

**A hybrid solar thermal technology that is 4x as powerful as traditional options**



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## Highlights

- 1 **LEADING TECHNOLOGY:** PP Technology captures 75% of sun's energy vs 20% for traditional solar tools
- 2 **READY FOR MARKET:** The PP product has 10+ years of R&D behind it and multiple test case studies
- 3 **REVENUE:** \$20M Annual Revenue projected by 2025 (not guaranteed)
- 4 **DIVERSIFIED VERTICALS:** Industrial | Commercial | Agriculture | Military | Residential | Resorts
- 5 **PROFITABILITY:** Project On-Going Gross Margins around 45% (not guaranteed)
- 6 **IMPACT:** PP has committed to donating 5% of gross profits to disaster relief needs globally
- 7 **COMPACT:** 40% smaller than traditional PV with 750W output
- 8 **Made in the USA, Patented Globally**

## Our Team



**Rob Kornahrens** CEO - Visionary / Angel Investor

Rob is Founder, President & CEO of Advanced Roofing, Inc, one of the top 10 Commercial Roofing Contractors in the US. Rob founded Advanced Green Technologies (AGT) and has grown it to be the leading commercial rooftop solar contractor in Florida.



**Steven Holtzman**



**Garth Schultz** COO - Founder / Inventor

Garth has over 25 years of experience in design, development, and manufacturing of proprietary intellectual properties to the solar, OEM Automotive (including CNG alternative fuels), defense, and RV industries.

## Pitch



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**POWERPANEL**

## Why POWERPANEL?

With the environmental demand for decreasing carbon emissions and consumers' need for access to affordable electricity and hot water, Power Panel provides unmatched and patented PVT Technology:

### Primary Advantages of Power Panel:

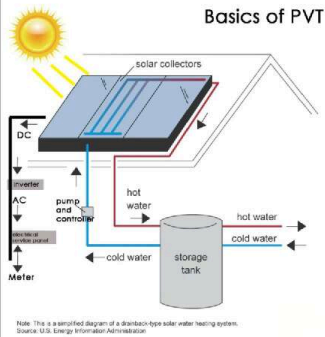
1. **Energy Capture** - Maximizes the sun capture and generates energy streams of both electricity and hot water that are needed in industrial, commercial, agricultural and residential applications.
2. **Patents** - Hybrid collector and thermal storage technology patents issued in the USA, Canada, the EU, China, Japan, South Korea and Australia.
3. **Manufactured in the USA** - Made in the USA and has established partnerships in North and South America plus Asia to distribute and manufacture under license.
4. **Leading Thermal Performance** - Application specific high temperature capable plastics, insulating foams, silicone adhesives and silicone solar cell encapsulants make

up the PVT1, a module that produces electrical energy on par with a standard PV module plus thermal output equivalent to that of a top rated glazed thermal collector.

**PVT captures 75% of the sun's energy vs. 20% for PV only.**

Solar thermal power/electric generation systems collect and concentrate sunlight to produce the high temperature heat needed to generate electricity and hot water for applications including:

- Off-grid Military Operations
- Construction + Mining Sites
- Hotels + Resorts
- Residential + Rural Communities
- Swimming Pools
- Disaster Relief Efforts

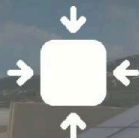


**POWERPANEL**

## What is **POWERPANEL**?

With Power Panel, the future of energy is today.

Power Panel's unique technology takes solar thermal energy to the next level with patented thermal technology 4X as powerful as PV, capturing 80% of the sun's energy PLUS:



Compact -  
40% less space  
than PV with  
750W output



Designed for  
easy mobility  
and onsite  
deployment



Simple  
Installation:  
Easy + efficient  
assembly



Eligible for  
Green Loan  
Program and  
ITC 26%

\*Competitively Priced and Green Loan Program Eligible; qualifies for US Federal Investment Tax Credit (ITC) of 26% at 100% depreciation

