Solar Power Unleashed

InSolare

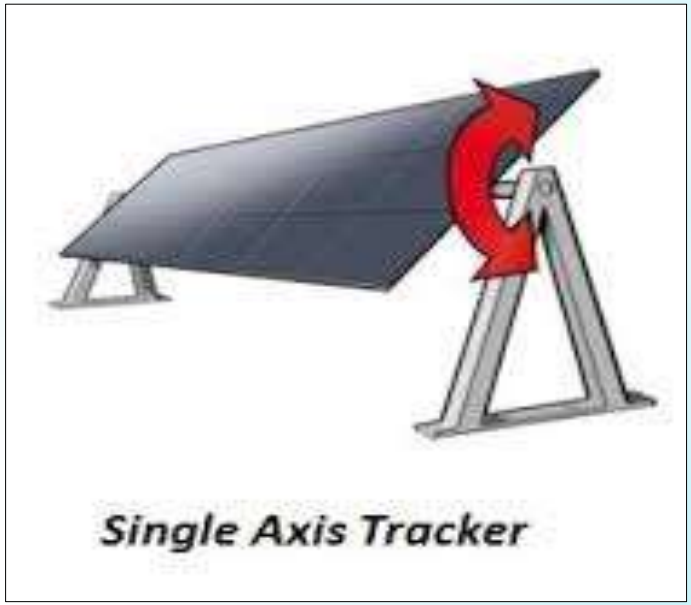
http://www.insolare.com

APRIL 2017

INSOLARE ENERGY

Solar Power Unleashed

- **Established Market Leader since 2009**
- **Team of Technocrats - IITs**
- **90 + Team - Mostly Engineers**
- **45 +Patents, PhD in Solar Field**
- **Global Number One Rooftop Solution (Module Level Power Electronics)**
- **India`s TOP Unchallenged Record Performing Single Axis Tracking Technology (ALL INHOUSE)**
- **Installed Around 50 MW Power Plants in India / Abroad . 50 MW + under installation. 200 + MW under finalization**



THE INSOLARE ENERGY TEAM

Dr. Sunit Tyagi- Chairman - 30 + Years Experience.

17 US patents in field of semiconductor devices/process technologies.

PhD from USA in Solar cells for space applications.

Dr. Hemanshu Bhatt- Director/CTO- 30 + Years Experience .

28 US patents in process technology / semiconductor device design.

Ph.D. from USA

Navashil Sharma – CEO M. Tech (USA), 15 + Years Experience

Semiconductor R&D & manufacturing. Project Management

Rohin Bhatia - Director Marketing B.Tech (IIT Delhi),40 + years

Experience.Profit Centre Business Head-Coats Viyella (Madura Garments)

Industrial Products Marketing – Wind / Solar / Machinery

(Mahindra Group – Trueskill- InSolare Energy)

Uday Kumar-Advisor Finance - MBA(XLRI) - 35+ years experience

Organization building, Finance, Legal, HR, Networking

Business Development

THE INSOLARE ENERGY TEAM

Col Gopal Samantha – Director Operations and Procurement

Management – IIM Ahmadabad. 24 years in Indian Armed Forces Corp of Electronics and Mechanical Engineers.

Dipakkumar Patel – General Manager

B.E. MSc (UK). 13 Years in - production, consultation, services - designs. SAC – ISRO -TBA (UK), Atkins Ltd (UK)

Maran R – Chief Engineer – Projects

B.E - 9 years experience in Project management - installation and Commissioning of power plants.

GLOBAL REACH & LOCAL EXPERTISE

InSolare Energy
Local Expertise - EPC

- Proven Quality & Delivery
- Direct Access to Directors
- Top Performing Solar Farm in Gujarat

Cutting Edge Technology

- Single Axis Tracking for Ground Mounted Mega Solar Farms
- DC to DC – Module Level Power Optimizers – For Rooftop Solars
- Fixed Voltage Optimizing Special Inverters ensures high Efficiency
- Very Low FIRE SAFE Open Circuit Voltage
- Fixed Tilt or Seasonal Tilt for rooftop systems to Capture High Radiation

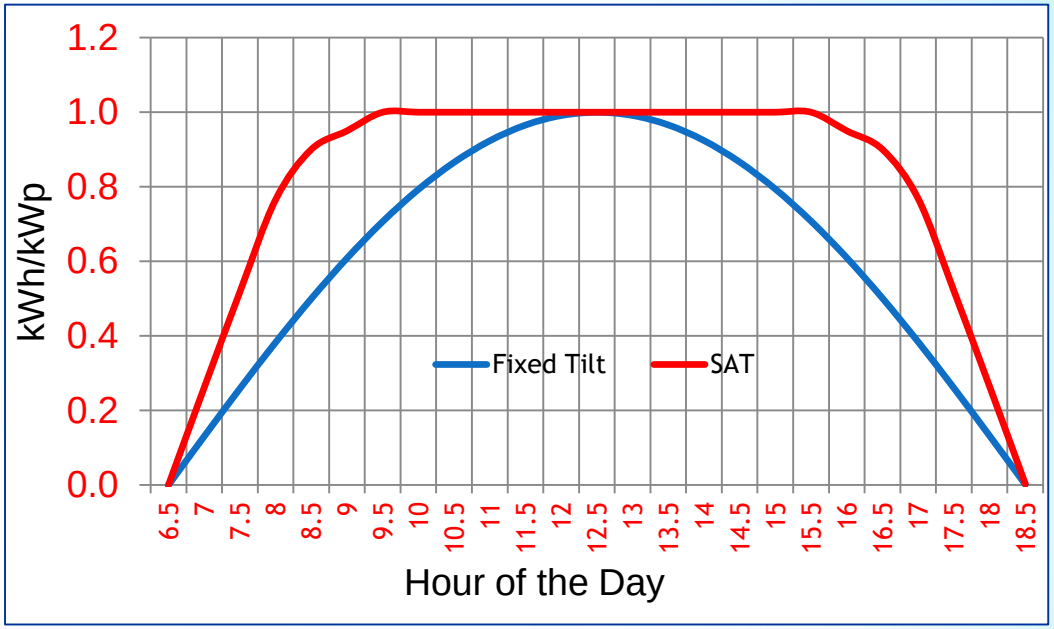
EPC FOR MEGA SCALE SOLAR FARMS

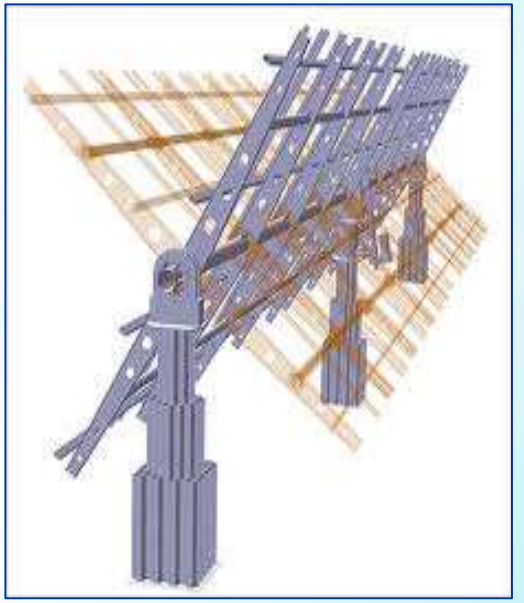
GROUND MOUNTED
WITH or WITHOUT
SINGLE AXIS TRACKING TECHNOLOGY

