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When Icarus flirts with the sun

Supported by his team, young engineer Marc Muller has embarked on a round-the-world journey in a solar and wind-powered vehicle. His goal is to visit sustainable development projects on four continents and to publish his reports in the media and online. Alain Wey puts this audacious venture under the spotlight.

Having set out on 15 May 2010 from Yverdon-les-Bains, Marc Muller, an engineer from Vaud, and his alternating co-pilots are currently crossing Latin America after journeying through North Africa and the USA. They are aiming to reach Buenos Aires by the end of April before heading off to Asia. Their goal is to arrive in Lausanne by autumn 2011. They have already been confronted with many challenges, including administrative (customs, residence permits), technical and meteorological obstacles. During their journey, they have met a number of environment ministers and have been warmly received by the people in the countries visited. They have also often been provided with accommodation by local people or members of the Swiss consulates.

In the starting blocks

Prior to departure, the Icare Project required 14 months of preparation and the involvement of 70 people working in the fields of engineering, vehicle construction, project management, logistics, media and sponsorship. The Icarette was developed from an electric car, the Twike (two-seater German tricycle), by the School of Engineering in the canton of Vaud (HEIG-VD) in partnership with the School of Engineering in Fribourg. It tows a six-metre-long, solar-panel trailer and is fitted with a fold-down wind-power system. "This project is a research project and one that focuses on how the term 'sustainable development' is understood and what changes have to be made in society in order to achieve it", explained Marc Muller.

After leaving Yverdon-les-Bains, Icarette headed for Lausanne, Martigny, and then Italy, passing through the Saint Bernard tunnel. The initial stretch also provided the opportunity to make the first adjustments, which required all the skills of the engineer and the technical team back in Switzerland. Having gone through the Aosta Valley, the Twike reached the port of Genoa and embarked on the ferry for Tunisia.

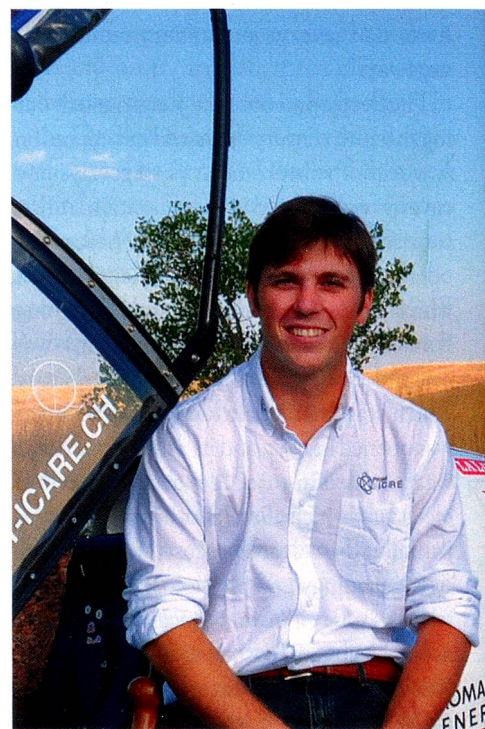
Under the North African sun

In Tunisia, Icare came under close scrutiny. Marc Muller visited the Djebel Chekir waste disposal site where technology prevents the release of thousands of tonnes of methane into the atmosphere. The landfill gas is used to produce electricity and to heat buildings. Muller also visited the Sidi Daoud wind-power plant, which produces 2% of the country's electricity. The vehicle then headed for Morocco, its solar power plants and the Rif wind farm. To reduce its energy dependency, the government has launched large-scale green projects aimed at enabling renewable energy to contribute 15% of national energy requirements by 2020. The Icare team also met students from the Mohammed de Rabat School of Engineering. In Casablanca, the car was to be put on the ferry for New York but was held up for two weeks because of strict US customs regulations.

Across the USA

Icarette finally reached the port of New York at the beginning of August. Here, Marc Muller had a real fight on his hands before the customs authorities allowed the vehicle to enter. After 50 days of administrative wrangling, Icarette took to the streets of the Big Apple and headed for Boston, where the intrepid adventurer took part in GreenFest 2010. He then continued his journey to Detroit where he met with engineers from Ford and members of the University of Michigan.

