

FCORP

FCORP UK. THE ENERGY HANDLING LTD.

Has an exclusive investment opportunity:

REFERENCE ONE – THE CAR OF THE FUTURE

Realization of this investment will create long term revenue for:

Investors

Car Manufacturers

Car Dealers

Car Service Owners

House and Car Park Owners

Electric Grid Owners

Renewable Energy Hardware Owners

Governments and Car Owners

FCORP
FCORP UK. THE ENERGY HANDLING LTD.

FCORP is a world leader in the ground-breaking innovative solution possessing unique and original ('without prior art') technologies in the business of Electric Vehicles since 1996

- ✓ Initial technologies were realized in the 'Evolution One' Electric Scooter prototype, created in 2000 and presented at the [2001 EVAA Electric Transportation Industry CONFERENCE \(Sacramento, CA, USA\)](#). Even in this early stage, the technologies incorporated in Evolution One produced outstanding results:
 - power consumption: **2.3 kWh/100 mi** vs. Tesla 38 kWh/100 mi (16 times less)
 - electric motor power: **0.5 kW** vs. Tesla 500 kW (1000 times less)
 - charger power: **1.5 kW** vs. Tesla 120 kW (80 times less) for 80% charge in 30 minutesConsidering the maximum speed was 20 mph, with a 360 lb load, it was a substantial accomplishment.

- ✓ From 2000 to 2006 **FCORP** (FazTech at the time) had developed battery chargers for industrial electric vehicles, from light electric trucks to heavy duty forklifts, for the US market. Our strategic partner for this market was [Taylor-Dunn](#), CA, (electric utility trucks, on-road and off-road and other electric utility vehicles, etc.) We were also engaged in a joint venture with [EaglePicher](#) AZ, (a company involved in the US Space Program, including contracts with NASA, USAF, Lockheed-Martin and Boeing). **FCORP** had manufactured and delivered, for the USA market, a market leading, [Industrial Battery Charger](#) distributed by [Arnold Machinery Company](#), UT, as a dealer:
 - The industrial charger had capability to charge batteries up to 2000 Ah.
 - Power of the industrial charger: up to 18 000 W at 24/48 V, (300/600 Amp).

- ✓ From 2008 to present, **FCORP** has focused on creating prototypes and testing additional technologies, indispensable for cars and electric vehicles.

Fortified by the knowledge and research built over the last 20 years, as well as international experience, FCORP is confident that it has TODAY the EV Solution – over 14 original technologies (grounds) – for

The Car of the Future.

Four targets are envisaged:

1. The first target of our venture is to incorporate all our technologies in an "industry reference" car, simply named **REFERENCE ONE**.
2. Our second target is to multiply the prototype for demonstrations worldwide.
3. Our third target will be to organize the manufacture, distribution and marketing of the **REFERENCE ONE The Car of the Future**. We expect significant interest from both the general public and car companies alike.
4. Our fourth target will be to penetrate the market for large sales, then license our technologies, to make it possible to have millions of **REFERENCE ONE** vehicles on the road by 2020.



FCORP is positioned to bring to market the REFERENCE ONE The Car of the Future!

ANTICIPATED RESULTS:

- **GREENER THAN TESLA**
- **STRONGER THAN LAND ROVER**
- **BETTER TRACTION THAN AUDI QUATTRO**
- **BETTER SUSPENSION THAN ROLLS ROYCE**
- **MORE RELIABLE THAN TOYOTA LEXUS**
- **SAFER THAN VOLVO**

ALL TOGETHER AT THE **COST** OF A VOLKSWAGEN!