SINGLE AXIS TRACKING TECHNOLOGY

Single Axis Tracker

1. Tracks the sun from East to West to increase energy
2. Gives 15 to 20 % higher Generation than Fixed Tilt .
3. Largest installed plant (5MW) with single axis tracker and Thin Film modules in India .
4. Top performer consistently since Dec 2011 .
5. **Trackers ALSO provide a better match to utility load.(More balanced output)**





COMMISSIONED DEC 2011 BY INSOLARE ENERGY

5 MW T – With TRACKER - KARUR

3 MW Thin Film – With / Without TRACKER

HYDERABAD - INDIA

5 PROJECTS IN KARNATAKA – 6 + MW - MYSORE/BAGALKOT

With TRACKER – Under Execution now

RECORD PERFORMANCE – 5 YEARS IN A ROW

5 YEARS IN A ROW - RECORD HIGHEST MONTH OUTPUT BY OUR SOLAR FARM - IN GUJARAT

MAY 2012 – MAY 2013 – MAY 2014 – MAY 2015 – MAY 2016

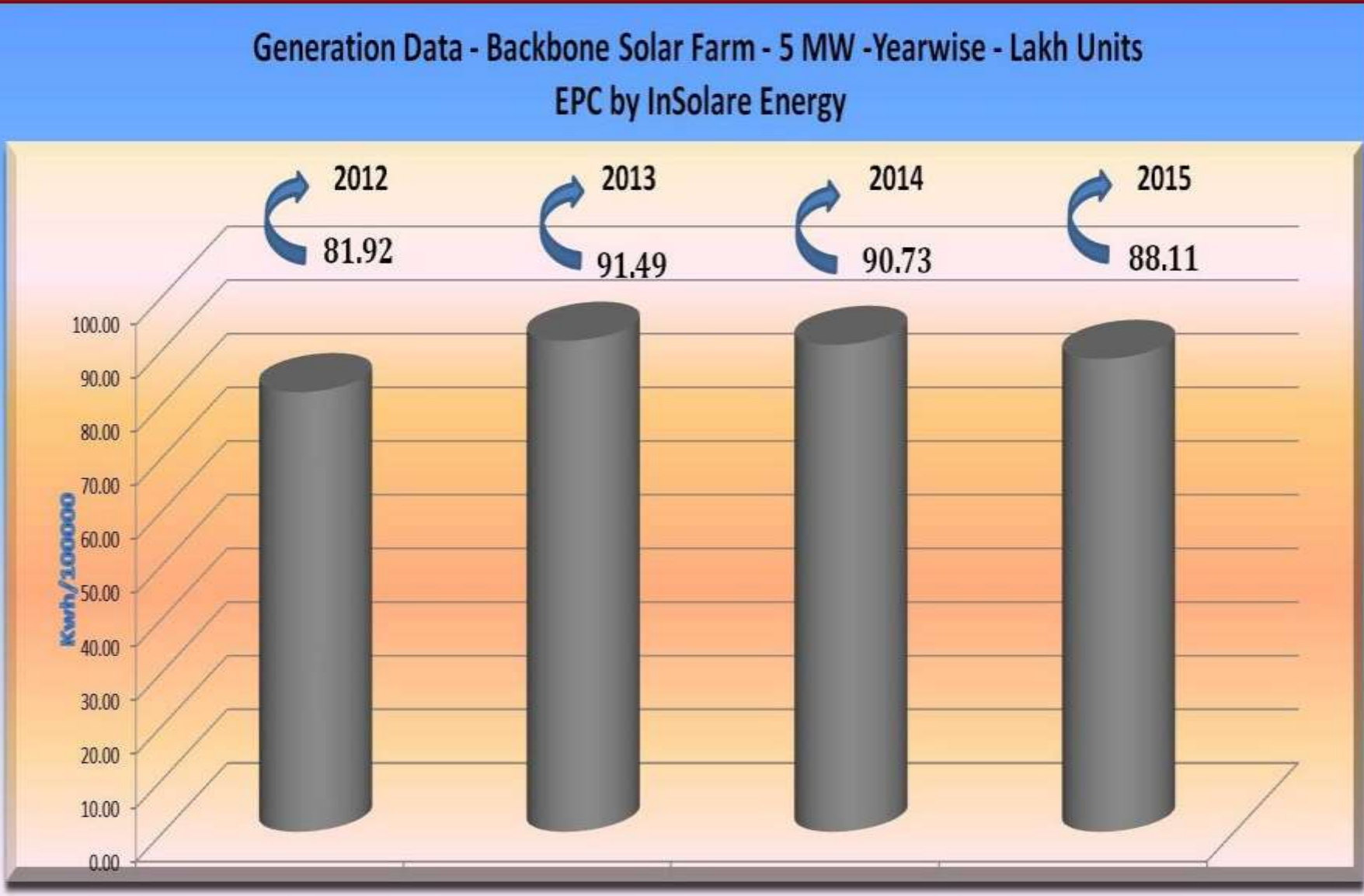
FOR THE MONTH OF MAY 2014 - THIS PLANT WAS HIGHEST OVER ALL INDIA
186 SOLAR FARMS COVERING 1423 MW – AS PER DATA AVAILABLE