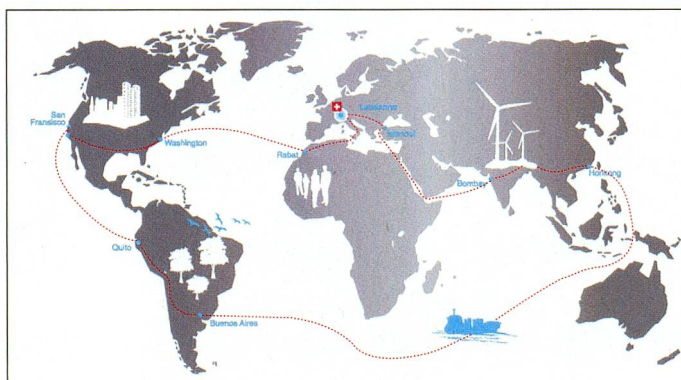
After visiting Indianapolis and Saint Louis, he went on to Illinois and Kansas where millions of tonnes of corn and soya are used to produce bio-ethanol. He then travelled to Colorado where almost 10% of electricity is clean (wind, solar and biomass energy). Marc Muller said: "It is one of the most innovative green states in terms of educating children, allowances for green companies, government aids, technological innovations and research centres." The governor of Colorado is in fact aiming to reach 30% renewable energy by 2020.



Marc Muller

Setbacks in Latin America

Accompanied by a new co-pilot, Muller left Denver for the Rocky Mountains where he set up his wind power system on Pikes Peak at 4,301 metres above sea level. After stopping in Arizona and New Mexico, he reached Los Angeles in November, where the car had to wait before embarking on a ferry for Ecuador.



A ROUND-THE-WORLD TRIP:
Departure: May 2010
Arrival: October 2011

A 40,000-km journey through 30 countries to produce 40 reports on CO₂ compensation methods

WHERE AND WHEN?

16 May 2010, Saint Bernard tunnel
 23 May 2010, Genoa, Italy
 1 June 2010: Raf Raf, Tunisia
 5 June 2010, Rif Valley, Morocco
 5 July 2010, Casablanca, Morocco
 5 August 2010, New York
 19 August 2010, Boston
 7 September 2010, Detroit
 26 September 2010, Kansas
 12 October 2010, Colorado
 21 October 2010, Pikes Peak (4,301 m),
 Rocky Mountains, Colorado

4 November 2010, Los Angeles
 14 November 2010, Bogotá, Colombia
 25 December 2010, Guayaquil, Ecuador
 18 January 2011, Lima, Peru

FACTS AND FIGURES ABOUT ICARE

Vehicle: solar panels with 450 photovoltaic cells, wind-power system on a fold-down mast which can be used when stationary (diameter: 2.8 m), 5000-watt electric engine, max. speed 80 kmph
 9000 km completed, 55% with solar power, 5% with wind power, 40% with bio-ethanol,

more than 20 reports produced (press and video)

Technological production: CHF 150,000 on engineering, CHF 50,000 on materials, CHF 25,000 on manufacturing, 15 companies involved, CHF 60,000 marketing budget

Academic output: 2 bachelor projects, 10 semester projects, 2 universities involved, hundreds of research hours

Waiting time to get through customs:

Peru 2 hours, Tunisia 4 hours, Morocco 6 hours, Ecuador 13 days, USA 2 months



The "Icarette", a converted Twike, is powered by solar and wind energy

The pair flew to Colombia without Icarette to find out about sustainable development projects there. They visited the "metrocable" public transport system in Medellin where cable cars sail above the city, connecting the poor quarters to the city centre, and the El Dorado nature reserve funded by eco-tourism. Icarette finally reached Guayaquil in Ecuador at the end of December but had to wait 12 days before getting through customs. "Scams, lies, dishonesty and even an armed assault, we saw it all in this place", recalled Muller. Destination Peru – 400 kilometres after crossing the border, one of the vehicle's two batteries developed a fault with 1,400 kilometres of desert ahead in temperatures of over 40°C. In the end, Muller loaded Icarette onto a vegetable truck to reach Lima, where spare parts had been sent for him. "So far, we've had nothing but problems in

South America", explained Muller. He was unable to confirm his plans for arrival in Buenos Aires. "It may no longer be possible to go to Asia because we'll arrive too late in terms of the weather. If that's the case, we have the option of going to Japan and doing a tour of the island to get some insight into Asian culture", he said. They would then return to Turkey at the end of the summer before going on to Eastern Europe and Russia. "We may visit India briefly (without the car) on the way back from Japan to take a look at CO₂ compensation projects and to see Asia's approach to sustainable development", he added.

"We are primarily interested in learning about the attitudes of communities and societies, as reflected in their sustainable development projects." According to Muller, the most significant factor is the reason why

such projects are or are not implemented. The approach is very different depending on the continent because the objectives are not the same. He believes North Africa very much looks to follow Europe's lead. "The South American approach is very focused on social aspects - they primarily see sustainable development as human development", says Muller. "This is a completely different vision to that of North America, which adopts an extremely technological approach."

Marc Muller's adventures can be followed on his website: www.projet-icare.ch. For the remainder of his journey through Argentina, Japan, Turkey, Eastern Europe and Russia, Marc Muller is looking for places where he can stay with his team, or simply for contact with Swiss abroad. You can contact him on info@projet-icare.ch.