BREAKTHROUGH features:

- **DESIGNED FOR EVERYDAY, REGULAR USE (INSIDE CITY AND PROXIMITY)**
- **SUSTAINABLE**
No charging stations required (!) There are already over **130 million** fast charging stations – at your home (USA) and anywhere there is a standard electric outlet, including car parks.
- **RANGE PER CHARGE**
Ask yourself – how much range do you need when electric outlets are everywhere and the fast charger is built into the car? Under those circumstances the range per charge may be **100-110 mi**
- **CHARGERS**
Because **FCORP** technologies make possible to **double the driving range** from the same kWh battery pack as today's electric vehicles (EV), we will need half of the power for the chargers vs. competition. (!)
Night charge (at home, car park, etc.): 2 kW/8 h – full charge,
Fast charge (at home, car park, etc.): 20 kW/36 min – 80% charge,
Super Fast charge station, (special application): 60 kW/10-15 min – 90% charge
- **REFERENCE ONE MAXIMUM DAILY RANGE IN CITY (24h)**
UP TO 600 mi - as much as you can drive!
(Fast charge time: 40min, drive time: 3h15min, average speed: 30mi/h, range: 100 mi) x 6 = 600 mi
- **REFERENCE TWO IS DESIGNED FOR HIGH DAILY RANGE OUTSIDE THE CITY (24h) it is a hybrid car**
Maximum 1500 mi = 4-5 gallons petrol + 40 kWh electric charge / day
REFERENCE TWO (30kW petrol engine connected to electric generator to charge on-board batteries). Starts with fully charged batteries, or with fast charged batteries, 80% charge (Fast full charge time: 45 min /drive time: 10h47min/ average speed: 70mi/h, range = 750 mi) x 2
[110 mi + 70 mi (1h on board full charge: 0.5 gallon) + 110 mi + 70 mi (1h charge: 0.5 gallon) + 110 mi + 70 mi (1h charge: 0.5 gallon) + 110 mi + 70 mi (1h charge: 0.5 gallon) + 30 mi] x 2 = 1,500 mi, average speed: 70 mi/h
New York – Los Angeles in 4 days: 2862 mi = 8-10 gallon petrol+80 kWh electricity (750 mi per day with 4 x Fast Charges or full charge)
- **EXTENDABLE**
Hundreds of millions of **REFERENCE ONE** may run on the road, NOW. As more they are as better for the grid, more storage capability, and more renewable energy will be captured and used.



Hi, I am entrepreneur **ANDRAS FAZAKAS** (the „F” in **FCORP**)
I invite you on a journey inside **REFERENCE ONE**
The Car of the Future

1. First, we focused on charging batteries as full as possible. After two years of effort, in 1996, we created a **High-Efficiency, High Quality battery Charger Technology**, which we developed, manufactured and brought to USA market. This innovative, new battery charger technology is able to implement additional 10%-15% electric energy into “off-the-shelf” batteries - more than any charger technology today. This additional energy implemented in the battery pack will return and increase the range of the car proportionally. The charger is installed on-board (**20kW**), and allows the batteries to be recharged from anywhere that has access to a standard electrical power outlet. This allows the batteries to remain “topped-up” for maximum range.
2. Second, over the past two decades, we have created and developed a High-Efficiency, High Torque Electric Motor Hardware and an Electric Motor Controller which requires less electric energy per mile than any other electric motor on the market today. This extends the range of the car substantially.
3. Third, over the same period, we have created and developed a High-Efficiency and High Power Electric Generator and Generator Controller, which allows recharging the battery via regenerative braking. With almost twice (!) the return of energy of any of today's generators, once again, we increase the range of the car significantly.

All taken together, these technologies may double the range of REFERENCE ONE compared to today's EV's. You may think, well, this is all that's needed, but in reality we need to do MORE. Why? It is because a vehicle is more than the sum of its motors, generators and batteries. It is an Inertial Mass on the road.