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## REVENUE FORECAST

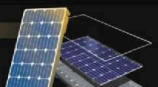
**POWERPANEL**

		2021	2022	2023	2024	2025	5 Year Total
 <b>PVT1</b>	Units Sold	5,110	5,475	6,844	8,555	10,693	36,677
	Revenue	\$3,679,200	\$3,843,450	\$4,681,125	\$5,705,977	\$6,950,684	\$24,860,436
 <b>Gen-2-O</b>	Units Sold	158	203	304	456	683	1,804
	Revenue	\$1,181,250	\$1,518,750	\$2,278,125	\$3,417,188	\$5,125,781	\$13,521,094
 <b>PVT2</b>	Units Sold		1,800	2,700	4,050	6,075	14,625
	Revenue		\$1,374,930	\$2,062,395	\$3,093,593	\$4,640,388	\$11,171,307
 <b>Thermal Edge Storage Tanks</b>	Units Sold	434	744	1,484	2,972	5,940	11,574
	Revenue	\$233,752	\$400,718	\$799,282	\$1,600,719	\$3,199,284	\$6,233,755
<b>Royalty &amp; Licensing Agreements</b>							
	Revenue		\$1,440,000	\$2,140,000	\$1,110,000	\$1,393,500	\$6,083,500
<b>Total Income</b>		<b>\$5,054,202</b>	<b>\$8,577,848</b>	<b>\$11,960,927</b>	<b>\$14,927,476</b>	<b>\$21,309,638</b>	<b>\$61,870,091</b>
<b>Gross Margin</b>		<b>35%</b>	<b>46%</b>	<b>47%</b>	<b>41%</b>	<b>49%</b>	

*\*The above slide contains forward looking projections and are not guaranteed.*

### THE POWER PANEL®

The Power Panel® module revolutionizes solar technology by combining it with thermal harvesting. Traditional solar panel efficiency drops as heat rises, but the Power Panel® offers elite





performance even in adverse conditions.



### GEN-2-O™ PORTABLE

Swift to deploy, this compact device sets up in less than an hour, making it a frontline choice for emergency response teams and military support. With so many parts of our world still lacking in hot water and basic electricity, the Gen-2-O is an ideal candidate for supporting aid in developing nations.



### THERMAL EDGE™ STORAGE

Power Panel®'s patented thermal storage tanks enhance solar technology by offering a second way to save resources and money: hot water. Our unique solar thermal hybrid technology uses a cooling system to keep The Power Panel® modules operating at peak efficiency.



### TURNKEY ARRAYS

Two groundbreaking technologies are better than one. You can save twice as much when compared to traditional solar panels with one of Power Panel®'s unique solar thermal hybrid complete turnkey systems.



## PRODUCT LINE

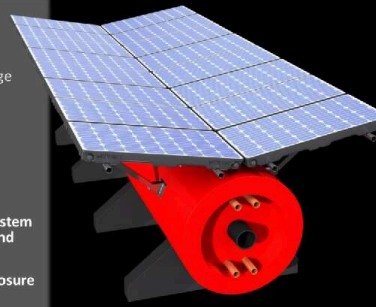
**Key Product Advantages:**

- Top-rated PVT panel with unmatched efficiency
- World's leading battery for thermal storage
- The only portable + electrical thermal generator on the market (Gen-2-O)
- Custom engineered solutions

## FUTURE PRODUCTS

### Products




- **Ice Storage**
  - Utilize existing patented thermal storage tanks to facilitate thermal cooling (air conditioning)
- **Large-scale Custom Commercial Solutions**
- **Water Purification System**
- **Wind Turbines for existing Solar Tracking system to produce 8x more energy output from wind**
- **Lithium batteries included in patented enclosure for easy deployment**
- **Glass on Glass panel for thermal only**
  - Opens opportunity to take 10% of existing thermal market



# POWERPANEL®

## POWERPANEL® VS. COMPETITION

**Up to 67% More Power**  
**Save up to 25% per watt vs. competition**

PRODUCT	PRICE
<b>POWERPANEL®</b>	\$2.20 per watt <i>(installed cost)</i>
 <b>COOLPV™</b>	\$2.95 per watt
 <b>GFAFCO</b>	
 <b>UNDRUM</b>	\$2.95 per watt

Source: Energy Sage

### Top 20 Markets for Power Panel

Leading potential markets identified and based upon electrical pricing; natural gas consumption; solar irradiance; population density are as follows:

1. Mexico	6. Egypt	11. Algeria	16. Japan
2. India	7. Australia	12. Spain	17. Portugal
3. Brazil	8. Kenya	13. Philippines	18. Iran
4. Pakistan	9. Thailand	14. Nigeria	19. S. Africa
5. United States	10. Malaysia	15. Guatemala	20. Italy

Additional Regions of Interest: Jamaica - Barbados - Bermuda

# POWERPANEL®

Power Panel provides an ideal energy and

## Global Market

not water solution for regions with one or a combination of the following identifying factors:

