance, bio-based elastomer. It is made from up to 95% plant-based Castor oil, a non-food based oil usually used as an engineering oil. It is one of the lightest elastomers, is durable, recyclable, and can be injection-moulded, overmoulded, extruded into films and sheets as well as being pigmented in any colour. Used in consumer products, sports equipment, and footwear the Castor bean never looked so good!

Sebastien Stassin from Kiska



Last to speak in the Morning Session was **Sebastien Stassin**, Partner at **Kiska**. Kiska is a unique design consultancy in Austria that most recently were asked by **Opel** to design a unique 3-wheeled concept for the Frankfurt Motor Show 2011 called **Rak-e**. The Rak-e highlights one of Kiska's trump cards in the development and design of eco-vehicles. Whilst the automotive industry battles and stagnates with safety and legislation issues about 4-wheeled passenger cars Kiska looked at the problem in another way. What if we considered vehicles that only had **3 wheels**? And sure enough the law and restrictions that inhibit change and development in the 4-wheeled arena do not exist for the 3-wheeled. With today's technologies and materials it is entirely possible to develop light, safe, and awesome looking vehicles that respect the environment now instead of waiting for bureaucratic minds to change...brilliant!



Lunch beckoned at this point but before then teams needed to be created for the task of designing a green car in what was left of the day. Teams led by car designers **Sebastien Stassin** (Kiska), **David Wilkie** (Mia-Electric), **Hugo Spowers** (Riversimple), and **Giovanni Piccardo** we asked to blindly pick out team-mate names from out of a box. Each team member was then asked to in turn blindly chose one word out of a box of automotive cliché design words that had been mixed in with cliché green words. From these each team had to chose at least 3 words by which their design would be guided...surprise, laughs, and delight filled everyone's faces. After a lunch session getting to know each other and finding a team name the clock started on their mission to design a green car in a day!



How would you design a green car?

That is the question we asked our teams during Green Car Design's 12:grn:hrs – design a green car in a day! event held at the Design Council during the **London Design Festival 2011**. By now the teams had met each other and discussed what direction their project might take over lunch, see **Part 1 Morning Session**.



Teams

- **Quattro Elementi** (Four Elements) – team leader **Sebastien Stassin**, Partner at Kiska, and his team members **Micol Costi**, **Anjum Quayyum**, and **Alexandros Adamou**.

- **Driversity** – team leader **Giovanni Piccardo**, formerly Pininfarina, and his team members **Alex Hartley**, **Juan Mateo**, and **Nico Sergent**.

- **Luci** (Light) – team leader **David Wilkie**, Design Director Mia-Electric, and his team members **Claudia Reder**, **Adrian Clarke**, **Mike Whelan**, and **Miles Kaye**.

