

Affordable, Sustainable & Modular

Solar Roof Solutions

Visaka Industries Ltd
Srujan Yeleti, General Manager

A T U M

Sustainability



The Inspiration



At VISAKA Industries, we are working on how innovations will help shape the world in areas such as sustainability and smart infrastructure while making them great places to live, work, and play.

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What we have achieved so far



More than 35 years of legacy



Listed on the Stock Exchange



13 Manufacturing Plants



4000+ Employees



1100 crores + in Revenue



Visaka Industries operates in the following businesses



Fiber cement boards
India's largest player



Textiles
The largest Twin Airjet spinner in the country



ATUM
India's 1st Electric roof

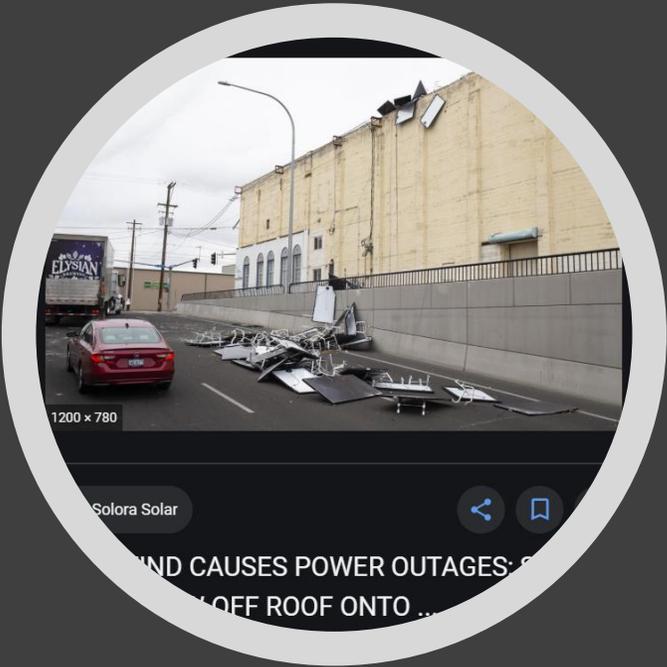


Cement Roofing Sheets
India's 2nd largest player



While the entire construction
can be made sustainable with
Vnext IGBC Greenpro
Products,

Why not the roof?



The Problem & The Idea!

