

UEM MAG 02/2009

ELECTRIC: DREAM OR REALITY ?

New challenges for European Motorcycling...



One of mankind main concerns is to find new alternative energy sources to traditional fuels, in particular in the auto and moto sectors. In our case, it is already in the advanced stage the study of using electrical engines in motorcycling competitions.

FIM started a successful experiment in the Isle of Man with motorcycles of this kind in a road racing event. Results were extremely promising both for the autonomy and the reached speed peaks. So good the outcome that plans are already undergoing to institute a new world championship for this category.

UEM showed similar sensibility on this topic and it is focusing on the experimentation for off-road motorcycles, dedicating particular attention to what is happening in some countries like Germany, France, Spain, Denmark, Italy and others.

Silvio Manicardi, mechanical engineer and member of the special research group of FIM and UEM, and also chairman of the UEM Marketing, Industry and Promotion Commission, has been covering this topic for long time and in the following article clearly shows some results in this direction and identify some opportunities that could arise with the use of electrical engines in motorcycles, for sporting purposes but not only.

Electrical motorisation is not a new issue, since the end of the 19th century the first interesting results were achieved. For example, one of the first speed records in the automobile history was from an electric car, the "Jamais Contente" in 1899, which was the first car in the world to reach the 100 km/h speed. Even before this exploit, the French Pingault with an electric bike established the speed record on 1 km in 1897 with the remarkable speed of over 60 km/h. But the development of 2 and 4 strokes engines and diesel displaced the electric technology for many years.

In the last years, the need to build increasingly environment-friendly cars brought back strong attention on this technology. The development of new Lithium batteries, the continuous progress of electronics (increasingly powerful, compact and cheap) allowed us to increase autonomy and to speed up recharge times, guaranteeing interesting performances.

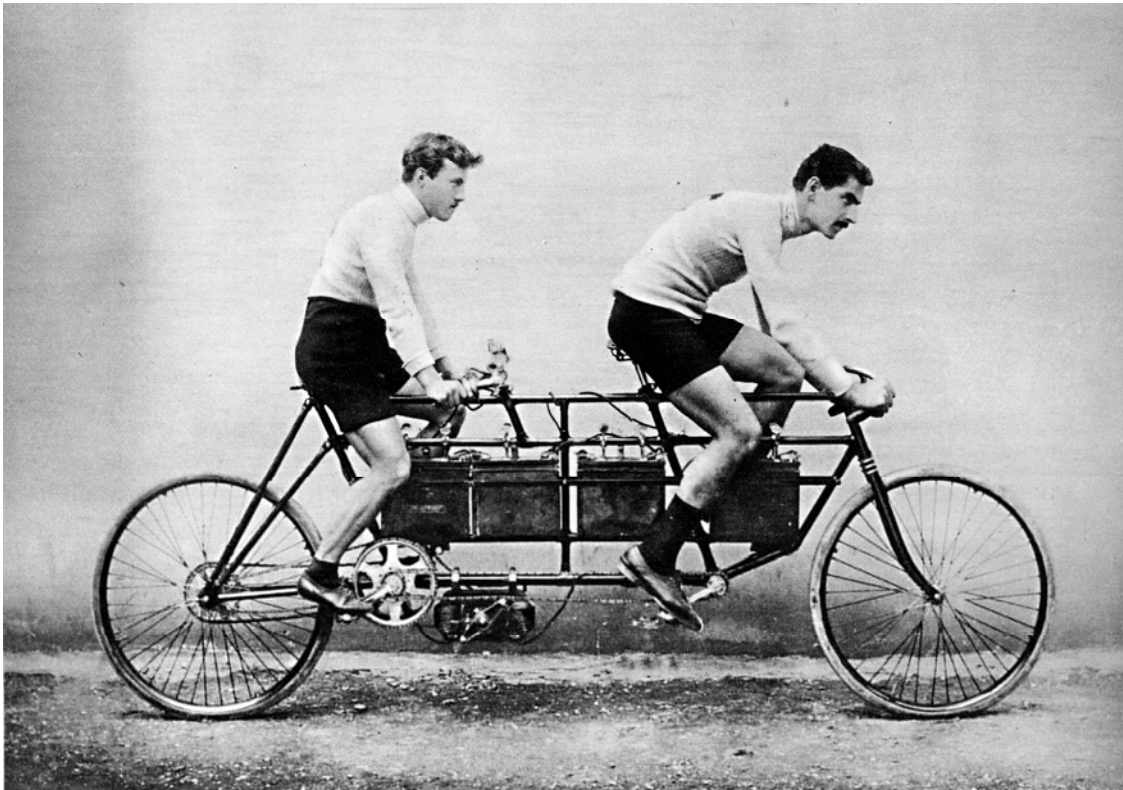
It is recent news that Nissan will launch an electric car model "Leaf" in the market from the

second half of 2010, but also other manufacturers have advanced plans for this technology during the recent Frankfurt car show.