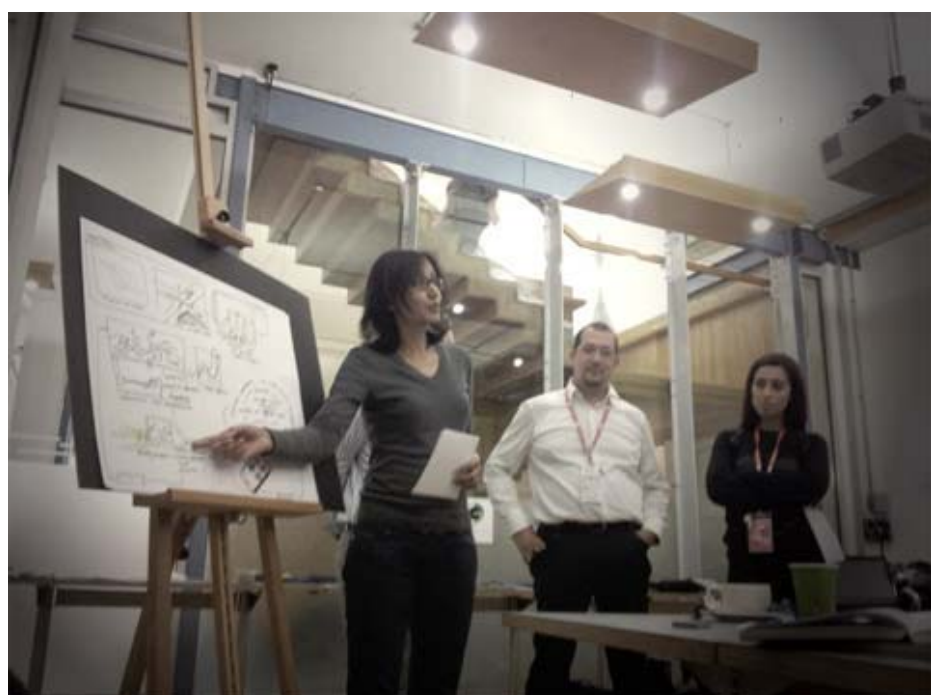
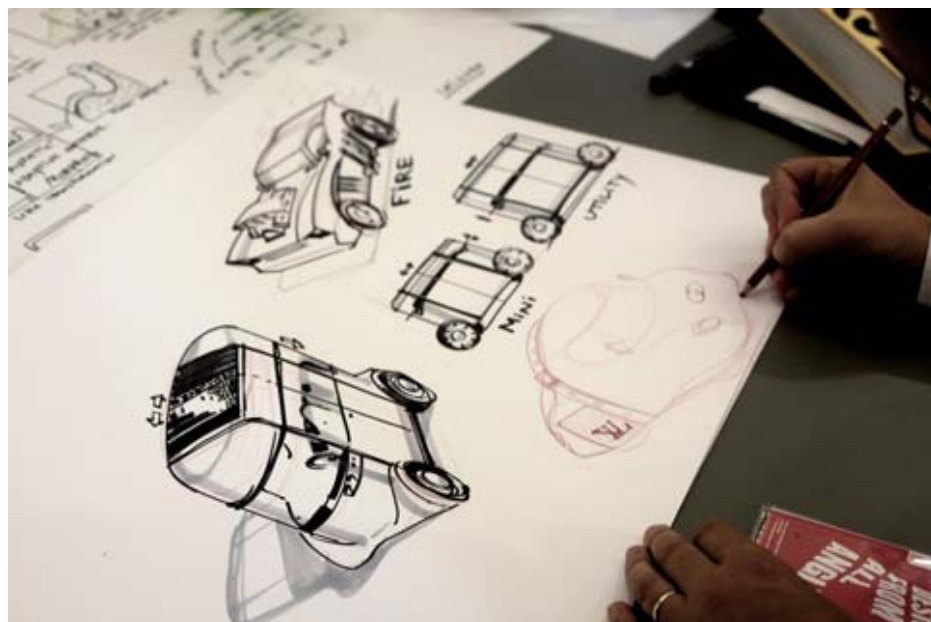
- **Car Blanche** – team leader **Hugo Spowers** and his team members **Valetin Vodev**, **Carlo Cialli**, **Jakob Jodlowski**, and **Adam Jefferson**.

Each team was allowed 40 minutes 'outside' time to research the outside world for ideas and clues. In addition the teams were allocated 3 x 10 minute slots of internet time to be used one at a time for looking up information and supporting key concepts. All in all most of the work was done at the table, throwing ideas back and forth from personal knowledge to assumptions about social behaviour. What was essentially different about the process was that 4-5 strangers had gathered for a few hours to try and develop a green car design that quite literally came out of the blue.

Of course this is not entirely true, each team leader with their own personal experiences and company culture behind them would tend to think in a certain way. His team members were then there to challenge, learn, and add to that experience. Together they did in one day what sometimes is achieved in weeks or months in a day-to-day situation. The fact that time was limited and the groups didn't know each other distilled ideas to their most relevant and important elements. Some people were sceptical that solid work would come out of the day but everyone was enthusiastic to give it a try, see for yourself how each team developed their own green car design!

