Message from the Editor

WE ARE WORRIED.

We are so worried that we have to pay our own money to print this out, to raise your awareness, for you to see what we see and what we know.

The GREEN MOVEMENT has been identified as radical and anti-social, and worse of all anti-development. However, after the movie "Inconvenient Truth", the GREEN MOVEMENT had become a more acceptable term. Because even the former Vice President, and President-Elect, Mr. Al Gore, cannot change the "system".He had to resolve to make his presentation one at a time, to appeal to people who would want to listen.

We are greatly inspired by his leading, and we know a little bit more to the solution. Instead of asking everyone to sacrifice their convenience, we keep this convenience and yet allowing a carbon-neutral solution to employ energy.

Here in Frankfurt, if you could spare 30 minutes, would you please visit our booth in Hall 8 D30, at every beginning of the even number hours, 10am, 12pm, 2pm, and 4pm, to pick our brains on how to use metal air fuel cells, how to re-use them, how to get the oxides back to metal, and how we propose the METAL FUEL ECONOMY.

No seats available, no beautiful girls, a mule car, but plenty for your brain.

Look forward to sharing with you our GREEN VISION.

Masa Chiu
APES Group COO, father of 2 sons, worried about their future more than business…

Message from APES CEO

Energy Colonization in the brewing…

Let's assume all developments originated for the greater good of the human race.

We are all doers. We do things to survive, to live better, but some how this green idea got skewed. Someone bought a lot of solar panels, which used a lot of carbon-based fuels to purify, in a distant land…

Someone bought a lot of sun-rich desert land, and plan to place the solar panels they bought from someone…

Sooner or later, everyone will need to start paying CARBON TAX…

This someone, who bought a lot of solar panels and a lot of desert land, will enjoy carbon-free energies for their economies and industries…

People who made the solar panels for them, people who used to own the desert land, will need to pay CARBON TAX, to the people who have carbon-free energy.

If you ask, I would define these actions of buying solar panels, buying desert land, a new type of colonization, exploiting resources that are located away from home.

Of course, everything is legitimate, because it is through buying and selling. The money is mostly sourced from financing, just numbers that banks borrow from and lend to each other.

The money, used as the tool to colonize other people's resources, is no different to opium and rum, or even guns and cannons in the old days.

Absolute power comes absolute corruption is what we know well.

Whoever possesses such gigantic energy resources from the free sun. It is like nuclear technologies, assembled under the same roof.

Energy from SUN to Earth is for everyone equally. It is human nature to monopolize, but on the other side we share and love. We believe in the good part of humanity. In APES, we try to develop our technologies based on hope for the future, with sharing in mind.

We believe the effort to break such monopoly has to come from every individual. We are here to open such access and provide immediate and advanced green energy components to encourage everyone's participation. Again, to make technology as human as possible.

Think about it for our kids, for our future, for our joint consequences that we have caused. Let's help, let's do it together.

Andrew Huang
APES Group CEO and founder

Efficient components - LED Car Lamps, open source LINUX connections

With an open attitude, we welcome anyone to join us in our march towards the EV future. Therefore, we are not afraid to use anything new. With our open source LINUX CANBUS, we can control precisely what and when these components are supposed to work for and with.

For example, our LED head lamp is another revolutionary product, with 20W power consumption, it is about 1/3 the power needed for the traditional car lamps of 60W in H4 standards.

This reduction in power, seemingly small, represents 40W x 2 lamps = 80W power reduction. In EV, it is directly proportional to the mileage you are going to get out of the batteries. It is representing 0.8km more for every kWh (assuming 1kWh can run 10km). If the EV has 30kWh capacity, and the car lamp is always on, the LED would help the car run 24km more per charge!

Again, this is a very good demonstration of EFFICIENCY SAVES MONEY.

APET will continue to develop adaptable and efficient components into the open source platform, in order to provide a wide range of energy solutions.

Drive From Garage Into The Green Future

Our design philosophy is a total solution comprising practicality, romanticism, and industrialism.

APET is a HK-based company. The mission is to integrate the most applicable, economically viable, habitable, and drivable electric vehicles.