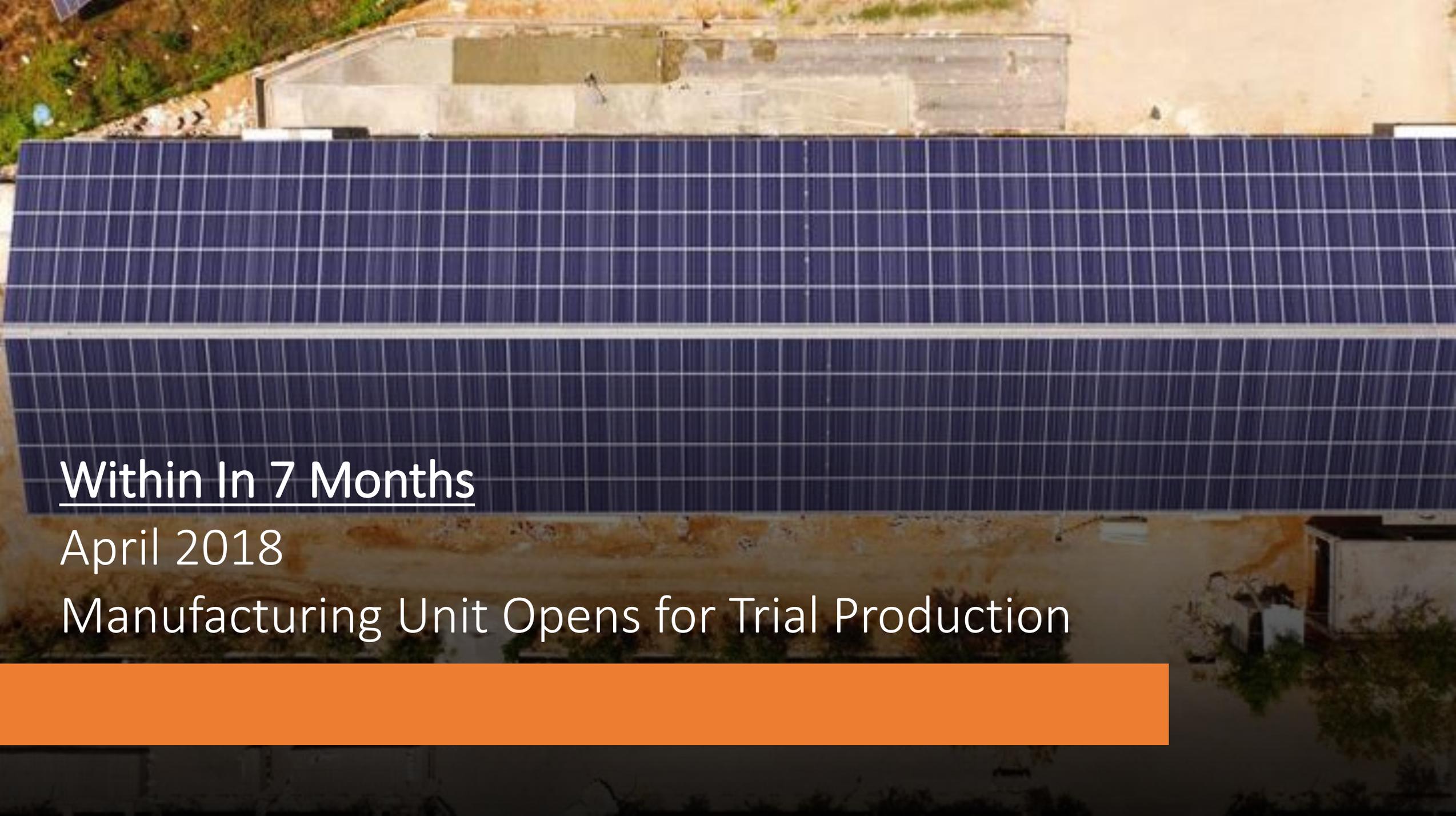
Conventional Solar Panels are NOT Compatible on a roof OR as a roof. A solar roof needs to be as robust as a roof.

A T U N

ENERGIZED FOR TO RROW



Aug 2017
Concept
Launch

An aerial photograph showing a large, rectangular array of dark blue solar panels installed on a flat roof. The panels are arranged in a grid pattern, separated by thin white lines. The roof is surrounded by a concrete parapet wall. In the background, there are some trees and a building with a light-colored facade. The overall scene is brightly lit, suggesting a sunny day.

Within In 7 Months

April 2018

Manufacturing Unit Opens for Trial Production

A solid orange horizontal bar located at the bottom of the image, spanning most of the width of the frame.

Within 13 months ATUM gets BIS Certified 22 Nov 2018



भारतीय मानक ब्यूरो

(उपभोगकर्ता मामलों, खाद्य एवं सार्वजनिक वितरण संबंधित, भारत सरकार)

BUREAU OF INDIAN STANDARDS

(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India)

मानक भवन, 9 बहादुर शाह जफर मार्ग, नई दिल्ली - 110002
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ई-मेल/E-mail: registration@bis.org.in