YEAR	STATE	NUMBER OF SOLAR FARMS	TOTAL INSTALLED CAPACITY	HIGHEST MONTHLY OUTPUT IN MWHrs Per MW	PLANT NAME	SYSTEM TYPE
2012-13	GUJARAT	49	661	215.5 MAY 2012	Backbone - EPC by INSOLARE ENERGY	SINGLE AXIS TRACKING 5 MW FARM
2013-14	GUJARAT	64	838	213.8 MAY 2013	Backbone - EPC by INSOLARE ENERGY	SINGLE AXIS TRACKING 5 MW FARM
2014-15	GUJARAT	66	883	200.2 MAY 2014	Backbone - EPC by INSOLARE ENERGY	SINGLE AXIS TRACKING 5 MW FARM
2014-15	12 STATES - MNRE SCHEME	121	543	195.0 MAY 2014	THUS BACKBONE HIGHEST ALL OVER INDIA FOR MAY 2014 MONTH	

PLEASE NOTE THIS COVERS FARMS OF ALL TECHNOLOGIES – FIXED TILT AND TRACKER

Data as per SLDC Gujarat - MNRE - and Curtsey Resolve

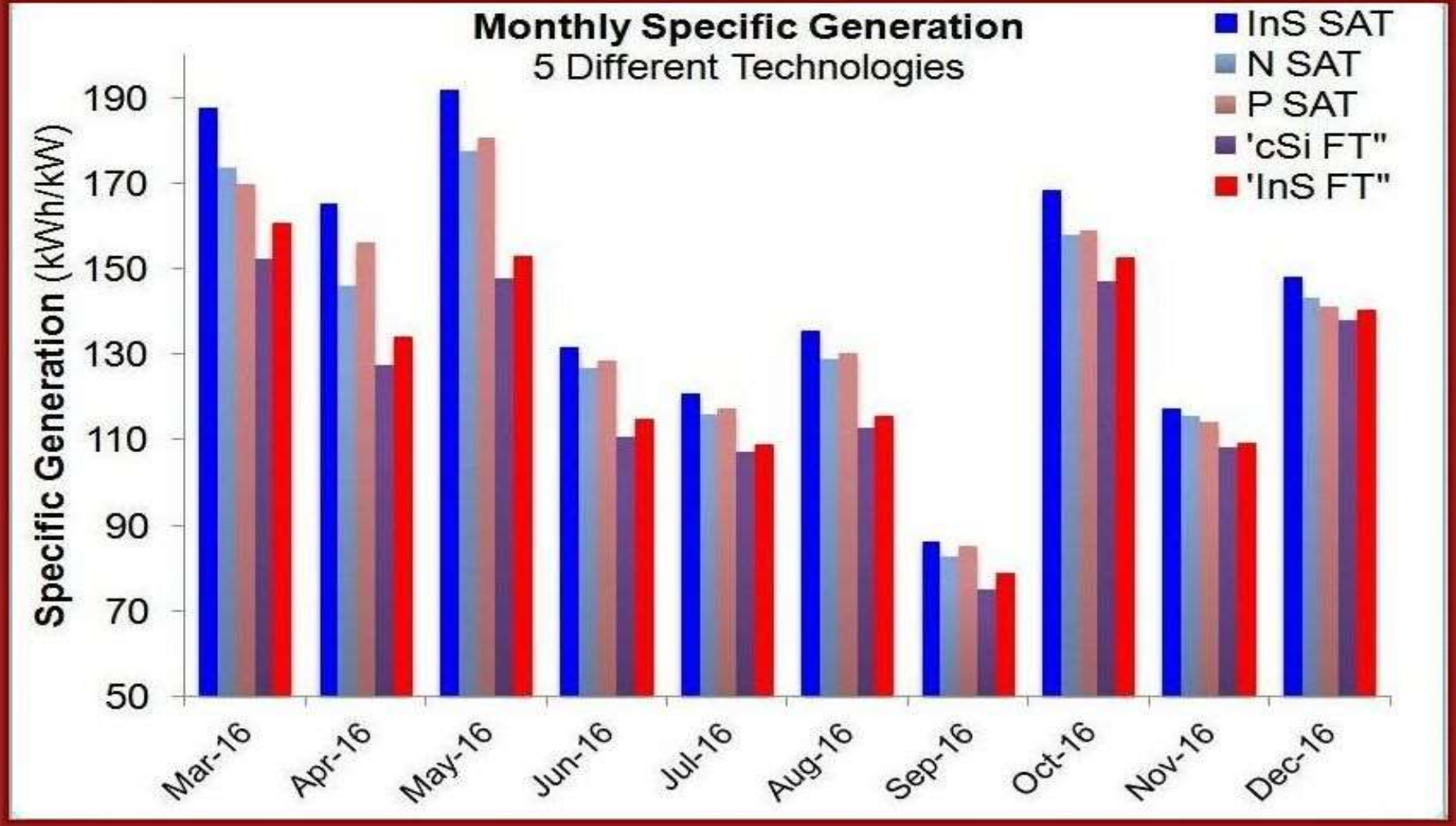
STABLE PERFORMANCE OVER FOUR YEARS



Performance of a Project in Telangana

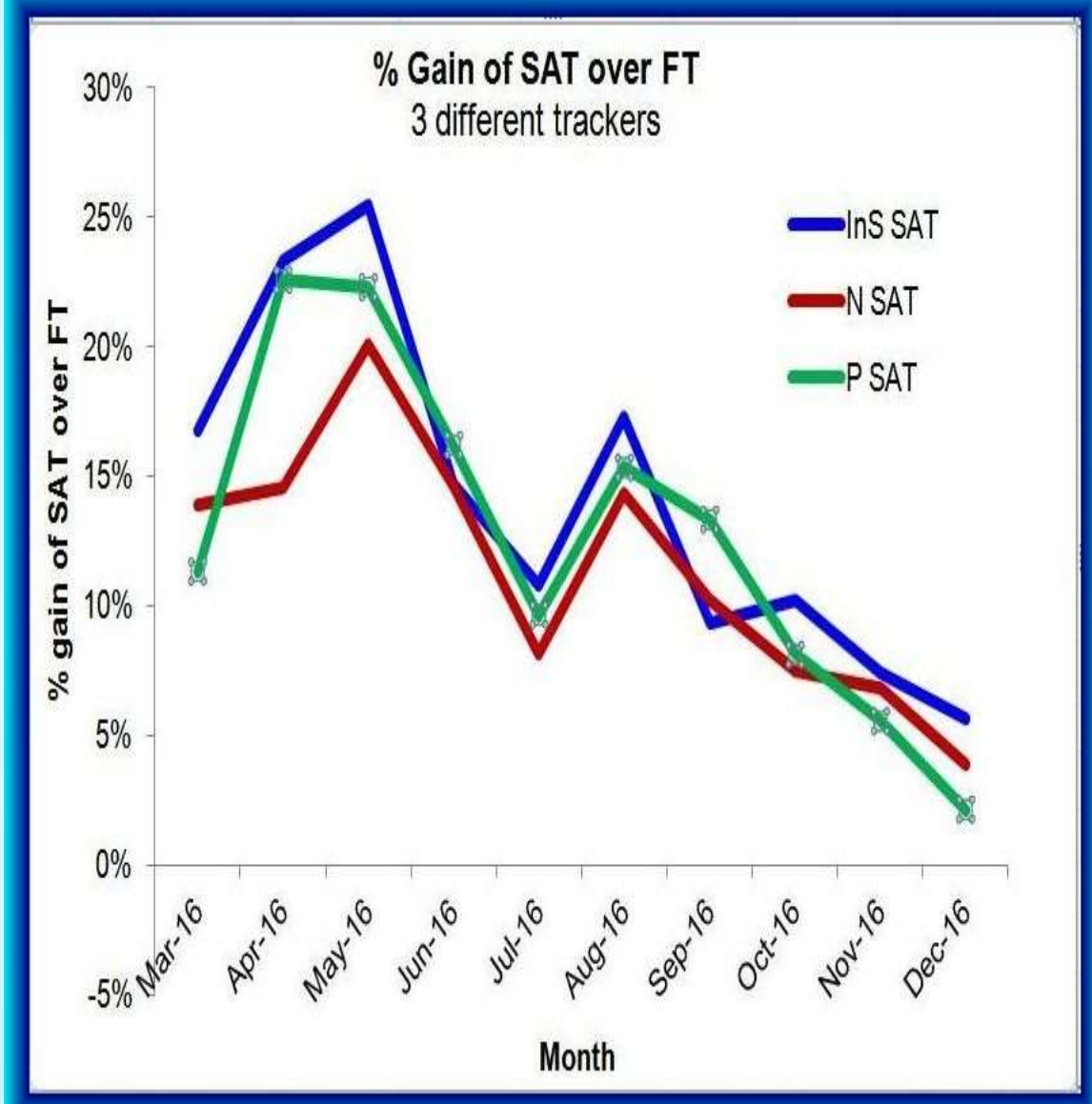
Different Technologies

InS SAT – is our plant with Single Axis Tracker Technology



Performance of a Project in Telangana

Gain by Single Axis Tracker over Fixed Tilt System



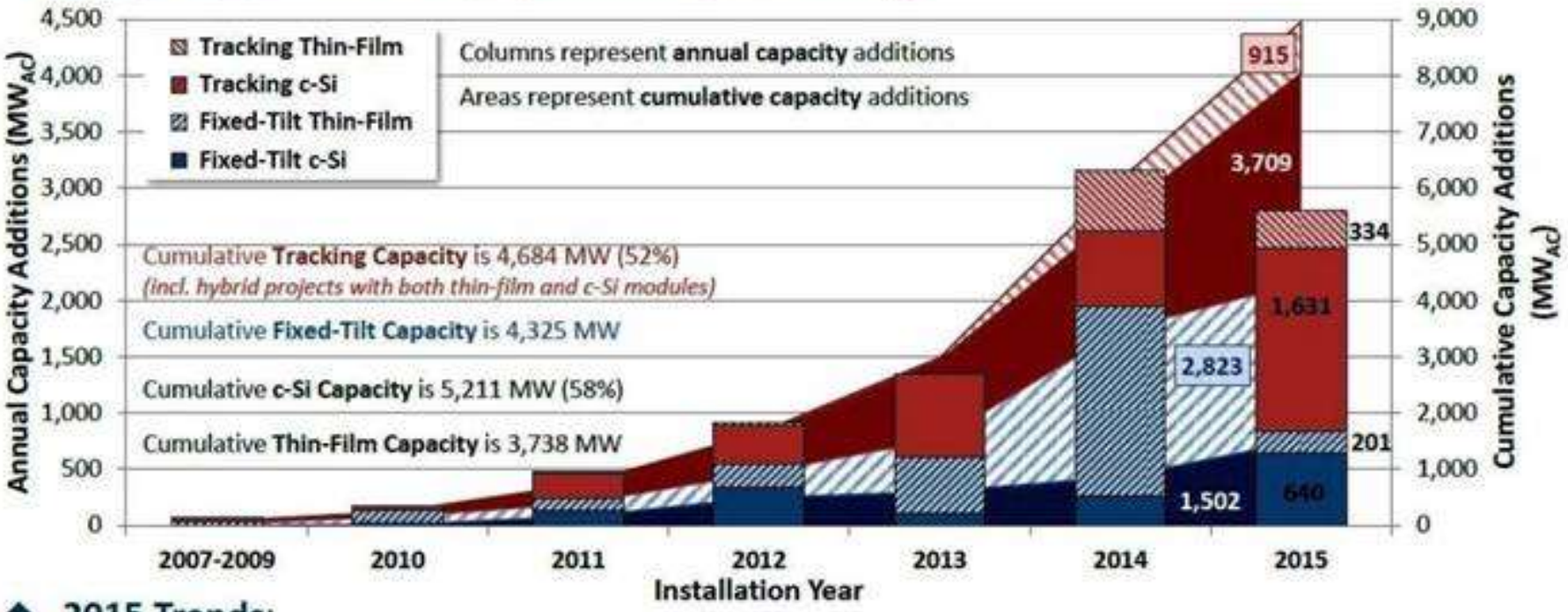
	% InS SAT	% N SAT	% P SAT
Mar-16	16.7%	13.9%	11.3%
Apr-16	23.4%	14.6%	22.6%