- We need extra torque for ramp and off road environments (As heavy snowfall, etc). For this purpose, in the last two years, we have created a High-Efficiency, unconventional, Torque Multiplier, to double the torque of **REFERENCE ONE's** four independent, already High-Torque electric motors.
- We also need an AWD capability, superior to the all-wheel-drive systems of cars on the market today, in order to improve the car's adaptation to environmental conditions, such as rain, snow, mud, etc. Each wheel has an individual electric motor, which eliminates the limitations and the friction losses of the mechanical differential. We will use an acceleration sensor to drive the electric motor controllers in order to distribute torque to each wheel, as needed. This offers far better stability of the car for accelerations and improves 'going around the corner' slippage and skidding behaviour dramatically.
- We also need a High Quality suspension for on-road stability, comfort, and to protect the batteries from mechanical stress. Therefore, **from 2008** we have developed a fully independent and adjustable suspension for **REFERENCE ONE**. From sport to comfort use, the software will automatically and continuously adjust the suspension, depending on how we drive, our speed, the road conditions, etc.
- High reliability has to be a main characteristic of **REFERENCE ONE**. In order to achieve this, each of our 4 motors has 2 battery packs, in order to keep the car on the move even if a battery pack, a motor or a motor controller fails. In fact, we have a total of 8 independent battery packs, four independent motors and controllers (!).
- Maximum safety is a major requirement. Even if a **tire bursts**, **REFERENCE ONE** must remain safely on the road. In a more extreme case, **if a wheel is lost** (!), the car must, nevertheless, continue to stay on-course on the road. In order to accomplish these goals, we have designed an **electro-oil-pneumatic suspension**. This automatically preserves the level of the car, independent of the load. For this, we utilize a computer-driven, continuous car level adjustment (between large limits from off-road to highway), which additionally compensates for roll, slippage and skidding in curves and corners, and decreases the energy consumption of the car at higher speed.



Well, if you think that we achieved all our goals, there are still few more:

- **Maximize Sustainability** to a high degree. In our case, the **Car of the Future** will be able to access all electric grids outlets at home, at car parks, at the shopping centre, anywhere where plug sockets to the electric grid are available. Charging stations are not required (!). This will ensure that the battery is always charged, eliminating the range anxiety.
- **REGULATOR FUNCTION** – This allows the **smart grid** TO BE INDEPENDENTLY INSULATED from houses or utilities where the cars are charging and REDIRECT THE ELECTRIC ENERGY TO WHERE IT IS NEEDED. The batteries of the car (connected through an inverter) MAY ACTUALLY SUPPLY ENERGY TO THE HOUSE, during any emergency period, or FOR THE OPERATION OF ANY EMERGENCY EQUIPMENT, as required. This covers the BLACKOUT too.
- **POWER-GRID LOAD-EQUALIZATION** – The grid does not have enough loads in the night time and actually it is quite difficult to readjust the power of the grid. By charging batteries through the night, the grid will have an equalized load overall. The efficiency of the grid will be improved and the cost of electricity will be dropped.
- Finally, a major complementary function for the **Car of the Future** is to be one of the **VITAL COMPONENTS of RENEWABLE ENERGY SYSTEMS**, such as wind or solar power plants etc., due to their **STORAGE CAPABILITY**. This makes it possible to capture more green energy when it is **AVAILABLE** as the number of cars increases.

Additional features: **Car of the Future** must have continuous communication, remote functions etc.

- Servicing for the car will be online, 24/7 and will notify the owner promptly if anything requires maintenance or repair.
- The car will be in Online Communication with the owner too and notify them of any unusual circumstances occur (car parking too close, extreme weather, power loss of the grid, etc.) It will have an online remote camera to visualize the car environment, and even speakers and microphones to communicate remotely with the vicinity of the car.
- Remote air conditioning of the car will also be available.
- Warranty policy: Because the major components of the car have online tracing and are highly reliable, the warranty will be valid for **9 years.(!)** The warranty of the batteries will be provided by the battery manufacturer.

Last but not least, the **Car of the Future** must be affordable, in order to meet demand for millions of cars on the road.

- **The total cost of ownership (TCO)** includes all spending related to the car for a specified period of time, including the purchasing cost. We anticipate the TCO for 6 year of the **Car of the Future** (assuming expected battery prices falling, the battery replacement cost included) will eventually equate to 50% of the cost of a comparable quality petrol car. (The car owner is encouraged to preserve the car for **6 years**)

FCORP vision is to separate the everyday car from the weekend car.

- The everyday car is designed to be used inside the city and in the proximity of the city vs. the weekend car which is usually used for long range journeys – up to 700 mi+ **outside the city**. Anyway, the market size of the long range personal car is **questionable**; in the USA at least. For a distance over 150 - 200 mi, people usually fly and rent a car at destination. Nevertheless, for a long range car the best solution is a **hybrid car - REFERENCE TWO**. In addition, **FCORP** has acquired experience on **improving efficiency of petrol engines** too, and has the appropriate electric generator to be serially connected to the engine to charge the on-board batteries on the run. Obviously the traction of the car will be fully electric as described above. Eventually the truck market is suitable for **hybrids** as much as long distance buses, etc as **Nikola One electric concept truck**.