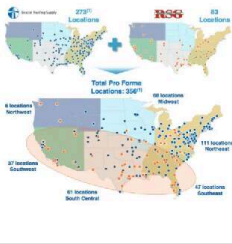
- High Population Density
- High Solar Irradiance
- High Electricity Rates
- Low Natural Gas Consumption

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### SALES CHANNELS

- **International Distributor/Partner**  
Partial manufacturing by Power Panel and partner
- **Distributor/Partner**
  - AET
  - Beacon
- **Royalty Agreement Partner**  
Manufactures with Power Panel's IP for royalty
- **Power Panel Sales Team**

#### Domestic Distributor



Sales Team

#### International Distributor



Royalty Agreement

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#### International Distributors

- **RECH**
  - 520 Dedicated Employees
  - 26 Years of Experience in Brazil
  - Annual Revenue: \$200M per year (importer/distributor)
- **Attack Audio Systems**
  - 250 Dedicated Employees
  - ~35 Years of Experience in Brazil
  - Annual Revenue: \$110M per year (mfr./distributor)
- **Region-specific Website:**  
<https://br.powerpanel.com>



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#### Domestic Distributors

- **Beacon**
  - 7,000+ Dedicated Employees
  - 90+ Years of Experience
  - Annual Sales: \$7B+ (2018)
- **AET**
  - 60+ Dedicated Employees, 400 Independent Dealers
  - 45 Years of Experience
  - Annual Revenue: \$10M+ (source: Solar World)



"As a supplier that has existing relationships with top tier industry leaders such as Advanced Roofing and Advanced Green Technologies, we have a high standard to meet with our products and service to our customers. We are proud to offer Power Panel's innovative technology, enabling contractors to provide high-quality, sustainable and energy efficient solutions for commercial and residential projects."  
— Ben Handley, Beacon

"Alternate Energy Technologies (AET), a pioneer in solar thermal manufacturing and solutions, is excited to partner with Power Panel to distribute its groundbreaking energy solutions through its network of factory authorized dealers. Power Panel will be a game changer for our dealers and partners."

— Peter Voghel, Chairman (AET)

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### Royalty/Licensing Agreements

- 3-5% Royalty/Licensing Fee
- International Opportunities Only
- ~\$6 Million in Revenue – 5-year projection

### India Opportunity

- Over 100 Years of Experience in India
- Distribution Outlets: 3 Continents
- Company Revenue: \$28+ per year
- Royalty Fee in Negotiation for India distribution
- Revenue Forecast Not Included
- Projected Start Date: 2022
- New Manufacturing Plant in Process
- Modules in Test Phase
- PVT2 Module in Co-development – cost reduction + installation efficiency for Southeast Asia Market
- Region-specific Website: <https://in.powerpanel.com>

### Additional Opportunities

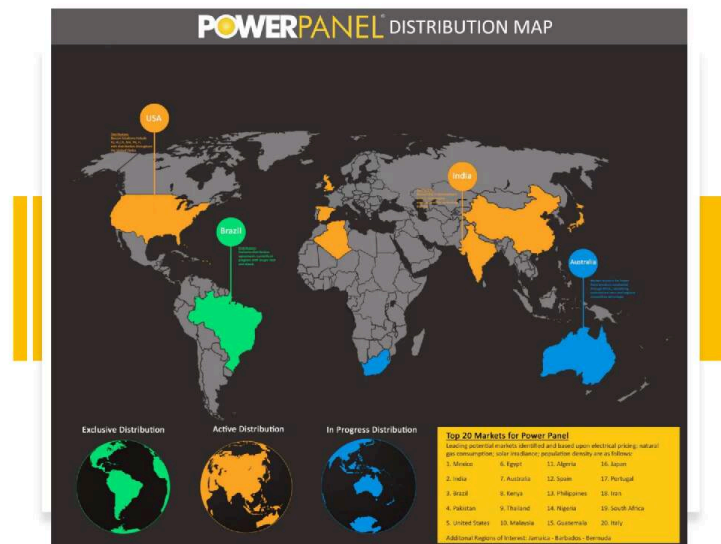
- Brazil – Current manufacturer for balance of systems parts
- Mexico – Seeking partners in Mexico to commence 2023