Project Salamander is only a beginning...

Dual Electric Power
Prismatic NiMH battery delivers high performance, high rate of discharge, non-explosive with enhanced safety devices, fast charging, unique battery balance management system with ZOE fuel cells or household power supply. Every full charge of 30kWh will provide a normal range of 300km.

Hi-tech Chassis with Strong Protection
Our chassis is built with light weight aluminum alloy while providing extra strength to the front, back and both sides. The battery compartments are well protected from impact and damage. The perfectly balanced weight distribution and low centre of gravity ensure stability as well as drivability.

Highly Efficient Motor
The Salamander motor uses 0.35mm thick steel coils and the rotor is made of copper. Thus further enhances its efficiency. Its super high efficiency at 94%+ propels a 1500kg vehicle to reach 80MPH (or 130km/h).

Intelligent Controller
Our multi-functional controller detects feedback from motor, human, battery and the road. The motor could be pre-programmed according to driving habit and preference. Sport mode will provide immediate acceleration. Efficiency mode would perform mildly but with much more mileage.

Open Source CANBUS
All the electrical components of Salamander are controlled by APET's self-developed CANBUS. The system is written in LINUX open source code, which encourages talents of the world to contribute their solutions, and integrate with component providers.

All signalling is devised through fibre-optics and will not suffer from electro-magnetic interferences.

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SPECIAL ISSUE

Salamanderian
a small ego to pursue a great eco

15-27 SEPTEMBER 2009

APES apet ZOE SAZ

FREE Test drive P.3

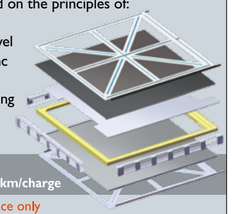
The first Metal Air Fuel Cell Electric Car!

Metal Air Fuel Cell Revival

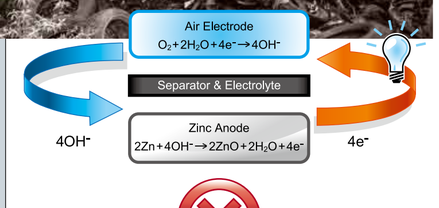
Zinc Air Fuel Cells are no news to the technology society. Previous versions of ZAFC had very high production costs, restricted to military use, and had never been properly promoted. We invented new ways to harvest the energy from Zinc, by using low cost materials, fully open cell design, without any screws and glues, allowing re-usage of the cells casing for hundreds of times.

The commercialization of ZOE is based on the principles of:

1. Not changing habits
2. Maintaining existing convenience level
3. Quantifiable economics in kg of Zinc
4. Environmentally friendly
5. Zero carbon emission, thus enhancing human health
6. A true Product of Consideration



Spec / Weight	Module US$/44kW	Cost US$/km/charge
288 cells, 154Wh = 44.35kWh 181kg, 244Wh/kg	Projected $3,600 for 288 cells	Replace only Zn $0.215



ZOE ZINC OXYGEN ENERGY

The True Green Energy can only come from the SUN…

In order to use a clean energy source without involving the carbon cycle, we must work on a way to obtain the energy directly from the Sun. We plan to use plain flat mirrors to reflect the heat and light from the sun, beaming into our Concentrated Solar Thermal Furnace, thus creating a very high industrial grade heat source to process the ZnO and reduced into Zn metal. This is our source of energy.

FROM maybe the most understated exhibitor in IAA (APET – Hall 8 Booth D30), comes with probably the most comprehensive energy solution to the world – Salamander – the first Metal Air Fuel Cell Electric Car.

We code named our vehicle "SALAMANDER", a mystic creature that is rumoured to be born out of fire and lives in water, symbolizing the energy solution we provide is GREEN and non-intrusive. Thus striking a balance with nature.

Salamander is a turn-key project allowing any car manufacturers or entities to go directly into the production/ investment planning stage.

APET (Advanced Power and Energy Transportation Ltd.) has chosen the occasion in this year's IAA show to premiere to the world our solutions for Electric Vehicles. The power solution is ZOE, Zinc Oxygen Energy, our own development to release the hidden energies from metal Zinc.