„It is not what we know that is so important. It is what we do not know. Most of what we know can be found in libraries, in the minds of people and in processes as they exist today.”

Charles F. Kettering
Vice-President in Charge of Research
General Motors Corporation, 1956

Some of **FCORP**'s brand new technologies, prototypes and designs for **REFERENCE ONE**

FCORP had designed and manufactured **Battery Chargers** which proved to provide extra 10% - 15% usable energy from the battery pack compared to those of competitors e.g. **BENNING BELATRON** (Germany), Hobart **comparison test** (USA) and **Arnold (USA) evaluation (granted patents)**.

FCORP had designed and manufactured a High Current Capability Electric Cable (**granted patent**).

FCORP had designed and manufactured a High Current Capability P.C. Board (**granted patent**).

FCORP had designed and implemented Software for battery charger (**granted patent**).

FCORP had designed and tested a **Battery Assist** technology which provides full charge to all cells of the battery pack. Hochschule für Technik und Wirtschaft, Dresden (Germany) **High Voltage Battery Pack and Battery Assist evaluation**.

FCORP had designed and tested an **Output Electric Module** for electric generator, which proved to deliver almost twice more energy vs. the world leader **Bosch13 generator** – Hochschule für Technik und Wirtschaft, Dresden (Germany) **electric generator evaluation**.

FCORP had designed and tested a new **High Torque Electric Motor Hardware** Technology. The **FCORP** Lab test indicates without any doubt extreme high efficiency behaviour, according to our consultant, even higher efficiency as the world leader **Maxxon** electric motor – **evaluation of Mr. Guido Ries** (Germany) an accredited electric motor expert.

FCORP had designed and tested an **Electric Motor Controller Module** designed for the **FCORP**'s high torque electric motor, with estimated efficiency of over 90% at all RPM range – **FCORP** Lab evaluation on low power functional prototype.

FCORP had designed and tested different **suspension hardware** since 2008.

FCORP had designed and tested a very strong **Integrated Mechanical Platform** customized for the electric vehicle since 2000. **FCORP** continued the research and has a new design for a strong, light **IMP** for EV.

FCORP had researched and designed a “Gas based” suspension for cars with continuous adjustment.

FCORP had researched and designed a High Efficient, Fast Reacting and Continuous Level Adjustment for cars.

FCORP had researched and designed a High Efficient Torque Multiplier for electric motors.

Some of **REFERENCE ONE**'s Exclusive features

- EMDW** 4 x Electric Motor Direct Drive to the Wheel, no friction losses due to transmission
- CCSTC** Curve Compensatory Speed and Torque Control, replacing mechanical differential
- MIBP** Multiple Independent Battery Packs, 2 in this application/motor, unprecedented high reliability
- MIES** Multiple Independent Energy Storage, 3 levels of independent energy storage/motor
- MBER** Maximized Breaking Energy Recovery, 4 x high efficiency generators
- IMIEV** Integrated Mechanical Infrastructure custom designed for Electric Vehicle
- LARS** 4 x controlled and independent Automated Levelling and Active-Rolling Suspension
- ACSLA** Acceleration Compensatory Suspension and Level Adjustment
- OFLC** On-board High Power / Low Power Chargers connectable to 3phase/1phase standard outlet
- CTM** Continuous Torque Multiplier – connected between the electric motor and the wheel

**We may say: 4 x Revolutionary Electric Vehicles in one =
REFERENCE ONE - The car of the future!**



Copyright © 2016 by FCORP UK. The Energy Handling LTD. All rights reserved. Company Registration in England and Wales No. 10232939, Registered Office: Kemp House 160 City Road London EC1V 2NX, Web: fcorp.eu
Contact person: Ms. Réka Kézi, Mobile: +447845828879, Email: reka.kezi@fcorp.eu