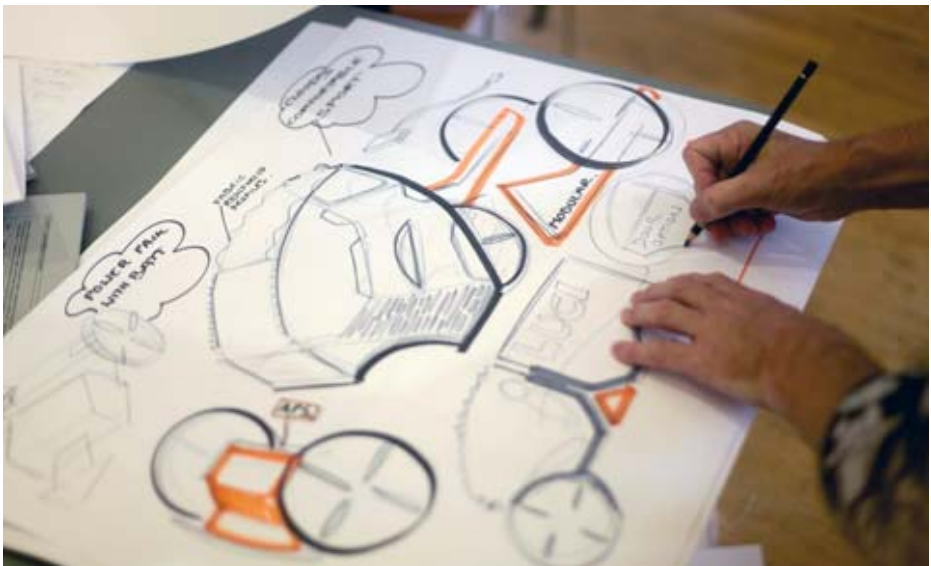
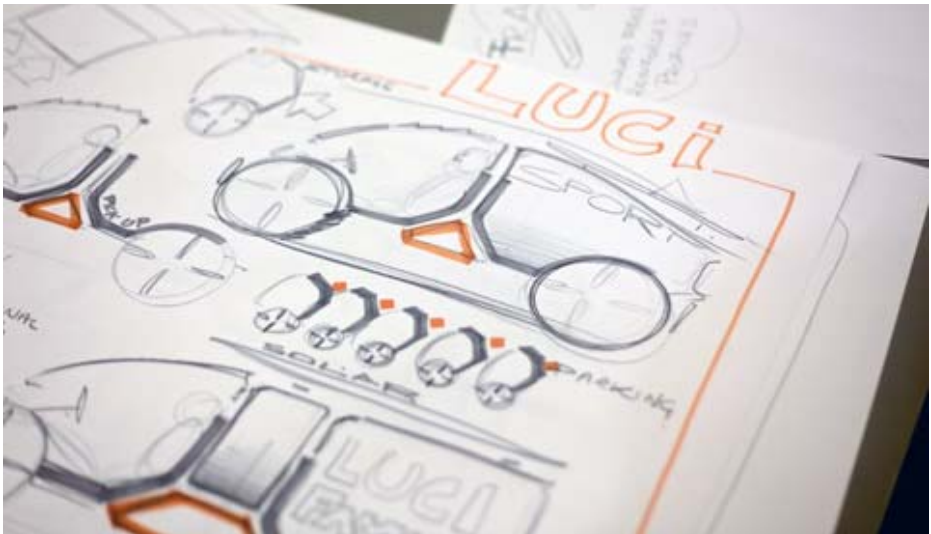


Team Quattro Elementi, with Sebastien Stassin as team leader, used cliché words **mini**, **utility**, **water**, and leisure for their concept that carried their team name Quattro Elementi. The concept was simple, a one size fits all flexible vehicle with plenty of personality! *Water* - many drops of water can make a body of water and so can many QE cars make a flock. In this flock is where many of the *Leisure* elements come into play for Stassin's team. Social Media connects EQ cars with like-minded individuals allowing them to join 'en route' and pursue given social interests. Eventhough the concept uses one battery pack platform the car can be used in its small state, *Mini*, or it can expand up and lengthwise adding a *Utility* feature. As most cars sit parked all day the automated version of the QE can be used 24hrs a day as a delivery van, taxi or car sharing vehicle while you are at work; earning you money in the meantime. The minimalist design of the EQ does not mean that everyone must or will be the same...much to the contrary. EQ is equipped with Augmented Reality technology that will project your very own **Avatar** that can be downloaded from any App store online. Feeling like a petrol-head today? Download 'Fire' Avatar packed with sound effects. Or wish you could have that latest Fiat 500 Gucci? Download the 'Water' Avatar, a mix of your favourite luxury brand! The interior is also as flexible and fun. Using **Auxetic** adaptive material seats can be morphed into beds and visa versa, adding to EQ's **FUNctional** design.