The ZOE fuel cells only carry Zinc as the fuel, by absorbing oxygen from the air, Zinc metal inside the fuel cells will become Zinc oxide and release electricity. The energy density is the highest among all available batteries of today's world, hence making **Salamander very light weight and with much energy to spare.**

(Turn to P. 2)

What is a METAL FUEL ECONOMY?

Energy must come from somewhere! We learn that the best way is to REUSE, to create a cycle using metal as the energy carrier, attaining the highest efficiency of transporting energy, without creating pollution.

APES – Advanced Power and Energy Sources, the mother company of APET, focusing on the promotion of a METAL FUEL ECONOMY. By employing ZOE, the energy stored in Zinc can be released as electricity for our use. Zinc, an element cannot be destroyed during the process, stay within the fuel cell and will be 100% recovered as Zinc oxide. These "spent" Zinc oxide will be processed, to be converted back into Zinc metal, by a carbo-thermic method. Nothing lost, energy transported.

The Metal Fuel Economy is very efficient, with only two steps to convert energies:

Zn ▶ ZnO (discharge electricity)
ZnO ▶ Zn (absorb heat for reduction)

Heat energy will be stored directly into the metals, to be used when needed.

When compared to Coal Fire Power Plants:

Coal ▶ **Heat** (lost heat to environment) ▶ **Water** (use heat to warm up) ▶ **Steam** (use heat to change physical state) ▶ **Turbine** (lost heat to environment) ▶ **Generator** (frictional loss, heat loss) ▶ **Electricity** (magnetism loss, frictional loss, heat loss) ▶ **Grid** (electrical loss during step up/step down/ transportation) ▶ **Plug**

Metal Fuel Economy is the sustainable way to carry on human society development.

Batteries Update

Lithium batteries

As an energy carrier, Lithium represents the lightest weight and highest reactivity among all natural things.

With such properties, Lithium being used as a key component of battery to create the highest potential gradient to generate electricity, with the highest voltage possible.

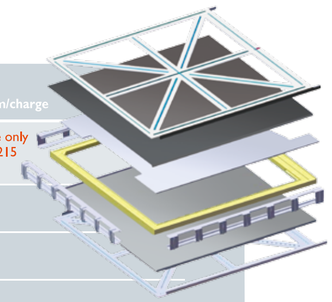
On the other hand, with the potential hazard of explosion, the safety of using Lithium batteries has become a major concern, especially for EVs.

In addition, Li-batteries biggest hurdle is the supply, when considering the commercialization in vehicle applications. According to Meridian International Research report in 2007, worldwide reserve of Li metal accounted for about 15 million tones. An estimated 0.3kg / kWh of Li metal is needed in battery.

If an average EV needs 30kWh Li battery, each EV will use up 9kg. Current global new car production is 60 million cars per year. Each year the consumption of Li will be at 540,000 tones. All Lithium deposits will be depleted within 27 years, just by EV's production.

Comparison

Battery	Spec / Weight	Module US$/44kW	Cost US$/km/charge
EGE	288 cells, 154Wh = 44.35kWh 181kg, 244Wh/kg	Projected $3,600 for 288 cells	Replace only Zn $0.215
Li-Polymer	408 cells, 3.6V, 30Ah = 44kWh 360kg, 122Wh/kg	$35,200 (@$800/kWh)	$0.160
NiMH	2037 cells, 1.2V, 18Ah = 44kWh 723kg, 60Wh.kg	$17,600 (@$400/kWh)	$0.223
PbAcid	37 batteries, 12V, 100Ah = 44kWh 1110kg, 40Wh/kg	$8,800 (@$200/kWh)	$0.219



NiMH batteries

One of the safest battery chemistry, even Toyota uses it for Prius!

However, the cylindrical NiMH batteries have limitations in size and capacity, hence restricted to smaller applications and low grade performance.The reason: Ovonics holding the patent of prismatic (flat, rectangular shaped) NiMH batteries. The production was halted by its owner, Chevron, in 2001, killed the popular EV1 project of the time.

