Good relationships between designer and a costumer are also very important. The best relationship are a two-way streets, where each party can communicate to each other and maintained throughout the design process. The need for communication was summed up by designer Wayne Hemingway during the Design Coucil's Design in Business Week 2002: «Here is no point sitting designers in a room and letting them design. They have to work with you and be a part of the business».

At the final stage project implementation what finished by manufactories, engineers, IT (Information Technologies) experts or service providers, but that does not mean the designers edit the scene. It is important to allow for redesign and the designers also have a vital role to play in representing their ideas to all those involved in executing them.

А. В. Зотов

THE HYBRID VEHICLES

At the beginning I'd like to speak about new environmental problems. Hothouse gas emission and pollution of car combustion engines brought ecological problems in big cities.

And it's increasing, because the estimated Planet Earth population may grow from 6 to 10 milliards to 2050. That's 1.7 times. But the expected vehicle number will grow from half to 2 milliards, despite the GM bankruptcy. That is 4 times.

These problems are so serious that they became very important subject of international discussions.

Results of one were accepted in the Kyoto Protocol. Kyoto Protocol is an agreement made under the United Nations Framework Convention on Climate Change.

Under this agreement industrialized countries will reduce their collective emissions of greenhouse gases and pollutions over the five year period 2008–2012.

Therefore a decrease of fuel consumption and alternative engine types became a new task in automotive industry. Namely hybrid vehicles with combustion engines, hybrid vehicles with fuel cell hydrogen elements engines and battery engines.

Hybrid electric vehicles combine electric and internal combustion engine drive. Hybrid electric vehicles keep the zero pollution benefits of electric motors with the high fuel energy density benefits of the thermal engines. Hybrid electric drives adjust the combustion engine load and frequency into the point of the best

motor efficiency and the lowest pollution. Such a technical solution enables to operate the combustion engine along optimal performance.

Hybrid drive consist of an internal combustion engine, a generator, a traction motor, rectifies, inverters and super capacitors. There are no mechanical link between combustion engine and wheels. Energy from combustion engine goes to traction motor through power electronic converters.

The super-capacitors are able to accept the vehicle braking energy and regenerate it during next speeding up or to add it to enlarge the traction power for a limited time. A super capacitor has the capacity about 100 farads or more.

Efficiency of energy regenerating is from 50 to 75% depending on working conditions. The most important for the energy storage and reusage is the efficiency of the traction motor and losses by energy conversion.

For zero emissions an internal combustion engine and a generator can be displaced by hydrogen fuel cells engine. The fuel-cells and super-capacitors are in present time the most promising new technologies.

Primary proposed power train alternatives include Hybrid Electric Vehicles, Battery Electric Vehicles and Fuel Cell Vehicles.

Although Battery Electric Vehicles offer zero emissions, their limited range and drawbacks related to long recharge cycles have limited their wide acceptance in the marketplace.

Although Hybrid Vehicles operates its combustion engine efficiently at optimal load points, however, it can't operate with zero emissions, and probably for this the Fuel Cell Vehicles will replace them.

Moreover, the efficiency of a fuel cell is higher than the efficiency of an internal combustion engine driving an electrical generator. It's making Fuel Cell Vehicles favored over any other technical solutions.

A wide interest is directed to fuel cell technology today due to the Proton Exchange Membrane Fuel Cell (PEMFC). A PEMFC converts a hydrogen chemical energy into electricity directly; with no intermediate thermal or mechanical processes such as occur when a combustion engine drives a generator.

Consequently, the energy conversion efficiency is about 50 percent, and it's clean; its byproducts are only heat and water. PEMFCs have high power density, high efficiency, quite high dynamics response and fast startup, low emission level, low temperature operation and they are suited for mass production processes.

However, two main problems still limit their using: reliability characteristics are poor; the costs of fuel cell systems are still too high.

Therefore a propulsion system has to be minimized for decrease the cost.

The combined use of batteries and super capacitors is used for power management of electric loads with large peak-to-average ratios, and allows substantial weight and volume reduction.

Because super capacitors have a limited specific energy, so the maximum energy that they must supply during the cycle is the quantity that determines their sizing; on the contrary, batteries haven't to be sized on the maximum power.

We've seen it's very important to find a viable alternative to internal combustion engine. And now I'm going to speak and I should speak about reliability, availability and maintenance costs of new technologies which will play a very significant role in establishing the commercial success of the future vehicles. And I have to speak about economic feasibility as well.

AC motor drives, supplied by voltage inverters, represent the most probable technical solution for the traction drive of the future road electric vehicles. Thus fuel cells, batteries and super capacitors are devices with generally weaker reliability characteristics.

An investigation has been carried out by Italian Scientists, in result of which system reliability was estimated.

They have taken into account some magnitudes of the traction chain components, namely the different reliabilities and the MTTR values of the different modules, and a preliminary computed MTTF of the whole system.

At last I'm going to introduce results of reliability analysis.

The Mean Time To Repair of the vehicle turns out equal to about 19 h and the system availability equal to 94.5%.

And the average cost for the corrective maintenance actions turns out equal to about 780 Euro per each 1000 h. The maintenance average cost can be also estimated taking into account the average number of kilometers run by the vehicle between two successive maintenance actions. In such a case it turns out equal to about 0.074 Euro/km.

Just as an example, assuming a conventional city car with an average annual mileage equal to 7,500 km and an average maintenance cost of 200 Euro, the cost per kilometer would be about 0.025 Euro/km (with a steady state availability definitely higher).

And finally we can see 2 main conclusions.

From the reliability point of view the outcomes of the analysis have shown that, despite the complexity of the power traction chain, the performances

of the proposed solution are acceptable. Being the probability of an immobilizing failure is quite low due to the redundant configuration of the energy source.

From the economic feasibility point of view, the preliminary cost analysis has shown that the repair costs of the proposed solution are still far from the repair costs of a conventional vehicle. And to decrease the costs it's necessary to do higher reliability of fuel cells and batteries. Super capacitors are not the main bottleneck of the system, because they are connected series.

Е. А. Зырянова,
Н. О. Мешавкина

THE SPHERE OF BUSINESS ETIQUETTE

Suppose you went to America or England. You have learned about the country in school, from television, from the Internet, and so forth. You also know the language. You don't want to offend the people there. However, you might offend the people there without wanting to. In your language courses, you cannot learn all the latest idioms. Knowing all about Buckingham palace will not help you in everyday life in London. News programs do not tell you about the subtle meanings of gestures. TV serials do not tell you what is acceptable in Samara but insulting in New York.

Our course of studies includes such subject as Business English. We study letter writing, telephone technique & business etiquette. We are going to tell you about the sphere of business etiquette. Our topic is Business Protocol.

With global information systems, worldwide telecommunications networks, and increasing international business travel, the «business world» seems to be shrinking. Accessibility to computers and communications worldwide has allowed corporations to expand their operations overseas. Sending the correct multi-cultural message is important for securing overseas business.

Knowing other cultures is a critical component of being able to succeed in doing business globally. Business people, international lawyers, and international business students must be aware of cross-cultural differences.

Knowing what greetings to say, what gifts should be given and how they should be presented, business protocol and entertaining manners, conversational do's and don'ts, punctuality tips, and other considerations are necessary elements for succeeding in the international arena. Many international lawyers practicing in the U. S. and U. S. business people may not be familiar with the customs and