May-16	25.4%	20.0%	22.3%
Jun-16	14.7%	14.7%	16.2%
Jul-16	10.8%	8.2%	9.7%
Aug-16	17.3%	14.3%	15.3%
Sep-16	9.3%	10.2%	13.3%
Oct-16	10.2%	7.5%	8.1%
Nov-16	7.4%	6.8%	5.5%
Dec-16	5.6%	3.9%	2.1%
Mar-Dec	14.6%	11.6%	12.7%

USA – Cumulative TRACKING projects now OVERTAKE Fixed Tilt

Acceptance even for THIN FILM with Tracking

PV project population broken out by tracking vs. fixed-tilt, module type, and installation year

PV project population: 278 projects totaling 9,016 MW_{AC}



- **2015 Trends**:
  - Strong growth in c-Si capacity (81%) relative to thin-film capacity (19%), driven in part by the completion of the very large Solar Star project (594 MW_{AC}). Largest c-Si manufacturers are SunPower (33% of c-Si market), Trina (20%), and Jinko (16%), while the thin-film market is dominated by First Solar (93% of the installed capacity).
  - Increasing dominance of tracking projects (70% of newly installed capacity) relative to fixed-tilt projects (30%)

Global Growth of Solar PV Tracker systems 250 + % in 2016

The global solar tracker market size is projected to grow at a CAGR of 18.6% from 2016 to 2025.