Team Luci, with David Wilkie as team leader, has words **sport**, **cloud**, and **comfort**. Unlike other teams the cliché fell naturally into play rather than intentionally as their 'design for less' approach made them realise that no-one really needs a 7-seater car everyday. Usually you only need 1-2 seats per car and occasionally need extra. This led to the creation of the **Luci Solo**, a 2-seater module whose design was driven by materials and function rather than aesthetics. With a soft top, made mostly from flexible solar panels presented in the **Morning Session** by **Material Connexion**, the structure is created by tension vis-a-vis a frame made from reinforced **Radius-Pultrusion** fibre profiles. The 3-wheel layout, two front and one rear, reduces weight and allows for the Solo battery to sit upfront. The seats are also made from felt made from PET, recycled bottles, and are thermoformed in place to act as part of the vehicle's structure. They are in turn recyclable at the end of the vehicle's life.





But the Luci family is not an only child! Because the Solo acts as the central module it can couple with a variety of attachments. Featured in the presentation were a **Pick-Up** module, a **Family** module, a **Sports** module, and a **Taxi**-module. Each one of these modules could be equipped with its very own battery pack and therefore ready for action at any time. This is where the *Cloud* element comes in. Log into the Cloud and you can find out where your next closest module is available and how charged it is as well. Solos can be stacked up against each other for space saving in congested city situations and quick access. The Solo and extra modules can all be part of a sharing scheme where you own or rent a Solo or extra module creating a sustainable market unto its own. The team did not forget the importance of the driving experience either. Since each combination of the module creates a different car segment so does the driving position change when coupled. As a Solo driver you might be in cruise mode but when connected to your family pod the driving position will lift and straighten intuitively changing your attitude!



Team Diversity, with Giovanni Piccardo as leader, explored the cliché words **young** exemplified by 'fresh style', **natural** embodied by 'sustainable materials', and **transparent** was reflected in 'cradle to cradle' emissions free manufacturing. With all its diversity in culture, France, Italy, Spain, and England represented this team explored the meaning and impact of alternative fuels and sustainable transport as a whole the most amongst the teams. Eventhough today's market drives the electric powertrain as tomorrow's saviour in actual fact hydrogen as a fuel is the cleanest. There are issues with the stigma where hydrogen is negatively typified by fiery explosions when in actuality it is safer than petrol. So the team's mission was not only to blow away myths about green cars but was also to give hydrogen a fighting chance.