वेबसाइट/Website: <http://www.bis.gov.in>, <http://crsbis.in>, BIS

Our Ref: Registration/CRS 2018-4557/R-63000795

Date:22-11-2018

Subject : Licence Document

MANUFACTURING UNIT :	VISAKA INDUSTRIES LIMITED (ATUM DIVISION) SURVEY NO 95 & 96, ADJACENT TO KUKKADAM RAILWAY STATION, KUKKADAM POST, GAJALAPUR, MADUGULAPALLY, NALGONDA – 508207, TELANGANA, INDIA vsolar@visaka.in 8770905614
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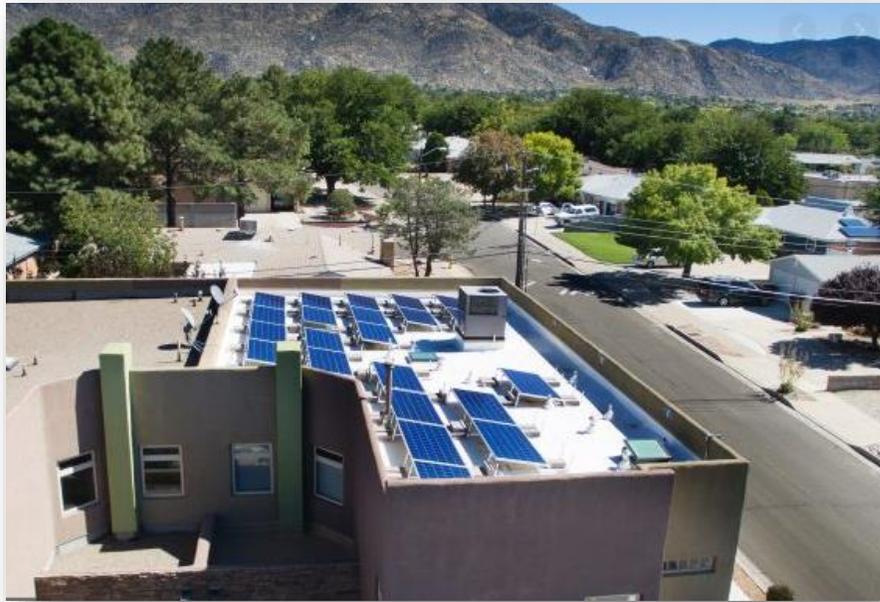
Dear Sir,

1. With reference to your Application, we are pleased to inform you that it has been decided to grant you License through registration based on self-declaration of conformity as per details given below:

PRODUCT :	Crystalline silicon terrestrial photovoltaic (PV) modules. (Poly-crystalline).
IS NO :	IS 14286 : 2010/ IEC 61215 : 2005, IS/IEC 61730 (PART 1) : 2004 & IS/IEC 61730 (PART 2) : 2004
BRAND :	ATUM
MODEL :	VIL - 305P, 72 cells: VIL – 280P, VIL – 285P, VIL – 290P, VIL – 295P, VIL – 300P, VIL – 310P, VIL – 315P, VIL – 320P, VIL – 325P, VIL – 330P, VIL – 335P, 60 Cells: VIL – 230P, VIL – 235P, VIL – 240P, VIL – 245P, VIL – 250P, VIL – 255P, VIL – 260P, VIL – 265P, VIL – 270P, 54 cells: VIL – 205P(54C), VIL – 210P(54C), VIL – 215P(54C), VIL – 220P(54C), VIL – 225P(54C), VIL – 230P(54C), VIL – 235P(54C), VIL – 240P(54C), VIL – 245P(54C), 48 cells: VIL – 180P(48C), VIL – 185P(48C), VIL – 190P(48C), VIL – 195P(48C), VIL – 200P(48C), VIL – 205P(48C),

ATUM Comparison - Residential Segment

Traditional Solar



Vs

A T U M



ATUM Comparison – Commercial Entities

Traditional Solar



Vs

A T U M



ATUM Comparison - Industrial Roofing

Conventional Solar + Metal Roof



Vs

A T U M

Before



After



ATUM is Solar Cells integrated into Cement roofing panels making it seamless and durable



- **Lifespan of panel is 45 years** for solar and roof, which is corrosion, fire, hail and shock proof.
- **Hybrid roofing** i.e ability to combine it with any other roofing material is easily possible.
- **20% extra capacity** per sqft can be achieved with ATUM
- Single point responsibility of roof and solar

Mounting of Panels is done on Metal Sheets

- This can lead to **degradation of the roof sheet**
- Life of solar cell is 30 years while life of sheeting is less than 20 years.
- Must leave **spacing for walkways**, wasting usable solar area
- **No single point responsibility** of roof and solar.

Load Bearing - Can take more than what a roof needs



- Can withstand **300 kg/sqm live load**
- And 150kg/sqft UDL load
- Wind load resistance of above **250kmph are possible.**

Load Bearing - Cannot take loads, leads to microcracks and loss of generation: -

- **Cannot walk** on the panel for maintenance
- Cannot survive above **100kmph wind loads.**
- Cannot take Hailstorms.
- Not Fire Rated. Catches and spreads fire.

