

Welcome to TE 250



Paul Couston

Main Takeaways from this Class

Learned the technical skills of founding/running a business

Find the solution from the CUSTOMER

Its amazing how much you can use the line “Hi, My name is _____ and I’m a university student doing research”

Your idea is fluid, it has to change based on the market

You will be wrong sometimes, that’s okay listen to your team

Midterm Assignment



Paul Couston, Santiago Gutierrez, John Showel, Jake Fava, Mark Glassgow

What problem are we solving?

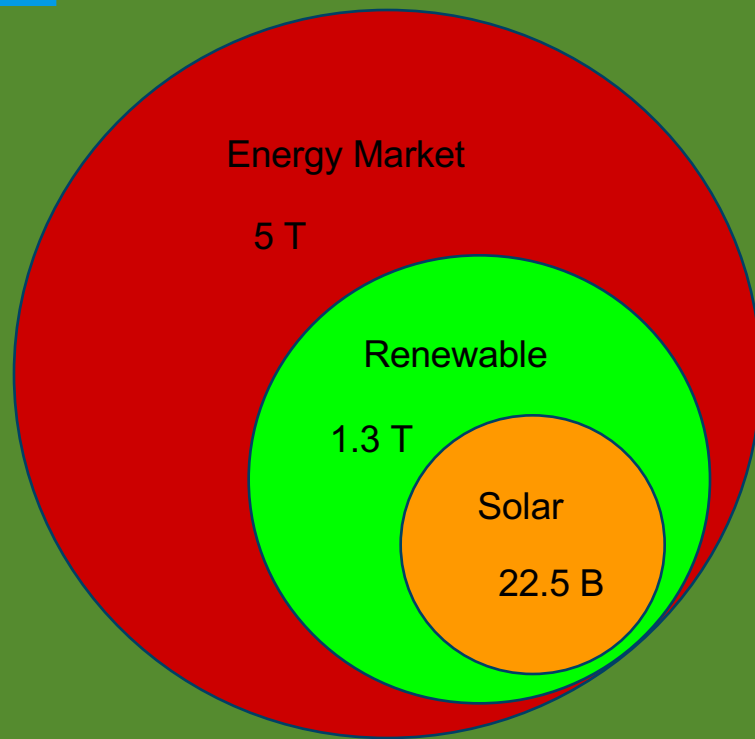
-Our team originally wanted to solve the problem of having readily available clean and portable energy.

-Our goal has not changed- but we have modified our goal to fit the customer's needs.

- After calling and interviewing many different companies we realize what the customer wants is different than our original assessment.



Market Validation



- Energy Market has a worth of about 5 trillion (USD; 2008 figure).
- Renewable Energy has a market value of about 1.3 trillion (USD).
- In 2014 the Solar PV industry achieved revenues of 22.5 Billion(USD).

Market Validation

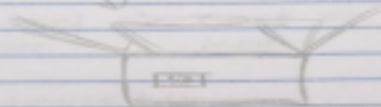
- Contacted 10 nonprofit companies that focus on disaster relief and third world development.
- Every company we talked to deals with gas power generators for their energy needs.
- Image of clean power.

Key Value Proposition

- What were these companies looking for in portable power?
 - GO GREEN!
 - No fuel needed.
 - Foldable, durable, one piece.
 - Self contained, requires no extra add-ons, parts, or fuel.

Solar - Folder

Stands



flower



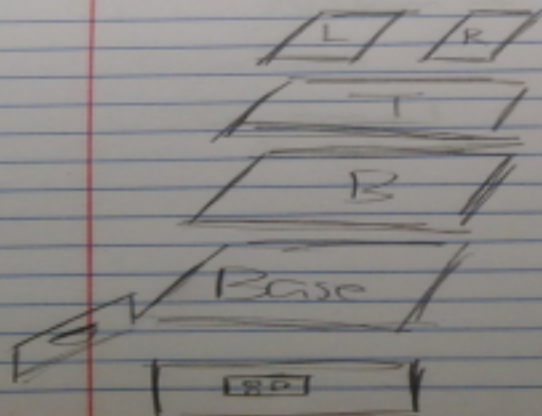
(look over view)

Uses

- Camps
- Fishing
- Rock climbing
- Yard Work
- Construction
- temporary
- ★ Develops
- Events
- Countries