At the next EICMA international show there will be an area dedicated for the first time to electric mobility.

And... what about motorbikes? Today, the major manufacturer of two-wheeled electrical vehicles is China. In this enormous country, in many cities access to the city centers is allowed only to low-environment-impact vehicles. Consequently, there has been an explosion in the production of small electrical vehicles (in particular scooters). It is estimated that more than 10.000.000 electrical scooters were produced in the last year.

Given this situation, FIM decided two years ago, guided by President Ippolito, to create a working group to study these issues and the opportunities that are arising from the development of alternative energies usage in the motorcycling world.



Pingault's electric bike

This group (AEWG) started its task with a broad overview on fuels (biofuels in particular) and on electrical and hydrogen motorcycles. The AEWG recognized also a strong acceleration of electrical vehicles in the last months and that this technology is almost ready for a mass distribution also according to European standards. This situation pushed the UEM, to follow the FIM, to create a similar working group to study how to broaden the use of

electrical vehicles in sporting competition and to create dedicated technical and sporting rules. This working group, co-ordinated by UEM Vice-President, Mr. Bartlett, is composed by Mr. Coen, Mr. Steiner and Mr. Manicardi and it met already one time in Frankfurt for an accurate analysis on what is happening in the different European countries.

The racing world

Here we try to summarize some projects that were taken into consideration:

Road racing

The first Road Racing event, with FIM support, was held in the Isle of Man. Thanks to the strong managerial push and passion of Azhar Hussain and to the interest of the local authorities, the event had a large success (www.egrandprix.com), with 20 participants, all with bikes with different technology. From the lighter ones under 180 kgs to the heavier above 260 kgs. The winning bike AGNI X01 was an English-Indian collaboration, developed by Cedric Lynch and Arvind Rabadia. The bike adopted a very clever solution with two externally mounted engines, saving space for the batteries.

The rider Rob Barber managed to do a lap of the track (around 63 km) at the average speed of almost 140km/h, with speed peaks of over 160km/h leaving everyone astonished for the



Agni X01, winner of the TTXGP in Isle of Man



Brammo from US: third in Isle of Man

accomplished performance level. It should be pointed out that the Isle of Man track is characterised by continuous up and downs in the central part of Snaefell with an uphill part reaching 422 m. of altitude, testing strongly the capacity of the batteries and all electrical components. Interesting also was the participation of teams from different countries, with the second position won by the German team XXL and the third by the American Brammo. This bike was probably the most advanced in realisation and also the lighter one. The race will take place again next year in the Isle of Man, but with an important innovation: there will be a class also for vehicles that will have the possibility to change batteries to do a second lap.

This possibility, appropriate to increase the autonomy, introduces several technical problems, because currently the battery cases are assembled by considering all available spaces in the mostly-traditional frames. To have the chance to change batteries means the need to re-engineer completely the vehicles, but also to explore models that could have interesting practical developments. Indeed, a hypothesis for future road vehicles is to substitute discharged battery packs with new pack at fuel station, similar to what it is done today in petrol stations.

Following the success of this year TTXGP, the FIM has decided to create a FIM Series for

3 UEM MAG 02/2009

ELECTRIC: DREAM OR REALITY ?



Mile speed record for electric bikes: Mission Motors

electric bikes in 2010. This Series will provide an international platform for the development of electric bikes and the technology behind them to be tested in an exciting and challenging way. It aims at driving low-carbon technological innovation forward, to demonstrate that clean-emission transport technologies have matured and can be fun, fast and exciting.

In the mean time, some bikes that participated at TTXGP, together with an Italian team that decided to participate to next year Championship, are presenting around their capabilities, last demo was held during the Superbike event in Nurburgring.

Very recent news: Mission Motors with the bike that raced in TTXGP shattered the mile speed record for electric bikes at 150mph with highest speed of 161mph.as high as 161 mph), shattering the land speed record for electric motorcycles

Off Road

The utilisation of off-road electrical vehicles opens a wide number of opportunities. We know very well how important the noise issue is in off-road events, in particular in Europe. Many cross tracks have been closed or allowed a limited usage (only a few hours or days a month). This scenario is a threat to European motorcycling and it worries particularly the UEM. However, the usage of electrical bikes could open new

perspectives to off-road specialities.