With China's revised direction on NiMH vs Li-batteries, its importance in the EV market will increase dramatically.

Global Energy News

GERMANY

FRANKFURT (Reuters, 16/Jun/2009)–A consortium of around 20 companies, including Munich Re, Siemens, RWE and Deutsche Bank, plans to build a 400 billion EURO ($555.3 billion) solar power project in Africa, a Munich Re executive told a German newspaper. The project, led by Munich Re, would use the energy from the Africa-based solar project to provide electricity to German households. The target is to provide 15% of EUROPE's electricity demand…

CHINA

BEIJING (23/Jan/2009)–China's Economics Affairs Development Department announced the subsidy program for electric vehicles. The maximum subsidy for Full EV is RMB 60,000 (over US$8,500), but the maximum for fuel cell EV can reach RMB 250,000 (over US$35,000). For buses, the maximum subsidy for Full Electric 10m buses is RMB 500,000 (over US$71,000), and fuel cell powered can reach RMB 600,000 (over US$85,000).

BEIJING (1/Jul/2009)–China's Ministry of Industry and Information Technology announced that Lithium battery-powered vehicles would be restricted to permitted locations, for selling and driving. Lead Acid and NiMH battery powered electric vehicles or hybrid vehicles can apply for license country-wide.

USA

WASHINGTON, DC (18/May/2009) –Energy Secretary Steven Chu announced the withdrawal of the support to develop hydrogen fuel cells. U.S. Energy Secretary Steven Chu said the Energy Department planned to shift funding away from hydrogen fuel cell vehicles in favor of alternative fuel programs that would be quicker to develop and roll out nationwide.

WASHINGTON, DC–Obama Apollo Project–The idea for a new Apollo program to build a new energy economy has been around since 2004. The program calls for investing $500 billion over 10 years to:

- Generate clean power (25% from renewable sources by 2025)
- Improve energy conservation and efficiency
- Cut energy bills
- Improve US technological and industrial capabilities
- Create 5 million green-collar job

JAPAN

TOKYO (22/July/2009)–POPULARITY OF THE DOMESTIC FUEL CELL ENERGY POLICY IN JAPAN–As the world's highest energy import dependency country, Japan attach great importance to the development of alternative energy. Economic consulting firm Fuji's latest report shows that universal home fuel cells will become an important component of Japan's energy policy. The company forecast that Japan's domestic fuel cell market in 2020 will reach JPY307,500,000,000 (US$3.3 billion)

TOKYO (27/July/2008)–TOYOTA FOCUSING ON METAL-AIR CELLS FOR NEXT-GENERATION BATTERY TECHNOLOGY–The Nikkei reports that Toyota's newly established department for battery research is focusing on metal-air cells as the next-generation battery technology for its vehicles. Toyota is already undergoing R&D for the next generation of batteries in search for battery technology with capabilities beyond what lithium ion battery technology can offer. One of the technologies being researched are metal-air batteries. Typical metals used in metal-air batteries include Zinc or Aluminum, with Zinc being the most popular one by far. Metal-air batteries have often been compared to fuel cells in terms of operation. The anode is pure metal, and the cathode is a supply of air, which is pretty much considered inexhaustible.

Is plug-in Electric Vehicle really the solution?

Every car brand is trying to make their electric cars, claiming their efficiency and performance, and GREEN nature of the car. But if the electric car is using plug-in method, or needed to be recharged, how will YOU value the electric car?

Will you still have your freedom?

Will you still have your security?

In 1996, EV1 was produced by GM. Electric cars have been struggling for 13 years, and still very much so. WHY? Because "recharging" kills "freedom" and "security". You will lose WHATever, WHEREver, WHENever, WHOever, when your car is recharging!

Your car cannot provide you security, not much if it is an immobile piece of steel, when it is recharging.

The answer to the hype for seeking a mass-marketable EV is obvious – that the EV cannot rely on recharging. Or the electric car will lose its meaning of being a car to a human being.

EFFICIENCY SAVES MONEY

It is simple. Every bit of energy used that can cover a bit more of your journey, you can save money a bit.