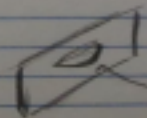
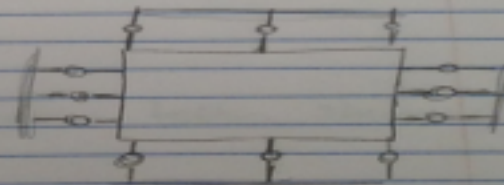
New Step
Meterized

folds in

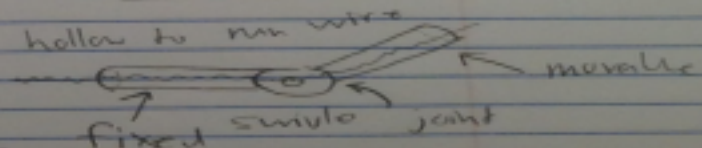


full size?
half size?
how many Amps?
Watts? $P=I \cdot V$

folding process



handle



Competitive Analysis: Indirect Competition

- According to companies we talked to our main competition is gas powered generators.
- They are well liked for their reliability.
- Only drawback is the cost and availability of gasoline.
- Will be a cheaper option compared to Solar short term.

Competitive Analysis: Direct Competition

- Already existing portable solar powered generators.
- Foldable means portable and durable



Target Customer Segments

- Originally targeted towards construction or camping
- Switched focus to nonprofits
- Disaster relief/ Developing or Third-World countries



Changes, Pivots, Redirects

Biggest redirect was customer focus.

Using our stance as University Students

Baptist mission group in Southern Africa

Reached out to 10 different companies



Questions or Comments?



Final Assignment



Paul Couston, Santiago Gutierrez, John Showel, Jake Fava, Mark Glassgow

Problem Statement

We want to supply a renewable and portable source of power in places that do not have direct access to on grid electric power.

Provide a way to use power without relying completely on fossil fuel sources.



Solution

- Our original idea involved a portable solar panel that would be used for camping or third world countries
- After many different interviews with not for profits, we realized we could never truly compete with gas powered generators
- Redirected to come up with the idea of a solar and gas hybrid generator that would use solar electricity when available and switch to gas when needed



Competitive Advantage

One interviewee, Bruce Baikie founder of Green Wifi, told us he would be “our first customer if we could get the price down to \$10,000”

Sent me links to current hybrids that green wifi is considering

“All of these are too large and too much



Current Market

SolarCraft (No gas)

Ascot (Stationary)

Black Sapphire (15k)

Amersco Solar (Stationary)

GoalZero(Solar seperate)

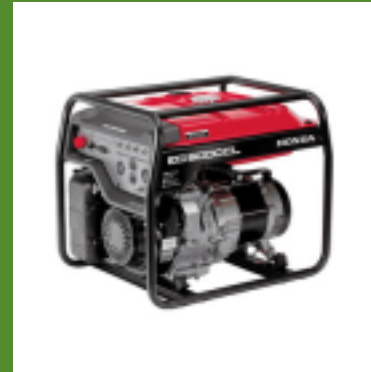
SunWize(Stationary)

“All of these are too large and
too much money” Bruce



Competitive Cost (DRAFT)

Portable Gas Generator (5,000 watt) (\$1.4k)



Honda EG5000 5,000 Watt Portable Generator with DAVR Technology (CARB)

5 solar cells(1,350 watt) (\$1.4k)

SolarWorld 270 Watt Solar Panel, Sunmodule SW270 Mono V2.5 Frame



Rechargeable System (\$1k)

Victron Energy Lithium battery 12,8V/60Ah - BMS"










Raspberry Pi 2, Model B












Folding mechanics and casing (estimate \$500 to \$1k)

Leaves us up to **\$5.2 to \$5.7** for contingencies and allowances









Business Model Canvas (Early)

Key Partners  1. Construction/contracting companies	Key Activities  1.	Value Propositions  1. Portable power 2. Renewable power 3. Sturdy design 4. Folding Panels 5. Provide clean power where there is no on grid power supply. 6. No need for external fuel source	Customer Relationships  1. Customers expect our product to be durable 2. Customers expect our product to supply a constant stream of energy 3. Customers expect our product to be able to generate enough energy to power large appliances and tools.	Customer Segments  1. Construction companies. 2. Universities 3. Camping/Outdoor activities. 4. Disaster Relief 5. Mission trips to third world countries.
Key Resources 		Channels  1. Companies who need to power appliances outdoors such as construction companies. 2. Possibly Universities, at least for funding to start.		
Cost Structure  1. Development of panels to customers need			Revenue Streams  1. Customer is ultimately paying for energy 2. Willing to pay more for portability 3. willing to pay more for clean aspect 4. Willing to pay more for inexhaustible fuel source	

Business Model Canvas (Middle)