12.6 GW of PV trackers to be installed around the world this year (2016), up from 5 GW in 2015.

By 2021, tracker installations will grow to 37.7 GW and account for nearly half of all ground-mount solar systems.

Though the United States will remain the leading market for trackers through 2021, **China and India will experience the most significant growth.**

SOME OTHER MW PROJECTS

Poly Crystalline 15 MW
Under Execution
10 MW Canal Top
without Tracker
5 MW Canal Bank –
With Tracker
INDIA`S LARGEST PROJECT FOR CANAL

3 Projects - Tracker Kit - 30 + MW - Now under Execution in Telangana

Poly Crystalline With Tracker – 15 + MW To commence at Telangana

100 + MW Tracker Kit under Finalisation

ROOFTOP AND SPECIAL SOLAR SOLUTIONS

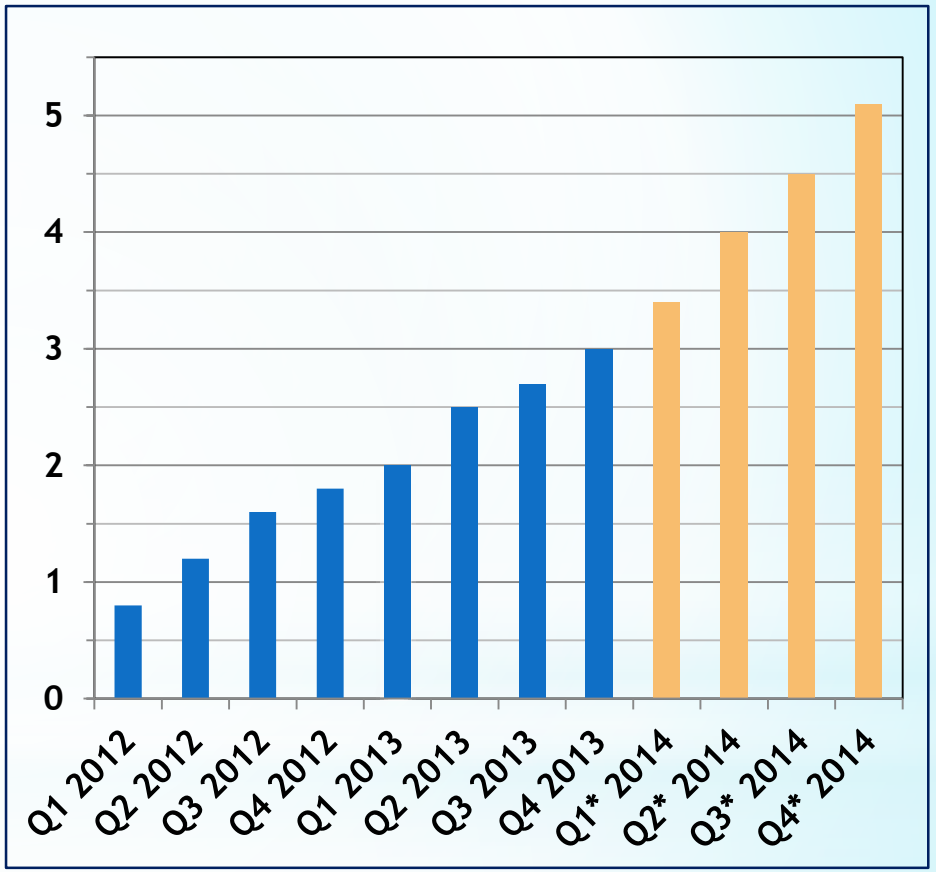
MODULE LEVEL DC TO DC OPTIMIZERS
SPECIAL FIXED LOW VOLTAGE INVERTERS - FIXED TILT OR SEASONAL TRACKING

INSOLARE`S UNIQUE MLPE

GLOBAL LEADER – MODULE LEVEL POWER ELECTRONICS – DC OPTIMIZER & INVERTER

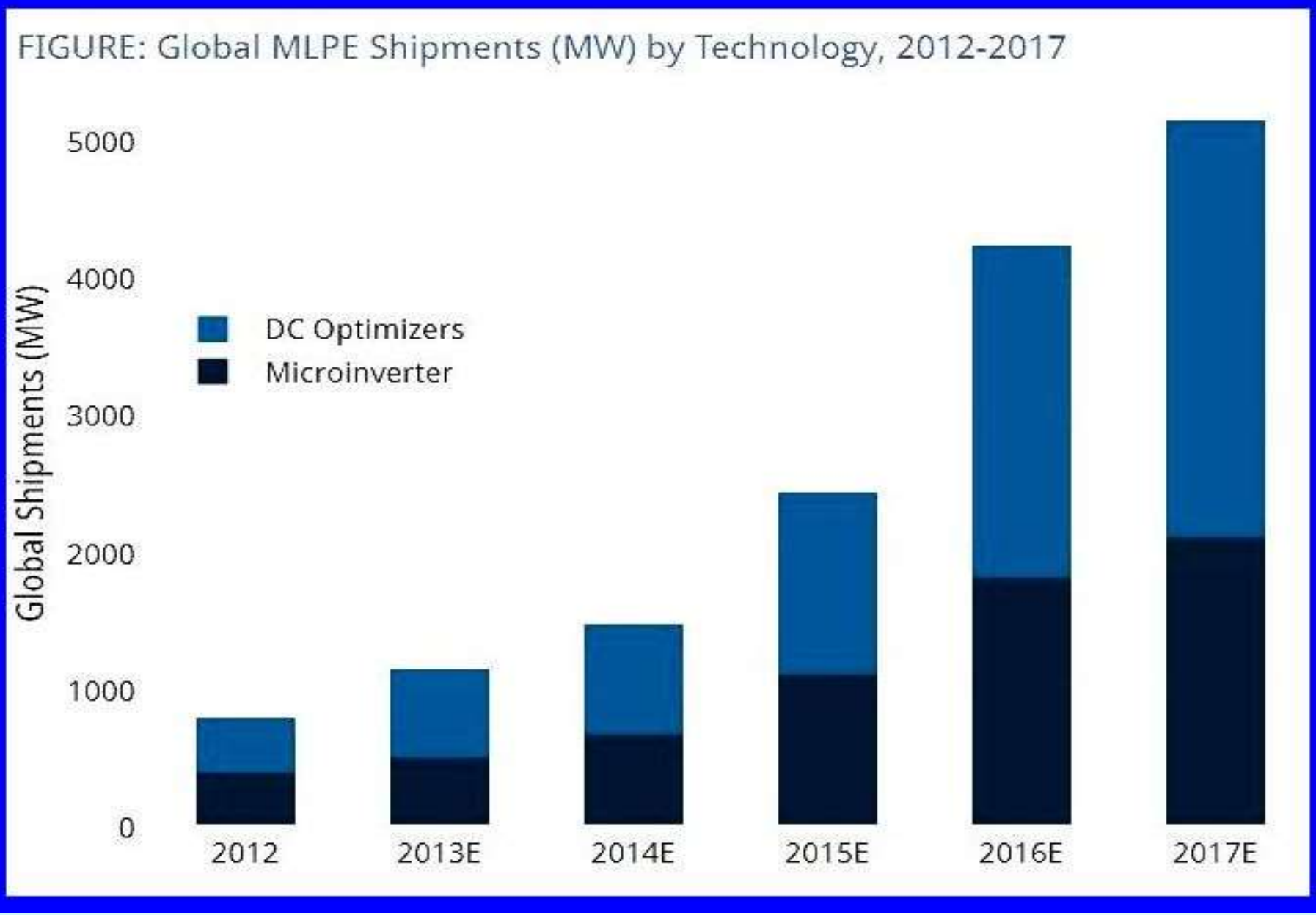
3500 + MW Worldwide
265000 + Systems Monitored worldwide on 24x7 Cloud Technology