Leak Proof Roof -



- **100% Leakproof for lifetime.**
- Leakproof industrial Grade Sealant and Aluminum profiles.
- Panel Jointing has been designed to withstand 200kmph speed unlike the conventional fragile clamps.

Cannot assure Leakproof Roofing-

- Standard clamps which hold panel in 4 places, Each clamp needs 2 drills, making 8 holes for each 20 sqft solar panel. This leaves huge scope for **uncontrolled leakages.**

Case Studies of Deployments & their Environmental Impact

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200kW- Case Study

- Located in Chennai
- 15000 sqft of Class Rooms Created
- Saves 1000 units per day

ATUM Installed in kW	200	kW
Area	14000	Sqft
Installable Conventional in Same Area	140	kW
Units if ATUM was Installed	240000	per year
Units if Conventional Solar is Installed	168000	per year
Additional Units (Due to Area Advantage)	72000	per year
Co2 Saved Lifetime	8400	Tonne
Water Saved Lifetime	21600	Kilo Litre
Equivalent Trees Planted /kW	4000	Lifetime
Money Saved(Earnings)	1920000	Rs 8/Unit Avg
Payback	= 1Cr/20 lakhs = 5 years	

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300kW- Manufacturing Unit of ATUM

- ATUM Panels are made using power produced by ATUM Roof
- This is a Net Zero Building
- Oldest plant with generation data of 2 years

Lifetime Earnings

Savings	₹	288000
CO2 Emissions		12600 Tons
Trees		6000
Water		32400 KL

Srinithi Foods



215kW- Food Processing Unit

- Located in Chennai
- 13000 sqft Roofing
- Saves 1000 units per day
- Equivalent to planting 4000 trees

Lifetime Earnings

Savings	₹	288000
CO2 Emissions		9030 Tons
Trees		4300
Water		23220 KL



557kW- Pre-Engineered Factory Building

- Located in Delhi
- 50,000 sqft
- Saves 2500 units per day
- Equivalent to Planting 10,000 trees



Lifetime Earnings

Savings ₹ 55,20,000

CO2 Reductions  24150 Tons

Trees  4300

Water  62100 KL



200kW- Printing Press

- Located in Telangana
- 20,000 sqft
- Saves 1000 units per day
- Equivalent to Planting 4,000 trees

Lifetime Earnings

Savings ₹ 192,00,00

CO2 Emissions  8400 Tons

Trees  4000

Water  21600 KL



40kW- Rainbow Hospitals

- One of the many hospitals who created extra roof using ATUM thereby making usable real estate out of an empty terrace while producing power at the same time.

Lifetime Earnings

Savings	₹	384,000
CO2 Emissions		1780 Tons
Trees		800
Water		4320 KL



57kW- Delta Realty

- Commercial Complex in prime locality of Mumbai



Lifetime Earnings

Savings ₹ 384,000

CO2 Emissions  1780 Tons

Trees  800

Water  4320 KL



35kW- Yoga Training Center

- Mumbai, Virar
- D Atlantis Resort
- Gives 3500 sqft floor area.
- Equivalent to planting 700 trees