*\*The above slide contains forward looking projections and are not guaranteed.*

## Target Verticals

1. Multi-Residential Housing (Int'l High-rise Urban)
2. Hotel Industry
3. Energy Savings Contracts
4. Military Contracts
5. NGO Contracts
6. Construction/Mining Sites
7. Industrial Commercial Agriculture
8. Multi-Residential Housing (Domestic/US Condos)
9. Commercial Pools
10. Residential

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## POWERPANEL

### DISTRIBUTOR TESTIMONIALS

Power Panel is an innovative technology that arrives in Brazil with a great mission, to expand the way of using the sun to heat water with durability and excellence, under a performance never seen before. It is a hybrid system that generates electricity while promoting adequate water heating. This is technology! " - Erick Viera, President

"Renewable Energy is the best investment to be made in Brazil these days. Bringing Power Panel products will open up even more business opportunities. It is a unique system, off and on grid, generating

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electricity and thermal energy. The best of the both worlds!!" - Gilberto Rech, President



Power Panel is coming to facilitate my installations, two solutions using only one system: pool heating and domestic water - Just what we needed!" - Alessandro Lopes, President

"Power Panel is easy to assemble and professional in its performance. Power Panel makes the sun more efficient"

- Antton Azpiazu, Técnicas del Agua y del Sol



## Executive Team

## POWERPANEL®

### Rob Kornahrens, Visionary/Angel Investor



Rob received his BS in Business Administration from the University of Arizona in 1979. Robert is the Founder, President, and CEO of Advanced Roofing, Inc., headquartered in Fort Lauderdale, Florida. Advanced Roofing has nearly 40 years of commercial roofing experience; the company has been listed as one of the top 10 Commercial Roofing Contractors in the United States and #1 in Florida. Currently, Advanced Roofing has seven branches throughout the State of Florida and employs more than 500 people.

In 2007, Rob started Advanced Green Technologies (AGT) as a solar distributor for a thin film solar panel, while starting his solar contracting business simultaneously. Today, AGT is the top commercial rooftop solar contractor in the State of Florida, having installed over 250 MW of solar systems and ranked #1 Solar EPC in Florida by Solar Power World (2020). Mr. Kornahrens was recently noted as one of the most powerful people in Broward County Florida by Gold Coast Magazine.

### Garth Schultz, Founder/Inventor



Co-Founder and President of Power Panel, Garth received his Bachelors of Science in Mechanical Engineering from the University of Saskatchewan in 1984. An entrepreneur with over 25 years engineering and management experience in design, development, and manufacturing of proprietary intellectual properties to the solar, OEM Automotive (including CNG alternative fuels), defense, and RV industries. Leads the multi-disciplinary team delivering the Power Panel solar renewable energy systems including power generation, thermal storage, and controls.



## POWER PANEL TEAM



## GLOBAL IMPACT

## POWERPANEL® Donates 5% of Gross Profits



- 5-Year Value = \$1.5 Million
- Humanitarian Relief provided through distribution of Gen-2-O to NGOs/nonprofit partners for:
  - Disaster Recovery
  - Hurricane Relief & Preparedness
  - Emergency Aid
- Gen-2-O provides on-demand electricity and hot water for immediate use:
  - Space heating/cooling
  - Hot showers and cleaning
  - Cooking
  - Charging phones and computers



\*Donation in form of Gen-2-O. Program will begin once Power Panel reaches forecasted positive net profitability.

\*The above slide contains forward looking projections and are not guaranteed.

## SALES OVERVIEW

### Trailing Sales (last 12 months)

- Cleveland Project Q4-2019: 96 units, \$101k

### Sales Pipeline \$4 Million

- RECH Deal – 500 units (immediate), plus 240/month starting June 2021
- 2 Large US Solar Providers: 500 units each in 2021 (1,000 units total)