Key Partners 	Key Activities 	Value Propositions  <ol style="list-style-type: none"> 1. Portable power 2. Renewable power 3. Sturdy design 4. Folding Panels 5. Provide clean power where there is no on grid power supply. 	Customer Relationships  <ol style="list-style-type: none"> 1. Customers expect our product to be durable. 2. Customers expect our product to supply a constant stream of energy 3. Customers will be depending on our product to be extremely reliable and not have many maintenance issues. 	Customer Segments  <ol style="list-style-type: none"> 1. Non-for profit companies helping 3rd world countries. 2. Disaster relief 3. Red cross 4. Entrepreneurs without borders 5. Camping and adventure clubs 6. Universities still a possibility
Cost Structure  <ol style="list-style-type: none"> 1. Development of panels to customers need 		Revenue Streams  <ol style="list-style-type: none"> 1. Customer is ultimately paying for energy 2. Willing to pay more for portability 3. willing to pay more for clean aspect 4. Willing to pay more for inexhaustible fuel source 5. Willing to pay more for durability. 		
Key Resources  <ol style="list-style-type: none"> 1. PV cell technology 		Channels  <ol style="list-style-type: none"> 1. Mainly non-profit organizations 2. Possibly Universities, at least for funding to start. 		

Business Model Canvas (Current)

Key Partners  1.Green Wifi 2. University of Illinois 3. Harlee Sorkin 4.Singleton Law Firm	Key Activities  1.Research and Development 2.Prototype Development	Value Propositions  1.Portable power 2.Renewable power with gas power hybrid 3. Sturdy design 4. Folding Panels 5. Provide clean power where there is no on grid power supply. 6. Allows for less fuel consumption	Customer Relationships  1.Customers expect our product to be durable. 2. Customers expect our product to supply a constant stream of energy 3. Customers will expect both fuel sources to be extremely reliable and be able to switch from one to the other seamlessly.	Customer Segments  1.Non-for profit companies helping 3rd world countries. 2. Tech/Sustainability companies overseas 2. Disaster relief 3.Red cross 4. Entrepreneurs without borders 5.Camping and adventure clubs
Cost Structure  1.Financing plan based on companies needs	Key Resources  1.PV Technology 2. Hybrid Technology	Revenue Streams  1.Customer is ultimately paying for energy 2. Willing to pay more for portability 3. willing to pay more for clean aspect 4. Willing to pay more for inexhaustible fuel source 5. Willing to pay more for durability		

Team Qualifications

Paul Couston- Industrial Engineer, Solar Panel Experience

Mark Glassgow - Business Law, Experience working start-ups

Santiago Gutierrez - Computer Engineer, Wind Power Experience

John Showel - Mechanical Engineer, Management Experience

Jake Fava - Electrical Engineer, Circuits Systems Experience

What We Need Still

Further research and development

Funding for materials to build prototype

Need the skills to combine gas and solar power

Credibility as a company



Questions or Comments?



Post TE 250



COZAD 2016



COZAD COMPETITION

THE NEXT GENERATION OF **ENTREPRENEURS**





Team History

Founded in a TEC class

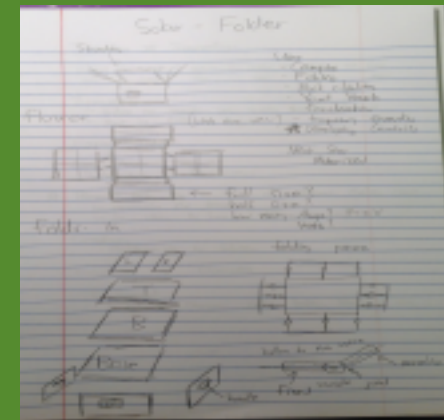
Originally an all solar generator

Modified due to potential customer feedback

Changed product model to a hybrid design

Done to increase power output and reliability

Moved to a complete retrofit design



Team

Paul Couston (Director, Co-founder)

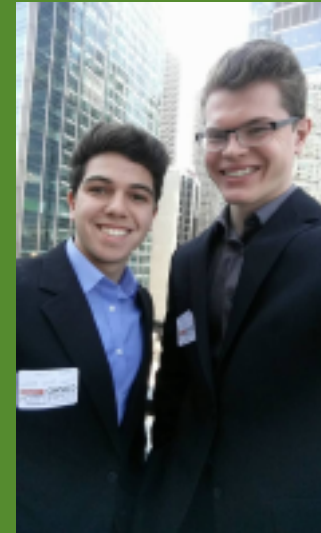
- Pursuing Industrial Engineering degree (undergraduate)
- President of the Student Sustainability Committee
- Manages 1.1 million dollars annually (largest college green fund in the USA)
- Start-up Experience (sales and marketing)
- Business Management

Nathan Franczyk (Co-founder)

