Main Takeaways from this Class

Learned the technical skills of founding/running a business

Find the solution from the CUSTOMER

It's 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
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

User
- Camp
- Field"is
- Backpacking
- Yard Work
- Construction

(fold one way)
- Frequency
- Develop Countries

Next Step
- Motorized

- Full size?
- Half size?
- How many Angles? P=TV
- Wall?

folds in

Base

hollow hole for wire
metal
handle
fixed swivel joint

folding pieces
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 money”
Current Market

- SolarCraft (No gas)
- Ascot (Stationary)
- Black Saphire (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.

**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)

<table>
<thead>
<tr>
<th>Key Partners</th>
<th>Key Activities</th>
<th>Value Propositions</th>
<th>Customer Relationships</th>
<th>Customer Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1. Portable power</td>
<td>1. Customers expect our product to be durable.</td>
<td>1. Non-for profit companies helping 3rd world countries.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Renewable power</td>
<td>2. Customers expect our product to be durable.</td>
<td>2. Disaster relief</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Sturdy design</td>
<td>3. Customers will be depending on our product to be extremely reliable and not have many maintenance issues.</td>
<td>3. Red cross</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Folding Panels</td>
<td>4. Customers will be depending on our product to be extremely reliable and not have many maintenance issues.</td>
<td>4. Entrepreneurs without borders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Provide clean power where there is no on grid power supply.</td>
<td>5. Customers will be depending on our product to be extremely reliable and not have many maintenance issues.</td>
<td>5. Camping and adventure clubs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. No need for external fuel source</td>
<td>6. Customers will be depending on our product to be extremely reliable and not have many maintenance issues.</td>
<td>6. Universities still a possibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Investment pays for itself over time with savings from fuel.</td>
<td>7. Investment pays for itself over time with savings from fuel.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Resources</th>
<th>Channels</th>
<th>Customer Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PV cell technology</td>
<td>1. Mainly non-profit organizations</td>
<td>1. Non-for profit companies helping 3rd world countries.</td>
</tr>
<tr>
<td></td>
<td>2. Possibly Universities, at least for funding to start.</td>
<td>2. Disaster relief</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Red cross</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Entrepreneurs without borders</td>
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<td></td>
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<td></td>
<td>6. Universities still a possibility</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost Structure</th>
<th>Revenue Streams</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Development of panels to customers need</td>
<td>1. Customer is ultimately paying for energy</td>
</tr>
<tr>
<td></td>
<td>2. Willing to pay more for portability</td>
</tr>
<tr>
<td></td>
<td>3. Willing to pay more for clean aspect</td>
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<tr>
<td></td>
<td>4. Willing to pay more for inexhaustible fuel source</td>
</tr>
<tr>
<td></td>
<td>5. Willing to pay more for durability.</td>
</tr>
</tbody>
</table>
Business Model Canvas (Current)

<table>
<thead>
<tr>
<th>Key Partners</th>
<th>Key Activities</th>
<th>Value Propositions</th>
<th>Customer Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. University of Illinois</td>
<td>2. Prototype Development</td>
<td>2. Renewable power with gas power hybrid</td>
<td>2. Customers expect our product to supply a constant stream of energy</td>
</tr>
<tr>
<td>3. Harlee Sorkin</td>
<td></td>
<td>3. Sturdy design</td>
<td>3. Customers will expect both fuel sources to be extremely reliable and be able to switch from one to the other seamlessly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Provide clean power where there is no on grid power supply.</td>
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<td></td>
<td></td>
<td>6. Allows for less fuel consumption</td>
<td></td>
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<tr>
<td>Key Resources</td>
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<td></td>
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</tr>
<tr>
<td>1. PV Technology</td>
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<td></td>
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<tr>
<td>2. Hybrid Technology</td>
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<tr>
<td>Customer Segments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Non-for profit companies</td>
<td></td>
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<tr>
<td>2. Tech/Sustainability</td>
<td></td>
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<tr>
<td>3. Disaster relief</td>
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<tr>
<td>4. Red cross</td>
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<td>5. Entrepreneurs without</td>
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<tr>
<td>6. Camping and adventure</td>
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<tr>
<td>Cost Structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Financing plan based on</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>companies needs</td>
<td></td>
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<td></td>
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<tr>
<td>Revenue Streams</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Customer is ultimately</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>paying for energy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Willing to pay more for</td>
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<td></td>
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</tr>
<tr>
<td>portability</td>
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<tr>
<td>3. Willing to pay more for</td>
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<tr>
<td>clean aspect</td>
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<tr>
<td>4. Willing to pay more for</td>
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<tr>
<td>inexhaustible fuel source</td>
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</tr>
<tr>
<td>5. Willing to pay more for</td>
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<td></td>
</tr>
<tr>
<td>durability</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
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
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