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## Topline P&L

Income	2021	2022	2023	2024	2025
Product Sales	\$5,094,202	\$7,137,848	\$9,820,927	\$13,817,476	\$19,918,138
Royalty Payments	\$0	\$150,000	\$850,000	\$1,110,000	\$1,393,500
Licensing Fees	\$0	\$1,290,000	\$1,290,000	\$0	\$0
<b>Total Income</b>	<b>\$5,094,202</b>	<b>\$8,677,848</b>	<b>\$11,960,927</b>	<b>\$14,927,476</b>	<b>\$21,309,638</b>
Cost of Sales	\$3,324,967	\$4,635,503	\$6,332,889	\$8,851,765	\$12,697,334
<b>Gross Profit</b>	<b>\$1,769,236</b>	<b>\$3,942,346</b>	<b>\$5,628,038</b>	<b>\$6,075,711</b>	<b>\$8,612,304</b>
Gross Margin	35%	46%	47%	41%	40%
<b>Selling, General &amp; Administrative Costs</b>	<b>\$1,151,352</b>	<b>\$2,118,399</b>	<b>\$2,663,005</b>	<b>\$2,870,456</b>	<b>\$3,663,215</b>
<b>Operating Income (EBIT)</b>	<b>\$617,883</b>	<b>\$1,823,947</b>	<b>\$2,965,033</b>	<b>\$3,205,255</b>	<b>\$4,949,089</b>
Operating Margin	12%	21%	25%	21%	23%
Net Changes in Working Capital	\$1,136,740	\$203,108	-\$321,367	-\$485,422	-\$705,509
Capital Expenditures	\$625,000	\$330,000	\$100,000	\$100,000	\$100,000
Capital Contribution	\$2,270,034	\$0	\$0	\$0	\$0
<b>Unlevered Free Cash Flow</b>	<b>\$1,126,178</b>	<b>\$1,697,055</b>	<b>\$2,543,667</b>	<b>\$2,619,833</b>	<b>\$4,140,580</b>
Debt Service	\$0	\$0	\$0	\$0	\$0
<b>Levered Free Cash Flow</b>	<b>\$1,126,178</b>	<b>\$1,697,055</b>	<b>\$2,543,667</b>	<b>\$2,619,833</b>	<b>\$4,140,580</b>
Cash at Beginning of Period	\$23,494	\$1,149,671	\$2,848,726	\$5,390,393	\$8,010,225
<b>Cash at End of Period</b>	<b>\$1,149,671</b>	<b>\$2,848,726</b>	<b>\$5,390,393</b>	<b>\$8,010,225</b>	<b>\$12,150,806</b>

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\*The above slide contains forward looking projections and are not guaranteed.



Hard Rock Hotel Punta Cana

## Investment Ask

- \$2 Million for 20% Equity
  - Private Offering
  - WeFunder
- Capital to be utilized for:
  - Working Capital – 50%+
  - Management Team
  - Sales and Marketing Team
  - Operational Overhead (3 months)

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# Appendix

- Case Studies
- Product Performance
- About BASF
- Power Panel Patents
- History of Solar Thermal
- PV vs. PVT
- Background – Power Panel PVT
- Thermal Storage Tanks
- Energy CIO Insights Article

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## Windward Passage Hotel – Charlotte Amalie, St. Thomas USVI

### Proposal:

The project proposal includes a 64 panel system to be installed on the roof of the Windward Passage Hotel. Thermal storage specified for the project is equivalent to 362 kWh.

### Outcomes:

Assuming a constant electric utility rate of 0.40 \$/kWh, the annual gross savings of the system is \$38,081, with an ROI of 2.02 years and IRR of 51.3%. When factoring in O&M costs, the 10 year revenue is \$437,052 and 25 year revenue is \$1,136,923. The 64 panel system will save the Windward Passage Hotel \$37,921 in the first year, resulting in a lifetime savings of \$1,016,797 over 25 years.\*

\*Based on electric utility costs available in St. Thomas



**Project:** Windward Passage Hotel  
**Location:** Charlotte Amalie, St. Thomas USVI  
**System:** 64 Panel Solar Thermal Array  
**Hot Water Usage (gal/day):** 2,051  
**Hot Water Thermal Consumption (kWh/month):** 8,993  
**Current Installation:** 16 Panels (Phase I)

**Windward Passage Hotel**  
 System Specifications:  
 64 PVT1 Thermal Modules with 3,600 gallons of thermal storage  
 20,400 lbs. Thermal  
 6,000 lbs. Electrical



## CASE STUDY: Windward Passage Hotel

- Location: Charlotte Amalie, St. Thomas
- Alternative: 40¢/kWh
- Water usage: 2,051 gallons/day
- Thermal consumption: 8,993 kWh/month
- ROI: 2 years
- IRR: 51.3%

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**Project:** Lighthouse Point Residence  
**Location:** Lighthouse Point, Florida  
**Modules:** 14 PVT1 (2x7 arrays – 3 LPM/module)  
**Outdoor Pool Heating:** 10,000 Gallons  
**Additions:** AquaCal 175 Air/Water Heat Pump

**Lighthouse Point Residence**  
 System Specifications:  
 14 PVT1 Thermal Modules with 350 gallons of thermal storage  
 10,000 lbs. Thermal  
 1,000 lbs. Electrical



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### Residence – Lighthouse Point, Florida

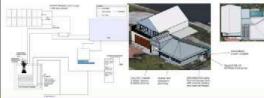
#### Proposal:

The project proposal includes a 14 panel PVT system and a 350-gallon Power Panel Thermal Edge storage tank with internal passive loop heat exchanger to be installed at a residence in Lighthouse Point, Florida.