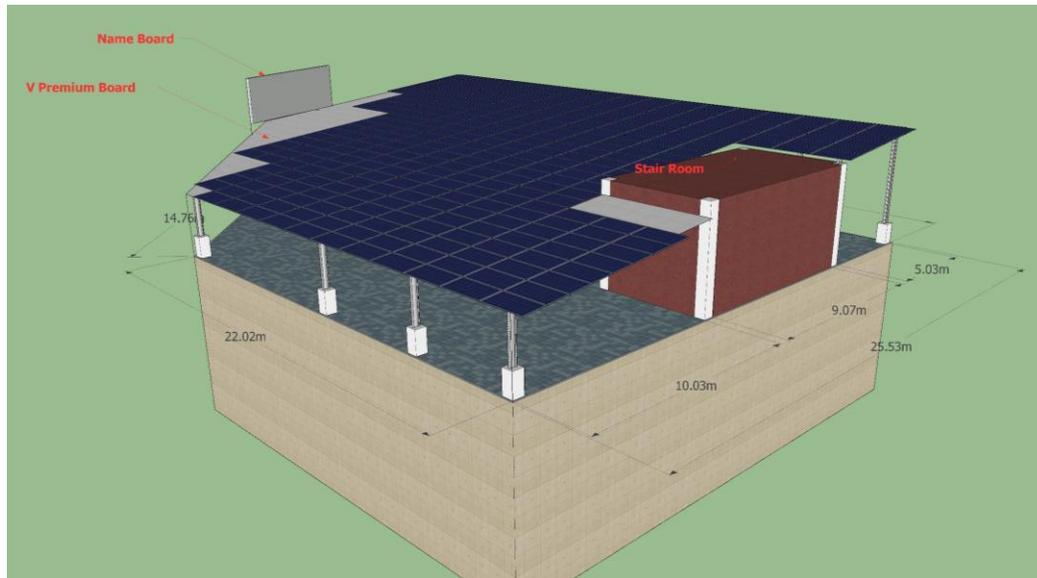
Lifetime Earnings

Savings	₹	336,000
CO2 Emissions		1780 Tons
Trees		700
Water		3780 KL



40 kW- Sapala Organics

- Hyderabad
- 28,00 sqft real estate
- Equivalent to planting 2800 trees



Lifetime Earnings

Savings	₹	384,000
CO2 Emissions		1780 Tons
Trees		800
Water		4320 KL



88kW Netmagic Data Center

- Mumbai
- 100,00 sqft real estate
- Equivalent to planting 2000 trees



Lifetime Earnings

Savings ₹ 844,000

CO2 Emissions  3696 Tons

Trees  1760

Water  9504 KL

References

Location	Organization	KW Installed	Sqft of Real Estate Generated	Savings /Year Just from Solar Power Generation for next 25 years	What is Happening Under the Solar Roof - Intangible Savings	Annual Value of Floor Space created @ 120 Rs per Sqft /month
HYD	Rainbow Hospitals	40	4800	4,60,800	Staff Hostel on Hospital Roof	57,60,000
HYD	Phoenix Infra (CBRE Consultants)	140	16800	16,12,800	PEB Shed on 16th Floor of Commercial Building	2,01,60,000
CHE	Srinithi Foods	210	25200	24,19,200	PEB Shed- Food Processing	3,02,40,000
HYD	Daicel Chiral Pharma	110	13200	12,67,200	Entire Roof of Industry	1,58,40,000
HYD	Sapala Organics	46	5520	5,29,920	Commercial Building	66,24,000
CHE	Sai Minerals Complex	50	6000	5,76,000	Storage Space on the roof	72,00,000
CHE	Ratnam Institutions	200	24000	23,04,000	Science Lab and Auditorium	2,88,00,000
CHE	Kumaran Apartments	50	6000	5,76,000	Watchman Quarters, Storage	72,00,000
HYD	SVS Medical College	200	24000	23,04,000	Entire Roof of College	2,88,00,000
HYD	V Printing Press	300	36000	34,56,000	Printing Press PEB Shed	4,32,00,000
BOM	Net Magic Data Center	88	10560	10,13,760	Entire Roof of Data Centre	1,26,72,000
BOM	Delta Realty	57	6840	6,56,640	Extra Floor on Commercial Building	82,08,000
BOM	Aga Khan Foundation	85	10200	9,79,200	Extra Floor on Commercial Building	1,22,40,000
BOM	Usha Sharshan Society	70	8400	8,06,400	Residential Towers	1,00,80,000
BOM	D Atlantis	35	4200	4,03,200	Resort Roof	50,40,000
BOM	Rashmi Builders	98	11760	11,28,960	Commercial Building	1,41,12,000
PUN	Kasat Industries	86	10320	9,90,720	PEB Shed	1,23,84,000
CHE	Trendz Fashions	20	2400	2,30,400	Storage Space on the roof	28,80,000
Total kW Installed and Running		1885kW	2,26,200 Sqft			