Customer Segments
1. Gas generator companies
2. Gas generator manufacturers

Channels
1. Licensing
2. Royalties

Revenue Streams
1. Licensing and Royalties
2. Variable between 5% to 15%

Cost Structure
1. Research and development
2. Prototyping parts
3. Marketing/ Customer Acquisition
## Financial Projections (3 Years)

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opening Cash</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening Balance</td>
<td>$ -</td>
<td>$ (7,700.00)</td>
<td>$ (11,750.00)</td>
<td>$ 29,650.00</td>
</tr>
<tr>
<td><strong>Revenues</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units Retrofitted (added $400 to produce)</td>
<td>$ -</td>
<td>150</td>
<td>1,000</td>
<td>4,000</td>
</tr>
<tr>
<td>Licensing at 9% per unit</td>
<td>$ -</td>
<td>$ 17,550.00</td>
<td>$ 117,000.00</td>
<td>$ 468,000.00</td>
</tr>
<tr>
<td><strong>Gross Profit:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$ -</td>
<td>$ 17,550.00</td>
<td>$ 117,000.00</td>
<td>$ 468,000.00</td>
</tr>
<tr>
<td><strong>Operating Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wages/Salaries</td>
<td>$ (25,000.00)</td>
<td>$ (8,000.00)</td>
<td>$ (4,000.00)</td>
<td>$ (2,000.00)</td>
</tr>
<tr>
<td>Prototyping/Development</td>
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<td>$ (40,000.00)</td>
<td>$ (10,000.00)</td>
<td>$ (10,000.00)</td>
</tr>
<tr>
<td>IP</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Advertising/Customer Acquisition</td>
<td>$ (1,000.00)</td>
<td>$ (5,000.00)</td>
<td>$ (5,000.00)</td>
<td>$ (5,000.00)</td>
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<tr>
<td>Legal Services</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Accounting</td>
<td>$ -</td>
<td>$ (3,600.00)</td>
<td>$ (3,600.00)</td>
<td>$ (3,600.00)</td>
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<tr>
<td>Rent</td>
<td>$ -</td>
<td>$ -</td>
<td>$ (9,000.00)</td>
<td>$ (9,000.00)</td>
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<tr>
<td>Debt Service</td>
<td>$ -</td>
<td>$ -</td>
<td>$ (4,000.00)</td>
<td>$ (15,000.00)</td>
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<tr>
<td><strong>Total Operating Expenses:</strong></td>
<td>$ (28,000.00)</td>
<td>$ (66,600.00)</td>
<td>$ (80,600.00)</td>
<td>$ (154,600.00)</td>
</tr>
<tr>
<td><strong>Financing Activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owners Investment</td>
<td>$ 300.00</td>
<td>$ 5,000.00</td>
<td>$ 5,000.00</td>
<td>$ -</td>
</tr>
<tr>
<td>Loans (Family)</td>
<td>$ -</td>
<td>$ 25,000.00</td>
<td>$ -</td>
<td>$ -</td>
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<tr>
<td>Crowd Funding</td>
<td>$ -</td>
<td>$ 5,000.00</td>
<td>$ -</td>
<td>$ -</td>
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<tr>
<td>Grants</td>
<td>$ 20,000.00</td>
<td>$ 10,000.00</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td><strong>Total Financing Activities:</strong></td>
<td>$ 20,300.00</td>
<td>$ 45,000.00</td>
<td>$ 5,000.00</td>
<td>$ -</td>
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<tr>
<td><strong>Ending Cash</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closing Balance</td>
<td>$ (7,700.00)</td>
<td>$ (11,750.00)</td>
<td>$ 29,650.00</td>
<td>$ 343,050.00</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th></th>
<th>Wagan</th>
<th>Goal Zero</th>
<th>Black Sapphire</th>
<th>Flower Power Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterproof/Durable</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>High Soar Output</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Highly Portable</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Affordable</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Mounted to Current Systems</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>
Milestones

August 2015 - Flower Power Energy was founded

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

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