The objective of the installation is to reduce the electric bill and thermal costs for pool heat and domestic hot water in a single-family home.

#### Outcomes:

The 14 panel system will cover 80.1% of thermal demand and offset 100% of the annual electrical energy demand. The ROI for the system is 9.3 years.



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## CASE STUDY: Lighthouse Point Residence

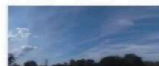
- Location: Lighthouse Point, Florida
- Modules: 14 PVT1 panels
- Thermal Storage: 350 gallons
- AquaCal Capacity: 74,000 BTU/hour
- ROI: 9.3 years

## CASE STUDY: J. Spang Building

- Savings from Tax Credit/Incentives: 45%
- 25-year Total Savings: \$155,392



**Project:** J. Spang Building  
**Location:** Cleveland, Ohio  
**System:** 96 Panel Solar Thermal Array  
**Estimated Electrical Consumption (kWh/day):** 1,260  
**Estimated Thermal Consumption (kWh/day):** 375  
**Average Tank Temperature (F):** 95 degrees





#### J. Spang Building

System Specifications:  
96 PVT Hybrid Modules with 2,500 gallons of thermal storage  
60.7kW Thermal  
12.5kW electrical



POWERPANEL



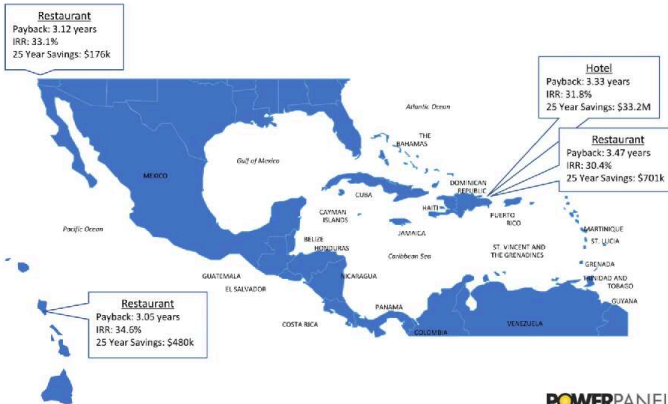
**Project:** Corner Brewery  
**Location:** Ypsilanti, Michigan  
**System:** 144 Panel PVT Generation I  
**Thermal Yearly Outputs:**  
19,000 kWh AC | 79,000 kW Thermal



Installation:  
Corner Brewery

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## PowerPanel: Resort and Restaurant Case Studies



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## PowerPanel: Designed for Performance and Deployability



#### System

- Smaller footprint than other solar thermal modules
- Plug and play i.e. no technical expertise required for install
- Can run at higher heat, as there is no copper in tubing/heat exchanger

#### Panel

- BASF material set
- Unpressurized system, lowers maintenance cost and # of failure points
- Embedded thermal capture, creates efficiencies and lower BOM
- No glycol, prevents loss in heat transfer increasing output ~15%
- Melts snow -> better winter performance

#### Tank

- Rapid deployment (<5 mins)
- No outside labor required
- All plastic construction enables internal and external placement with no corrosion

POWERPANEL

**BASF contributes to sustainable construction for the world's largest concentrated solar plant in Morocco**

Specialized solutions to secure the construction of the largest solar plant in the world

- Master Business Developer\* helps to ensure a durable and long service life for the solar sector plants

Overseas, Morocco, April 20, 2017 - Stage one of the three of state construction projects of the Noor solar collector was set to proceed in February 2016. Innovative materials from the BASF Construction Chemicals Division's global knowledge and experience are used in the construction of the concentrated solar power system - a new construction process to install the solar collector panels.