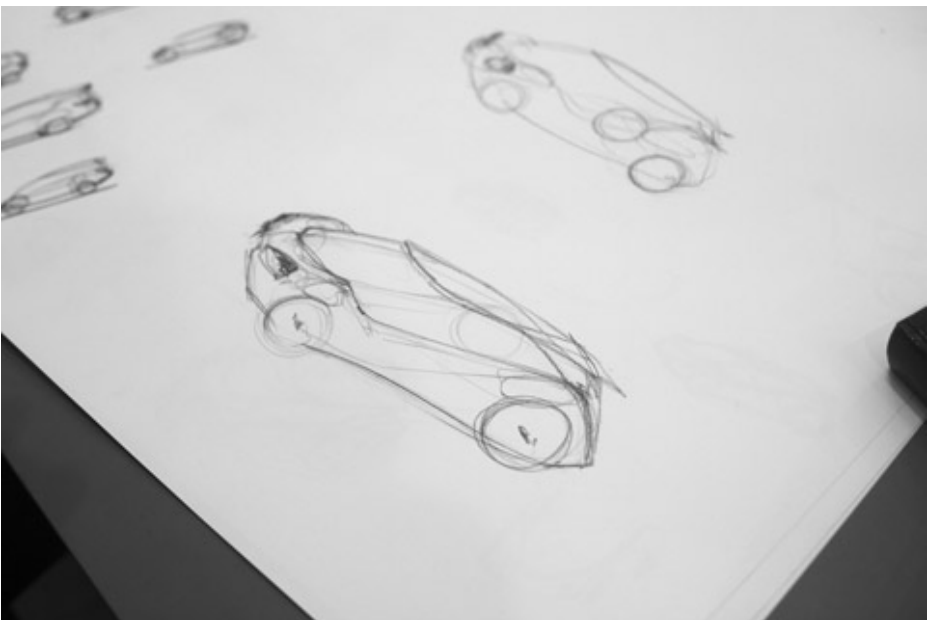




Their final concept, **Eco-Bomb**, was a 2-seater tandem hydrogen fuel cell vehicle with a range of 200 miles and top speed of 60 mph. This 'to-the-city' car was imagined for people who live outside and commute regularly to the city with the added benefit of a small bike in the rear as a range extender when parking is limited or altogether non-existent. The body would be made from **Curran®**, the rotten carrot derived material with similar properties to carbon fibre presented in the **Morning Session** whilst the bomb cross tail-light would be laminated with **Light Tape**. Layouts, other than the traditional tandem position were considered but were forgone for the ultimate aerodynamic droplet shape. "Exploding myths about green cars" was the main goal for the team to increase awareness and inform people in a really accessible way. The result a tongue-in-cheek message from England, smooth design moves from Italy, aggressive stance from Spain, and emotionally charged fuel choice from France...a truly European design!



Team Car Blanche, with Hugo Spowers as team leader, chose cliché words **bamboo**, **light**, and **exciting** to guide their concept. They came up with 3 initial concepts - the first was 'holiday machine', the second was 'eco-sports car', and the third was a vehicle for developing countries. Seeing as many of the members had an interest in cycling and camping they naturally gravitated **towards the holiday machine. But not just any Holiday Machine, a high-end luxury vehicle for up to 4 people in a 2+2 configuration. Motivated by their** material choice of bamboo they considered what a car may look and feel like if it were designed using human power as its fuel. The result? a double tandem layout built with bicycle technology.



After considering a high seating position as the potential profile they realised that the carriage-like layout would neither be practical nor in line with 'light' and 'exciting'. At the 11th hour they turned to the conventional sports car shape with a totally unconventional approach. Imagine, if you will, walking up to this car, it never had time to be named, and coming to the realisation that the entire body is made of **weatherproof tensile fabric drawn** over an **organically grown bamboo chassis** a double tandem bicycle structure. All your expectation would be challenged as you realise the simplicity of this proposal. Not only are the materials sustainable, bamboo can be locally grown at a rate of 1-2 inches per hour into complex, but the power generated to weight proportion is directly related to the number of passengers in the vehicle; being able to be driven by one person or four generating some serious speed! The vehicle could function entirely on human power or if so inclined could be equipped with in-hub electric motors to help with regenerative breaking adding power on demand. To top it all off elasticised hammock seats act as suspension...happy days!

This day, seemingly run by random elements such as strangers gathering to design a green car in a day, car designers picking names out of a box, or teams given cliché words to design with within a window of 12 hours, was not, after all so random. The one guiding string throughout is the **design process**. Every designer uses it in a different way, and it leads him or her down different thought paths; it is almost guaranteed you will get an interesting result. How you structure the process naturally helps to generate radical, provocative, important, or even life-changing results. **12:grn:hrs** was structured as a time driven exercise with 'out of the car designer's studio box' ingredients. The results speak for themselves! Freethinking can almost always shift the status quo in even the smallest way and create a huge impact. Our day would not have been complete without a peer review and a vote on best design of the day.



After a glass of wine, a beer or two, some quiet relief that the task was done the votes were counted and the clear winner was Luci, the modular 2-seater plug-and-play concept by David Wilkie, Claudia Reder, Adrian Clarke, Mike Whelan, and Miles Kaye. Luci's appeal as a Solo 3-wheel car was immediately evident, added to the honest use of recycled and sustainable materials was the key social element that is tip toeing around the automotive industry these days. A worthy winner to an intense day! Keep posted here as Luci and this story develops. In the meantime let us know which concept you liked the best.