With more than 12.5 million power optimizers and over 513,000 inverters installed in 90 countries, SolarEdge is a global leader in the DC power optimizer market .
Yearly Growth Revenues 51 % +



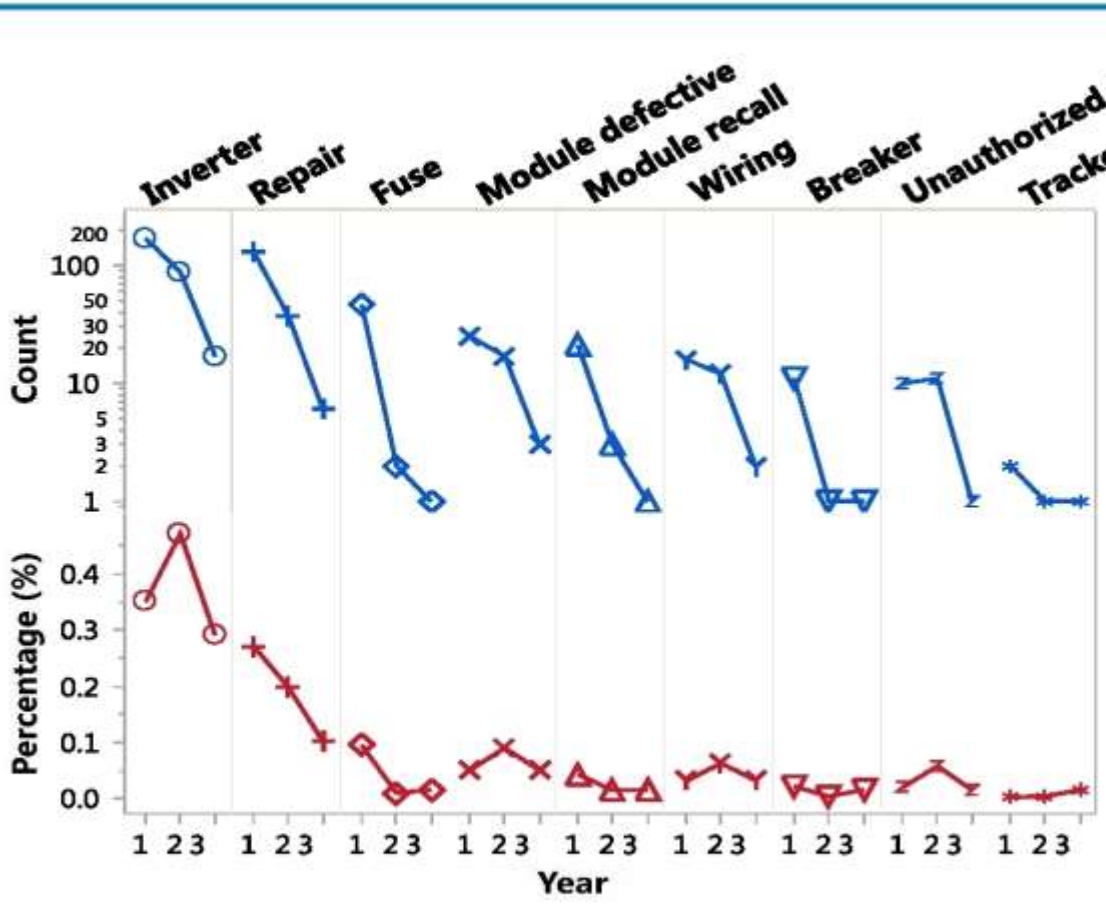
12.5 Million Optimizers Shipped (Jan 2017)

IN MLPE – DC OPTIMIZERS SURGING AHEAD



NREL LATEST REPORT – LOWEST PLANT ISSUES FOR TRACKER

Hardware-related issues are dominated by inverter



Repair: Unspecified repair & outages
Unauthorized shutdown: May be mitigated by interconnect locks

Less than 0.1% are due to defective modules

MODULE LEVEL INDIVIDUAL OPTIMIZER - Rooftop

solaredge

Cost effective maintenance

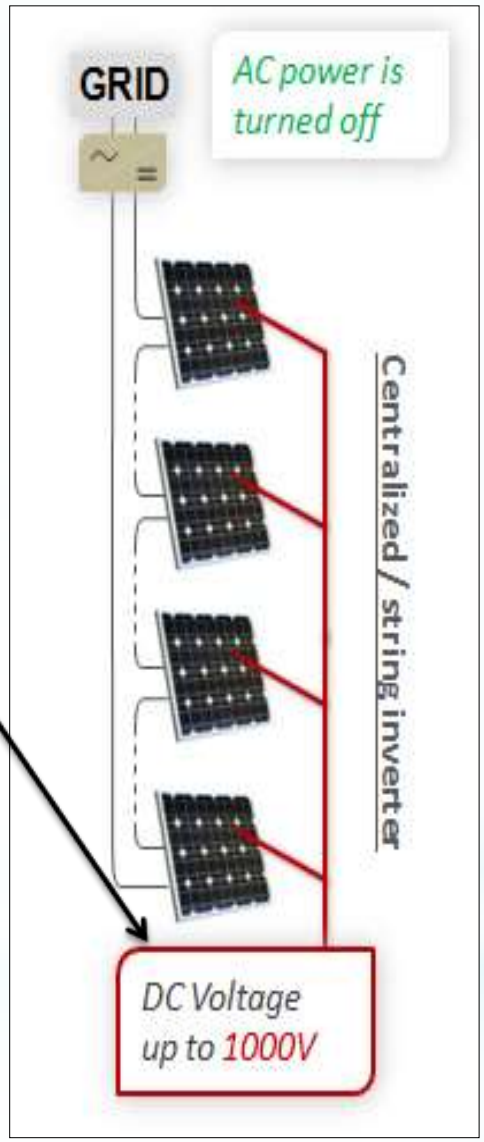
Cost effective maintenance
with monitoring at the module level