The above mentioned working group examined with particular interest what has been done by a small but extremely active Swiss company (Quantya <http://www.quantya.com>), which started to develop electrical cross bikes and it is probably the most advanced manufacturer of off-road bikes at least in Europe.

UEM attention was attracted particularly by the initiative to create "Quantya park" close or in the cities, where motocross could be practiced in silence. Quietness and total lack of pollution made "politically" acceptable our sport also in residential areas, which were up to now off-limits for motorcycling sports.

Another interesting aspect is the development of solutions that will make each "Quantya park" energetically-independent, using solar panels or water power generation, to create the electricity needed to recharge batteries.

From a sporting point of view two extremely interesting initiatives should be highlighted.

In the United States, on 4 and 5 April, about 50 motocross riders participated in the first 24 hour long endurance race on electric motorcycles. The 24 Hour Electricross, was hosted by Zero Motorcycles, an American producer of electric bikes. From 11 a.m. on Saturday to 11 a.m. on Sunday, 10 teams competed to see which could complete the most laps. With a maximum of 3 batteries, the teams had to consider their speed, use of their braking systems, and how



Solar panels to charge batteries

4 UEM MAG 02/2009

ELECTRIC: DREAM OR REALITY ?



Quantya at the 24h race in Spain

often to switch out and charge their batteries. Changing the batteries took between 30 and 60 seconds.

In total, more than 4000 miles were completed by the field of 10 teams. The winning team completed more than 1000 laps and 500 miles. "This event proved that electric technology can endure the same level of competition as its gas-powered counterparts. However, the power resources to compete are drastically different. The total cost to power all 10 motorcycles for 24 hours was approximately \$100," said Neal Saiki, inventor and founder, Zero Motorcycles.

The lack of noise was one of the important factors allowing continuous racing for 24 hours in the immediate vicinity of a residential area.

In fact, when the racing Zero X bikes were put to the test on a decibel meter, they came in below the level of normal conversation. "Without a lot of noise and no pollution, it's really changing the way we do racing" concluded Neal Saiki. Zero Motorcycles is thinking about

organising similar competitions in the near future with the possibility to open it to a wider audience and other manufacturers.

Recently, in Switzerland Quantya organised a mono-brand event in Meisberg with the participation of 20 riders.

One significant observation from one of the spectators was: "It was weird to assist a race where the only noise that could be heard is the one of the tires and of the chain!!!"

Quantya, again, participated to a 24 hours race, which was held under the following rules: each team had two riders and two bikes. Under the electrical bike point of view, they had the time for recharging during the stop of one rider (around 30-40 minutes) and be ready, therefore, for the next turn. Quantya arrived third in the 125 class, beating many bikes with the traditional combustion engine.



Electricity charger stacks at paddocks

5 UEM MAG 02/2009

ELECTRIC: DREAM OR REALITY ?



The Zero Motorcycle

Many other similar projects are under the realisation stage. We would like to list some:

In France, FFM is testing some electrical bikes in some of its motorcycling schools. FFM is also studying the possibility to use electrical vehicles in the Moto Ball, a particularly widespread specialty in France.

Beside this, it is preparing a scientific study to demonstrate the low environment impact of the off-road competition with electrical bikes, in order to have strong argumentation to leverage in discussions with the different environmental movements. UEM accepted with enthusiasm to be involved, also with a financial contribution, to this extremely interesting study.

In Denmark, DMU promoted an Enduro race presented in the following way:

It doesn't have to be boring doing environmentally friendly motorsport. That is the theme of the Worlds First International Ecological Enduro race, run in Denmark on environmentally friendly electrical motocross motorcycles in the period of the United Nations Climate Change Conference in Copenhagen (December 2009).

The battery's capacity is the big limitation, but

in fact the developing is happening so rapidly that the final program, current number and duration will not be determined in detail, until shortly before the International EcoEnduro occurs.

The International Eco Enduro is organized by the Danish Motor Union (member of the FIM and UEM) in cooperation with experienced clubs, Ivan Reedtz-Thott (Vice-World champion in Cross Country Quad and six times Rallye Dakar participant), Vivi Siiger and Søren Clauding (motorsport experts and holder of the media-agency, Scandinavian Racing Press). The event is also supported by "The Danish Year of Sport 2009".

Further news is expected from Italy, where some projects are ready to be disclosed.

In order to be informed of eventual further initiatives (road racing, cross, enduro) the UEM working group sent a questionnaire to all the European Federations. This survey has also the aim to better focus the interest of Federations to this aspect of our sport that it is better to fully understand and to identify the eventual penetration of brands and models in the market.

Silvio Manicardi

The current and past issues of UEM MAG could be downloaded at the following link www.uem-moto.eu