- Pursuing Electrical Engineering Degree (undergraduate)
- Specialization in power systems
- Computer aided designs and computer programming experience.
- Experience in electrical systems and processes

Harlee Sorkin (Advisor)

- Mentor and Guidance
- Emphasis on business formation, capitalization, product and customer
- NSF I-Corps program instructor/Entrepreneur-in-Residence at EnterpriseWorks



Product Technology

3 panel foldable solar array

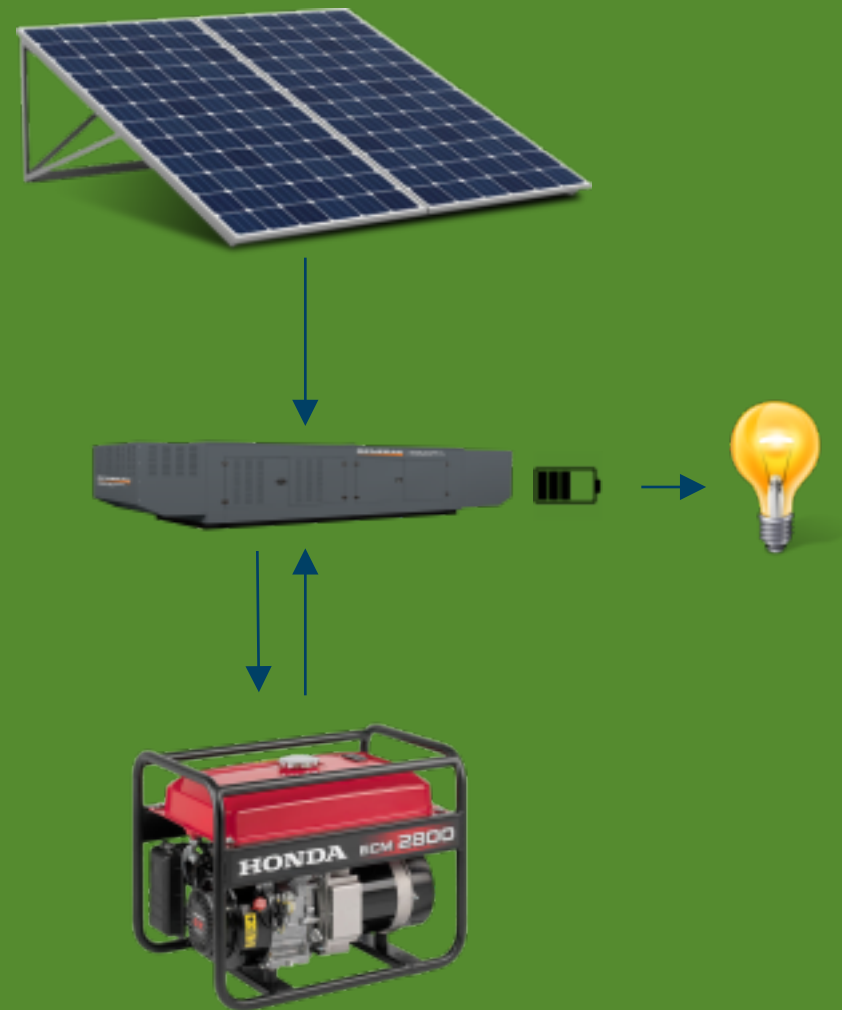
Charging system

Battery

Voltage regulation










Automated electric start

Needs less gasoline to supply the same
amount of power





Flower Power Energy Business Model Canvas

Key Partners  1.University of Illinois 2.TEC 3. Harlee Sorkin 4.Singleton Law Firm 5. I-venture at Enterprise Works	Key Activities  1. Further research and development 2. Prototyping and design 3. Licensing Key Resources  1.Designers and engineers 2.Sales and outreach team 3. IP and Trademarking	Value Propositions  1. Competitive edge to gas generator companies 2. Environmental Impact 3. Clean power connotation 4.Portable and reliable 5.Rugged and durable	Customer Relationships  1. Return/refund policy 2. Sponsorship on website 3. Mutual manufacturer Channels  1. Licensing 2.Royalties	Customer Segments  1.Gas generator companies 2. Gas generator manufacturers
Cost Structure  1. Research and development 2. Prototyping parts 3. Marketing/ Customer Acquisition		Revenue Streams  1. Licensing and Royalties 2. Variable between 5% to 15%		

Financial Projections (3 Years)