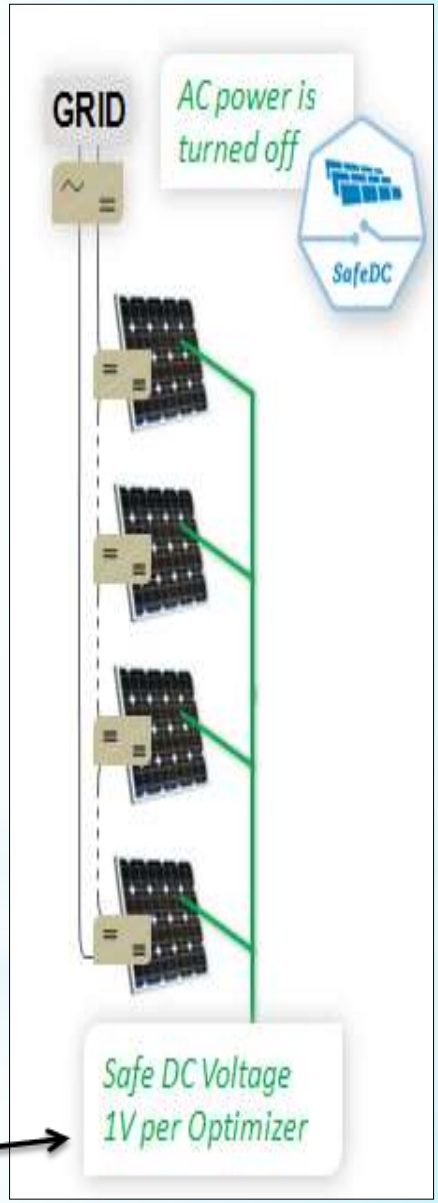
SOLAREDGE for Rooftop – NO ELECTROCUTION RISK

No Way to 'De-energize' Traditional PV Systems

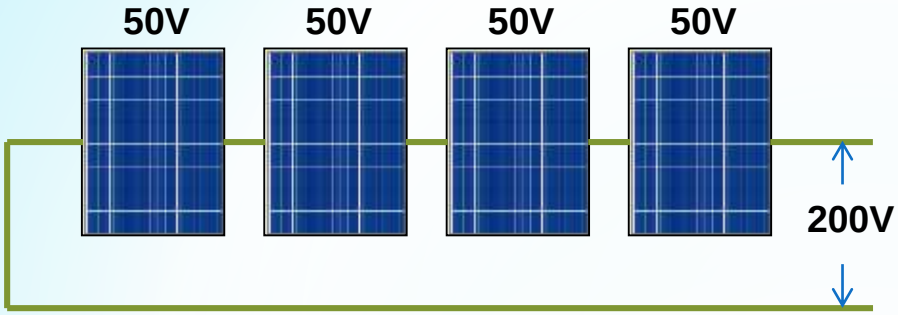
- PV systems are always energized when exposed to sunlight
- Traditionally, roof top PV systems operate at up to 1000 VDC
- When utilizing a disconnect-device:
  - Current flow is interrupted however, hazardous voltages remain

- Automatic DC Voltage Shutdown
  - Power Optimizers shut down current and voltage automatically when the inverter is turned off or during grid disconnection
  - The shut down is fail-safe. It doesn't require any additional actions (such as pressing an additional button)

