

GreenErg

An investment Opportunity

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EXECUTIVE SUMMARY.....	3
0.0 INTRODUCTION.....	4
2.0 FINANCIAL STATEMENT AND PROJECTIONS	4
3.0 PRODUCT SELLING PRICES AND COSTS	4
4.0 PRODUCT DEVELOPMENT STATUS	5
5.0 RESUME- CEDRICK NGALANDE PHD.....	6

Executive Summary

Electronic devices have become an integral part of the people's lives. There is a constant need to provide more power for longer durations and at lower weight and cost. Even as electrical engineers provide less power-hungry devices, the constant desire to provide further capability drives the need for higher power to unprecedented levels. GreenErg is a startup company which has developed a portable energy-harvesting device that can charge a wide range of devices from cell phones to laptops without electricity. The startup seeks to manufacture and commercialize this product.

This generator does not require batteries or electricity to operate. It derives its energy from motion, vibrations, turbulence, acceleration and deceleration of a moving vehicle in which it is carried, or a walking person carrying it. Thus, the charger operates whenever it is carried in a moving vehicle such as a moving car, airplane, helicopter, bus, train, or if carried by a walking person.

There is a big market for this product. Passengers on airplanes, cars, buses, train or boat will use this gadget to charge their laptops, cell phones, blackberries, etc. The product will also be very marketable to the military. This device is revolutionary in that it is the first energy harvesting device ever made that automatically operates when carried on a moving vehicle. It is also the first of such devices being capable of providing power substantially big enough to cover a wide range of appliances including laptops.

GreenErg is looking an investment of \$3,000,000 to start a company to manufacture and commercialize the product. The company will be located in Los Angeles.

Dr Cedrick Ngalande, a PhD aeronautical engineering graduate from the USC, will be the CEO of the company.

0.0 Introduction

Electronic devices have become an integral part of the people's lives. There is a constant need to provide more power for longer durations and at lower weight and cost. Even as electrical engineers provide less power-hungry devices, the constant desire to provide further capability drives the need for higher power to unprecedented levels. GreenErg is a startup company that seeks to develop and manufacture and commercialize, a portable energy-harvesting device that can charge a wide range of devices from cell phones to laptops.

This generator does not require batteries or electricity. It derives its energy from motion, vibrations, turbulence, acceleration and deceleration of a moving vehicle in which it is carried, or a walking person carrying it. Thus, the generator operates whenever it is carried in a moving vehicle such as a moving car, humvee, airplane, helicopter, bus, train, or if carried by a walking person.

This device, herein referred to as *motion charger*, is revolutionary in that it is the first energy harvesting device ever made that automatically operates when carried on a moving vehicle. It is also the first of such devices being capable of providing power substantially big enough to cover a wide range of appliances including laptops.

2.0 Financial Statement and Projections

The GreenErg management is looking for \$3,000,000 to bring to GreenErg to operational status. This money will be used for the setting up and development of this company. Projections show that if all goes according to plan, the investor can expect a return of his investment within the first 3 years of production.

Warning This is an optimistic view of this company. It is positive because the *motion charger* has a great potential and a very wide market. However, it should be borne in mind that investing in company start-ups does have certain risks. We have carefully considered all possible risks and are confident of success.

3.0 Product Selling Prices and Costs

The projections included in this business plan are based on several assumptions about product selling prices and selling.

1. Wholesale selling price = \$60.00
2. Direct (variable) cost of each unit = \$10.00
3. Gross profit per unit = \$50.00

We intend to start by manufacturing 5,000 units a month starting from the sixth month. Since the market for this gadget is extensive, these units should sell easily.

These costs do not allow for any corporation overhead, such as rent, management costs, etc. They are based solely on the cost of producing each unit. All costs and selling prices have been developed through extensive market research and profitability analysis. They reflect the realities of the market place, as well as the price objectives of management.

The Projected Budget for the first two years of GreenErg Company is presented in the accompanying Excel file.

4.0 Product Development Status

The gadget has worked in a proof of concept phase. GreenErg have tested all-important parts of the gadget and they work as thought on paper.

However, the first 5 months of company will be spent building and testing a working prototype suitable for different needs of the company. The planned schedule for the first year of the company is shown in the table below:

Month	Activity
1	Design a working prototype
2	Build the prototype
3, 4	Testing the prototype and finding solutions to possible problems. Successful testing will mean that <ol style="list-style-type: none"> 1. the gadget responds well to vibrations when carried by i) a walking soldier ii) in a moving vehicle and iii) helicopter or plane. 2. there is an understanding of which of the above environments do the gadget perform best or least in 3. the gadget is capable of charging cell phones and laptops 4. the gadget is durable
5	Final design based on test results
6-12	Manufacturing and commercialization

The company will be stationed in Los Angeles. Most of the product parts will be manufactured in China and assembled in Los Angeles.

5.0 Resume- Cedrick Ngalande PhD

EDUCATION

- Ph.D. Astronautical Engineering, University of Southern California, May 2007
- M.S. Aerospace Engineering-Astronautics, University of Southern California, July 2004;
- Diploma, Mechanical Engineering, the Polytechnic, University of Malawi, 1994;

PROFESSIONAL SERVICE

AIAA Journal Reviewer for the Journal of Spacecraft and Rockets, **March 2007** –

INVENTIONS

- An electricity generator that runs on sugar and yeast
- Automatic motion charger for passengers on vehicles and small airplanes

RESEARCH EXPERIENCE

Consultant, ERC, Huntsville Alabama, **May 2007** –

- Modeling/simulation of gas flows
- Micro-propulsion devices

Research Assistant, Department of Aerospace and Mechanical Engineering, University of Southern California, **January 2004- May 2007**

- Designed and conducted numerical analysis of laser based micro-propulsion devices using solutions of Navier-Stokes equations
- Analyzed the trapping and acceleration of molecules with optical lattices using kinetic and continuum approaches.
- Analyzed the impact of nozzle and spacecraft surface roughness on thrust degradation using the DSMC method
- Investigated radiometric forces and energy accommodation coefficients using DSMC method and solution of the Navier-Stokes equations
- Conducted numerical study of the efficiency of ground based aerospace testing facilities

Team leader, USC Microsatellite Program, January 2004 –May 2006

- Lead the design and building of propellant tank for Free Molecular Micro-resistojet (FMMR)

Research Assistant, USC Space Sciences Center, **August 2002- January 2004**

- Designed payload instruments
- Namioka Monochromator assembly and operation
- SOHO Rocket payload assembly
- Designed computer program to interpret data from rocket
- Space instrument calibration

Team Member for USC Rocket Sounding, White Sands Missile Range, New Mexico, summer 2002

- Member of the 36.202US team on SOHO/SEM calibration mission
- Designed a program that interpreted data from the SOHO/SEM calibration mission

TEACHING EXPERIENCE

Visiting lecturer, Astronautics and Space Technology Division, Viterbi School of Engineering, University of Southern California, **October 2007 -**

- Classes
 - Introduction to Astronautics
 - Thermal and Statistical Systems
 - DSMC and CFD

Instructor, East San Gabriel Valley ROP/TC, **August – November 2007**

- Developing pre-engineering, design and robotics curriculum for high school students
- Teaching Design Based Learning (DBL) engineering and design courses

Teaching assistant, USC Department of Aerospace and Mechanical Engineering

- Space Environments and Spacecraft Interactions (2002 -2004)
- Introduction to MEMS (2004)