

# Grid Connected Solar Roof Top Solutions

**RESIDENTIAL**



**COMMERCIAL**



**INDUSTRIAL**

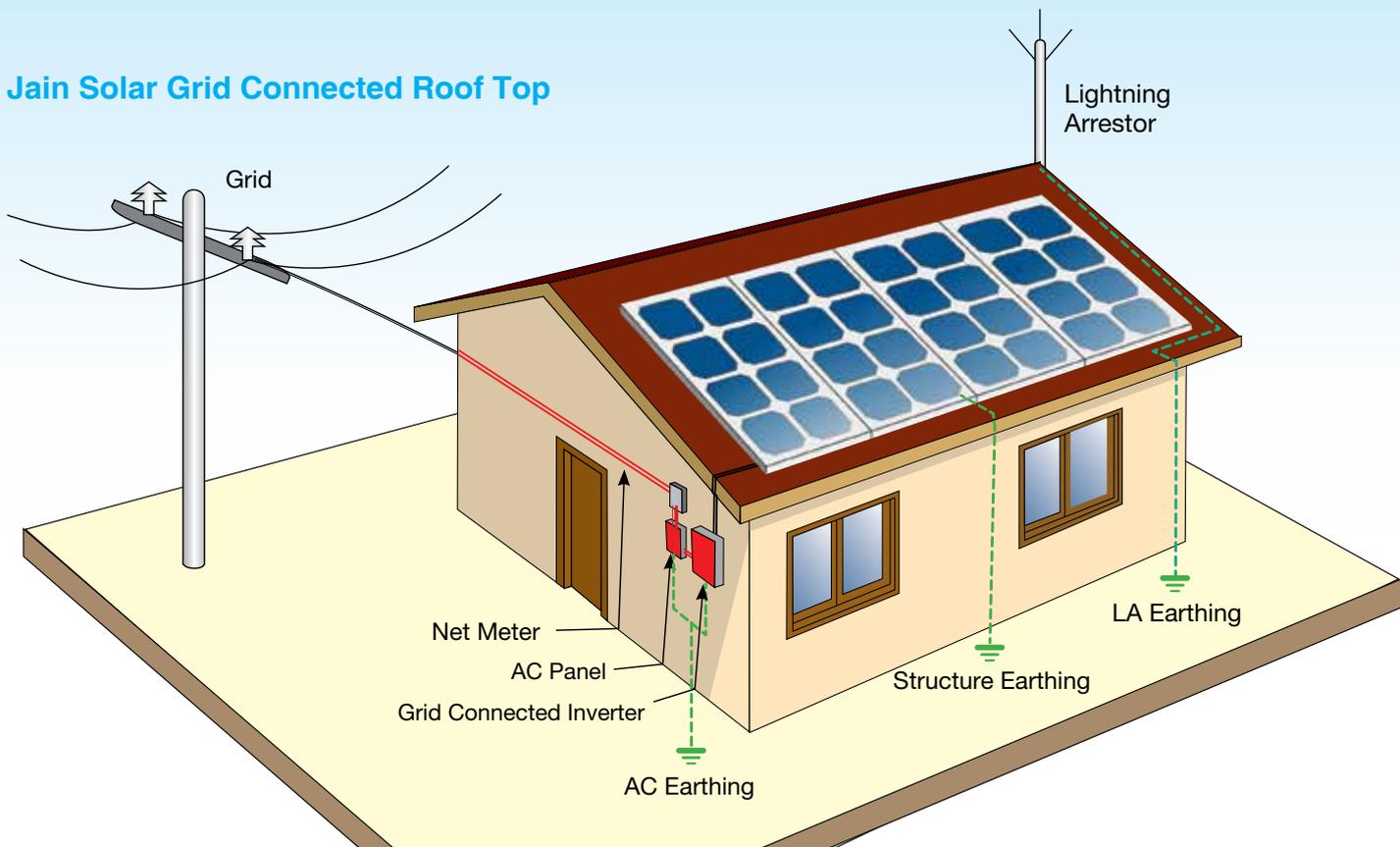


**JAIN**<sup>®</sup>

Jain Irrigation Systems Ltd.

Small Ideas. Big Revolutions.<sup>®</sup>

## Jain Solar Grid Connected Roof Top



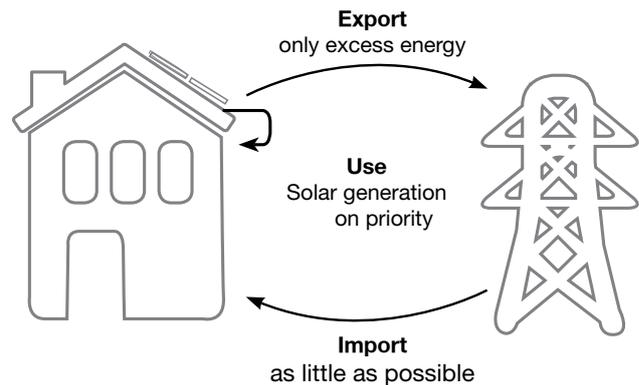
Jain Irrigation System Limited is working at grass root level to contribute in the National Solar Mission. JISL has set up, its own state of the art, module manufacturing facility, BLDC pump manufacturing along with controller manufacturing, solar appliances manufacturing, structure and tracker manufacturing etc. As world leaders in irrigation, pipes, water management and in house expertise of engineering solutions in solar, Jain's stood 1<sup>st</sup> in Solar Pump installations in India with more than 25,000 solar pumps operating across nearly 17 states successfully.

Solar Roof Top Grid Connected systems with Net metering policy in various states opened new opportunities of solar business in residential, commercial and industrial sectors. Jain Irrigation Systems Ltd. has already installed more than 200 nos of plants with solar net metering facility.