Year	2016	2017	2018	2019
Opening Cash				
<i>Opening Balance</i>	\$ -	\$ (7,700.00)	\$ (11,750.00)	\$ 29,650.00
Revenues				
<i>Units Retrofited (added \$400 to produce)</i>	\$ -	150	1,000	4,000
<i>Licensing at 9% per unit</i>	\$ -	\$ 17,550.00	\$ 117,000.00	\$ 468,000.00
<i>Gross Profit:</i>	\$ -	\$ 17,550.00	\$ 117,000.00	\$ 468,000.00
Operating Expenses				
Wages/Salaries	\$ -	\$ (10,000.00)	\$ (40,000.00)	\$ (100,000.00)
Prototyping/Development	\$ (25,000.00)	\$ (8,000.00)	\$ (4,000.00)	\$ (2,000.00)
IP	\$ (2,000.00)	\$ (40,000.00)	\$ (10,000.00)	\$ (10,000.00)
Advertising/Customer Acquisition	\$ -	\$ -	\$ (5,000.00)	\$ (10,000.00)
Legal Services	\$ (1,000.00)	\$ (5,000.00)	\$ (5,000.00)	\$ (5,000.00)
Accounting		\$ (3,600.00)	\$ (3,600.00)	\$ (3,600.00)
Rent	\$ -	\$ -	\$ (9,000.00)	\$ (9,000.00)
Debt Service	\$ -	\$ -	\$ (4,000.00)	\$ (15,000.00)
<i>Total Expenses:</i>	\$ (28,000.00)	\$ (66,600.00)	\$ (80,600.00)	\$ (154,600.00)
Financing Activities				
Owners Investment	\$ 300.00	\$ 5,000.00	\$ 5,000.00	\$ -
Loans (Family)	\$ -	\$ 25,000.00	\$ -	\$ -
Crowd Funding	\$ -	\$ 5,000.00	\$ -	\$ -
Grants	\$ 20,000.00	\$ 10,000.00	\$ -	\$ -
<i>Total Financing Activities:</i>	\$ 20,300.00	\$ 45,000.00	\$ 5,000.00	\$ -
Ending Cash				
<i>Closing Balance</i>	\$ (7,700.00)	\$ (11,750.00)	\$ 29,650.00	\$ 343,050.00

Market Size

Domestic Market

TAM - People with Gas Generators

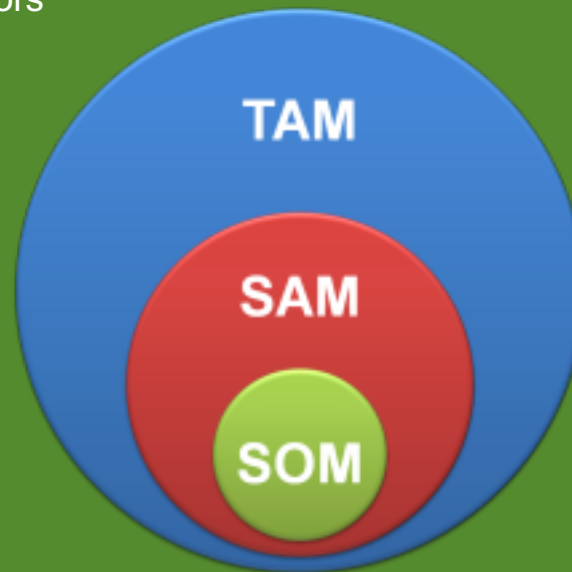
- 2.58 million generators

SAM - People who use their gas generators frequently

- 600,000 generators

SOM - People who use enough gasoline to have it factor into everyday operations.

- 300,000 units



Top 10 Gas Generator Companies 2016

- Honda
- Yamaha
- Sportsman Series
- Westinghouse
- Champion Power
- Briggs and Stratton
- WEN
- Generac
- Honeywell
- All-Power America

Target Customer Segments

Portable Generator Companies

Licensing, Royalties, Future Partnership

Work closely with generator manufacturers

Give competitive edge over other gas generators



Competition

	<i>Wagan</i>	<i>Goal Zero</i>	<i>Black Sapphire</i>	Flower Power Energy
Waterproof/ Durable	NO	NO	YES	YES
High Soar Output	NO	NO	YES	YES
Highly Portable	YES	YES	NO	YES
Affordable	YES	YES	NO	YES
Mounted to Current Systems	NO	NO	NO	YES

Milestones

August 2015 - Flower Power Energy was founded

December 2015 - The Flower Power Energy team built a fully functional solar ar

Spring 2016 - Flower Power Energy enters Cozad Competition

April 2016 (Anticipated) - Patent filed for the retrofit

April 2017 (Anticipated) - First prototype completed

May 2017 (Anticipated) - First order placed through licensing deal

2019 (Anticipated) - Over 5,000 units retrofitted