Over time, as the ancient Chinese belief, sand grains can be accumulated into towers and palaces.

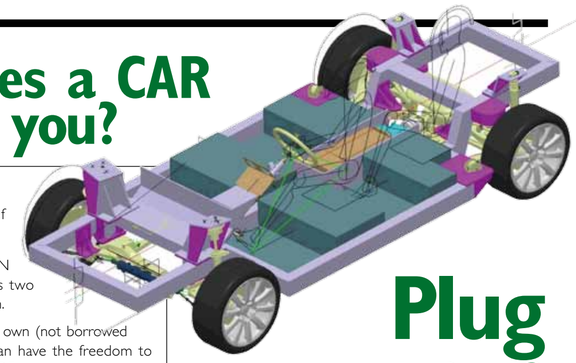
This is not only good to your pocket, it is also very good to us as a community. The less energy consumed, the less pollution from cars or from power plants, the better the environment and our livelihoods.

As a Salamanderian, we aim to strike a balance in life, with efficiency in mind all the time, to save us money and our precious EARTH.

FREE Test drive **To experience the green power of Salamander, please visit our booth (Hall 8 Booth D30) and test drive the stationery demo set. Don't forget to refresh yourself with a complimentary welcome drink!**

So come and join us. Become a Salamanderian today!

What does a CAR mean to you?



You are in IAA.
You are seeing all sorts of beauties and exotics.

But WHAT DOES A CAR MEAN TO YOU? To us, a car represents two core values of the human civilization.

FREEDOM – with a car of your own (not borrowed from your dad, of course) you can have the freedom to do WHATever you want, WHEREver you want to go, WHENever you want to do it, with some capacities of WHOever you want to be with. This freedom is almost priceless, not to mention it is the foundation of humanity as well.

SECURITY – with a car of your own, you can have the ability to deal with many difficult situations, and have a way to get out of troubles. The car provides a shelter, a chance to escape from dangerous places, a tool to help others and a mobile storage.

FREEDOM + SECURITY = CONVENIENCE

Plug and Run? Not at all.

EV is hot. It is so hot that people learn all the goodies from the people promoting it. Yes, it is clean face-to-face. There is no emission when you are driving it. But when you get home, you plug it to your home plug, then what happen?

Your plug, will normally provide 110V or 220V electricity power. It is the pressure of electricity flowing. The current that comes out, usually 15A or 20A, measures the amount of electrons, or the real "push" of energy.

When your battery stacked up with around 30kWh, to get you 200-300km range, you will need at least the same amount of energy for recharging.

110V x 20A = 2.2kWh per hour = more than 13 hours for a full recharge

220V x 15A = 3.3kWh per hour = more than 9 hours for a full recharge

Unless you put 4 plugs together, or retrofit your house electricity supplies, there is no such thing as fast charging from your home plug. If you put 4 plugs to recharge your car, where do you get power to your fridge? Your air-con? Your TV? If you retrofit your house electricity, should you calculate this into the price of buying the EV?

Most of our electricity is still coming from coal fire power plants. Less than 20% of the energy can be harvested from coal to be converted into electricity. If your EV gets electricity from the plug, and runs at a very high efficiency of over 70%, you are actually running with 12-14% efficiency.

Any normal sized petrol cars can give an efficiency of around 23-25% on oil. So what's the point of turning to Plug-in EV?

Introduction of Automotive X-Prize, with US$10 million prize pocket!

Asia's only Official Contender of Automotive X-Prize Mainstream Competition

TEAM APET-X

apet TEAM APET-X is the only Team from Asia accepted as an official contender for the mainstream competition, for 4 wheels 4 passengers car.

The 5 pillars of requirement from Automotive X-Prize:

PROGRESSIVE AUTOMOTIVE X PRIZE

1. 100 MPGe efficiency
2. No more than 200g/mile CO2 equivalent
3. Meeting US safety standards (FMVSS)
4. Vehicles must be capable of being manufactured in quantities of 10,000 per year
5. A credible plan to manufacture, sell, and service 10,000 vehicles (or conversions) per year by 2014

www.progressiveautoxprize.org