## BASF – Power Panel's First Partner

- Provided the NRE to develop the resin chemistry
- Contribution of \$40-50k for an unproven startup
- Enabled PowerPanel to operate both outside in UV light and underwater
- Developed racking
- PowerPanel has royalty free access to the technology

## POWERPANEL® Product Patents

Product	Patent #, Date	Country	Status
Power Panel	2701754, 13-Nov-2016	Canada	Granted
Hybrid Solar Panel	602080446506, 08-Jun-2016	Germany	Granted
Hybrid Solar Panel	2206160, 08-Jun-2016	European Patent Convention + France	Granted
Power Panel	8476522, 02-Jul-2013	United States of America	Granted
Photovoltaic Panel for Power Panel	201262313, 14-Jul-2016	Australia	Granted
Photovoltaic Panel for Power Panel	ZL 201280038237.8, 15-May-2018	China (People's Republic)	Granted
Photovoltaic Panel for Power Panel	602012040644.5, 06-Dec-2017	Germany	Granted
Photovoltaic Panel for Power Panel	2715800, 06-Dec-2017	European Patent Convention + United Kingdom	Granted
Photovoltaic Panel for Power Panel	6152096, 02-Jun-2017	Japan	Granted
Photovoltaic Panel for Power Panel	J/003217, 13-Nov-2018	Macau	Granted
Insulated Storage Tank	2752673, 17-Nov-2015	Canada	Granted
Insulated Storage Tank	ZL2010800170163, 12-Jun-2013	China (People's Republic)	Granted
Insulated Storage Tank	602010039794.7, 25-Jan-2017	Germany	Granted
Insulated Storage Tank	2398719, 25-Jan-2017	European Patent Convention + France	Granted
Insulated Storage Tank	5686746, 30-Jan-2015	Japan	Granted

## POWERPANEL® Product Patents (continued)

Product	Patent #, Date	Country	Status
Insulated Storage Tank	101617817, 27-Apr-2016	Korea, Republic of	Granted
Insulated Storage Tank	8381939, 26-Feb-2013	United States of America	Granted
POWER PANEL ASSEMBLY INCL. SOLAR PANEL + SOLAR THERMAL HEAT EXCHANGER, & METHOD FOR MAKING POWER PANEL ASSEMBLY	201814011652, 28-Mar-2018	India	Published
POWER PANEL ASSEMBLY INCL. SOLAR PANEL + SOLAR THERMAL HEAT EXCHANGER, & METHOD FOR MAKING POWER PANEL ASSEMBLY	15/888,297, 05-Feb-2018	United States of America	Published
AquaGrow Fish and Water Drop (Design Only)	Trademark 5625702, 11-Dec-2018	United States of America	Registered
Gen-2-O (stylized/design)	Trademark 88847100, 25-Mar-2020	United States of America	Published
Gen-2-O	Trademark 4487174	India	Registered
Gen-2-O	Trademark 919510493	Brazil	Registered
Power Panel	Trademark 5687756, 26-Feb-2019	United States of America	Registered
Power Panel	Trademark 919459048, 24-Mar-2020	Brazil	Published
Power Panel	Trademark 4487175, 7-May-2020	India	Pending
Power Panel (stylized/design)	Trademark 5597785, 30-Oct-2018	United States of America	Registered
Power Panel Logo	Trademark 919459064, 24-Mar-2020	Brazil	Published

## Background – Power Panel PVT Technology:

The idea of a hybrid solar collector that generates both electricity and thermal energy in a single module is not new. Several attempts by notable companies have been tried and most have failed due to the lack of thermal performance. These previous products attempted to adapt a thermal capture mechanism to a standard electrical producing Photovoltaic (PV) module with the result being little if any thermal energy generation from the collector.

To ensure that both electricity and thermal energy are delivered to full potential, a ground up design approach was taken by Power Panel. Application specific high temperature capable plastics, insulating foams along with silicone adhesives and silicone solar cell encapsulants are utilized to build the Power Panel PVT1 collector. The result is a module that produces electrical energy on par as a standard PV module plus thermal output as would be expected from a top rated glazed thermal collector.

In addition to the PVT1 Collector, Power Panel developed a thermal storage tank as the cornerstone technology of the Balance of System for engineered rooftop solutions. The thermal storage tank utilizes engineered foam sections that form the sidewall, base and tank lid. These foam sections are contained by an outer membrane hoop with working fluid (water) contained by a high temperature PVC liner. The design allows the tank to be located on a rooftop, under the PVT1 collector, or in basement or crawl space.



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