Taking Solar Closer to Bottom of the Pyramid



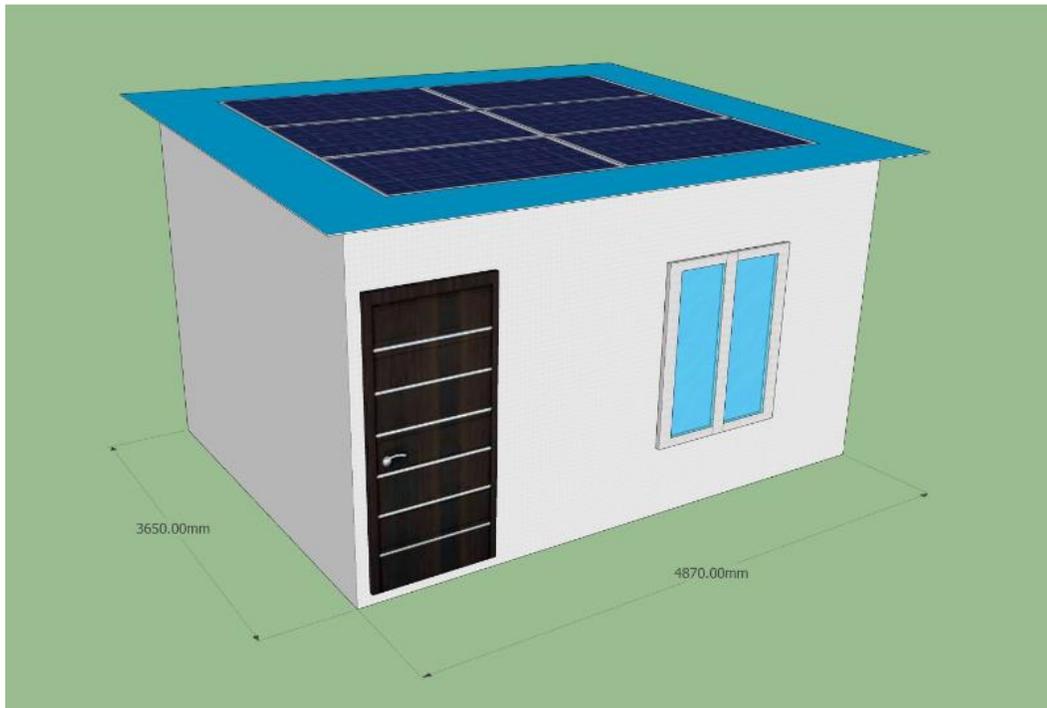


UN Habitat Innovation Forum Nairobi

- 500 sqft
- USD 7000
- Featured in Affordable and Sustainable Innovation 2019



Entire Home Paid
Back in 6 years



SMART VILLAGE PROJECT – UC BERKELEY

- For Deployment in Assam, Arunachal Pradesh, PHC, Schools
- Walls are made up of Vnext panels (Cement Fibre Board Panels)
- Usable floor area of 190 sqft
- Roofing is with 8 ATUM Roof Panels and rest with Metal Sheet seamlessly integrated with ATUM giving $8 \times 320 = 2.6$ kW
- Rs 1500 per Sqft for entire room with Solar Roof
- This does not include cost Logistics and Installation.



Solar Roof Street Vendor Cart

- Rs 30,000 per Cart
- Visaka CSR Initiative
- 6 hours in Sunlight it can run for 2 nights
- Mobile Charging included.



1500 per month saved from
not renting Battery LED Bulbs



1.5 years Pay Back



Assam Tea Gardens- Workers Rest Houses

- 1.5 kW ATUM Roof and cottage entirely made of Visaka Products
- Deployed across Tea Estates in Assam
- Costed Rs 1800 per Sqft



Affordable Housing Scheme California

- Under Proto Deployment in City of San Jose
- All materials used are made of IGBC certified Cement Fiber Board of Visaka
- Roof is made of ATUM Solar



Entire Home Paid
Back in 6 years



HIMALAYAN INSTITUTE OF ALTERNATIVES, LADAKH

An Alternative Institute for Mountain Development



Innovator Sonam Wangchuk and Indian Army

- 5kW Roof and Mud Walls
- Being tested for superior thermal insulation in Ladhak
- Energy Savings from thermal Insulation



Off Grid Ticketing Counter in a Remote village Railway station
5kW in Telangana

An aerial photograph of a building with a large, rectangular array of dark blue solar panels covering its roof. The panels are arranged in a grid pattern. The building is surrounded by a mix of dry, brownish ground and some green vegetation. In the top left corner, there are several smaller solar panels on a different structure. The overall scene is brightly lit, suggesting a sunny day.

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