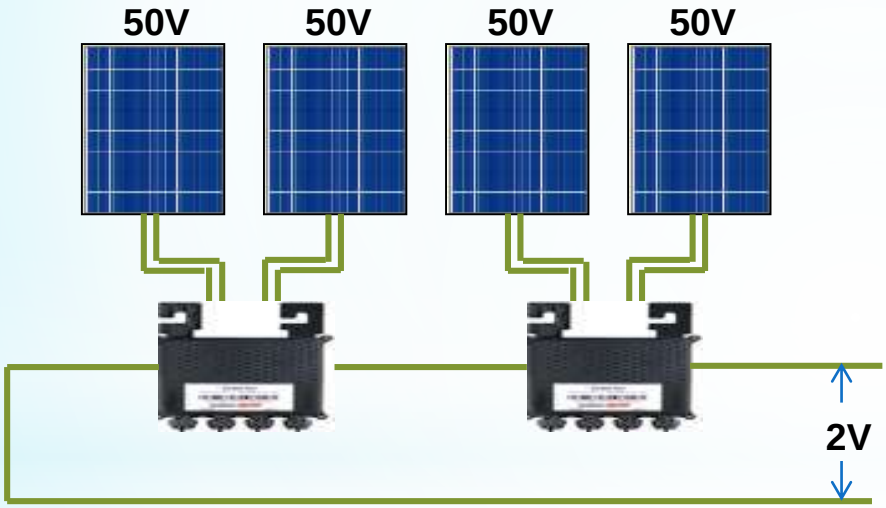




INSOLARE ROOFTOP SYSTEM PREVENTS FIRE



Regular String
200V open circuit Voltage

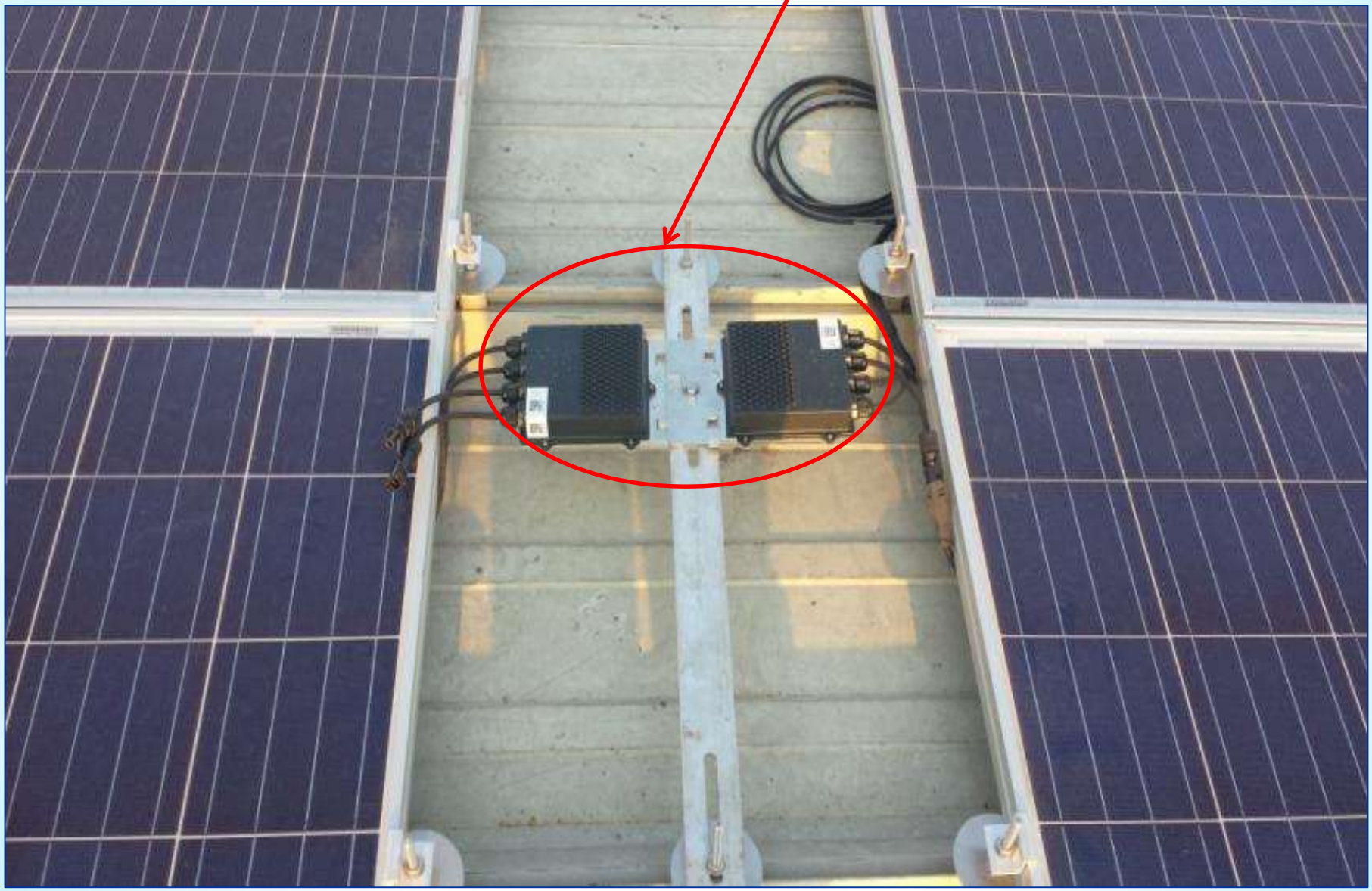


InSolare String
2V open circuit Voltage

Optimizers can detect serial arcs and can automatically terminate them by eliminating any current in the wires by completely shutting off all modules in the array.

Module-level Shutdown Occurs Automatically:
Either when a building is disconnected from the electrical grid
Or when the inverter is shutdown
Or when thermal sensors for each module detect the rising temperature (threshold 95˚C)

MODULE LEVEL DC OPTIMIZER
SMARTEST WAY TO MINIMISE ENERGY LOSS



Large Rooftop Projects (Selective)

One Of India`s LARGEST

CISCO, Bangalore
1 MW Rooftop With Panel Optimizers
And Grid Tied Inverters

Large Rooftop Projects (Selective)

One Of India`s LARGEST

ITC Group - Local and International
Total 2600 KW Various Sites - Rooftops

Large Rooftop Projects (Selective)

One Of India`s LARGEST

INFOSYS - One MW Rooftop Bangalore

Large Rooftop Projects (Selective)

ONE MW Rooftop Bangalore - For a Poultry Farm

Large Rooftop Projects (Selective)

750 KW - Roof - Car Park - under execution - Jaipur - Infosys

WIND SOLAR HYBRID – (WITH GE TURBINE)

MAJOR (SELECTIVE) GROUND MOUNT PROJECTS

BACKBONE	5000 KW	GUJARAT - WITH TRACKER - RECORD MONTH PERFORMER LAST 5 YRS
INFOSYS	3000 KW	HYD - WITH/WITHOUT TRACKER - OUTPERFORMING OTHER TRACKERS
SIDARTHA	5000 KW	KARUR - WITH TRACKER - OUTSTANDING GENERATION - HIGH WIND ZONE
NARMADA CANAL	15000 KW	CANAL TOP AND BANK (WITH / WITHOUT TRACKER) - PRESENT EXECUTION
TELENGANA	30000 KW	3 PROJECTS- TRACKER KIT - (FOR EUROPEAN IPP)
BAGALKOT	3300 KW	3 PROJECTS - WITH TRACKER - PRESENT ONGOING
MYSORE	2200 KW	2 PROJECTS - WITH TRACKER - PRESENT ONGOING
ADANI	1500 KW	TN - TRACKER KIT
SHALAKA ++	16500 KW	WITH TRACKER - COMMENCING
SHALAKA ++	5000 KW	Fixed Tilt - TO COMMENCE
ATRIA	250 KW	WIND/SOLAR HYBRID

MAJOR (SELECTIVE) ROOTOP PROJECTS

CISCO	940 KW	KARNATAKA`S FIRST MEGA ROOFTOP PROJECT
INFOSYS	2500 +KW	VARIOUS PROJECTS ALL OVER INDIA
ITC GROUP	2500 +KW	VARIOUS PROJECTS ALL OVER- UP-BIHAR - WB - NEPAL ETC
POULTRY FARM	1000 KW	KARNATAKA

CUMULATIVE INSTALLATIONS BY END June 2017

Expected 100 MW

OUR OFFERING

Team that understands technology to deliver the best solution to the customer

Projects delivered for high yield and high IRR

All Segments (KW-MW)

All Configuration (Rooftop & Ground based)

All Mechanisms (Seasonal tilt, Fixed Tilt & Tracker)

CONTACT US

INSOLARE ENERGY

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