Ultimately customer has to pay Net amount of billing. Net metering allows residential, commercial & industrial customers to generates their own electricity from grid connected solar power plant and feed excess electricity back into the grid when they are not using it and allows to take electricity from grid when required.

### Features

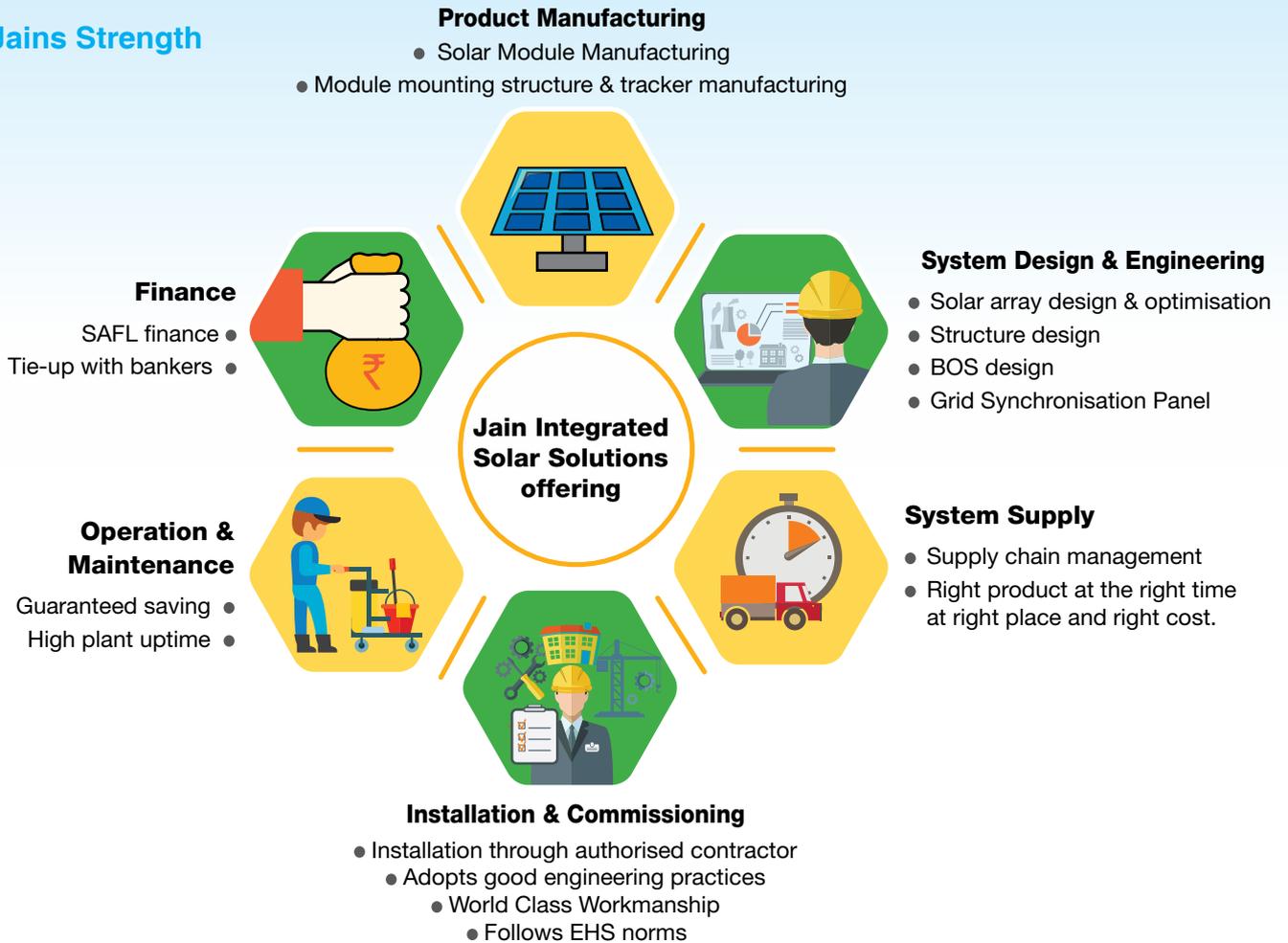
- Lowest per unit cost of electricity
- Reduces your Electricity Bill
- Automatic clearing of generation & consumption bills
- Lowest maintenance cost
- Get rid of investment and maintenance of battery
- Can run inductive loads / air conditioners etc
- Most appropriate power solution for green building
- Corporates can claim voluntary carbon credits or carbon footprint verifications



- Generates 4-4.5 units per day per kWp
- 10-12 Sq. meter shadow free area required per kWp

Commercial / Industrial	Domestic
40% Depreciation for income tax benefit	Capital Subsidy (As per policy terms & Conditions)
Applicable for Industries, hospitals, commercials establishments, Malls, showrooms, townships etc.	Applicable for Bungalows, Villas, NGO, Schools, Colleges etc.
Pay back period of less than 4 years	Attractive payback period of 5-7 years
	Exemption in corporation / municipality tax

## Jains Strength



## Mounting solutions



## Specialized Solar Solutions

- Floating structure
- Canal top structure
- Agro-voltaic structure
- Solar Green house
- Solar Powered Pumping Stations
- Automatic Solar Module Cleaning System

## Economics of 100 kWp Solar power Plant

- = 1000 sq. meter shadow free area
- > 1.5 lacs of unit generation per year
- > 140 tonnes of carbon emission saving per year
- < 4 years payback
- < 30 days from concept to commissioning



**Industrial** - 322 kWp khandesh Roller Floor Mills, Jalgaon



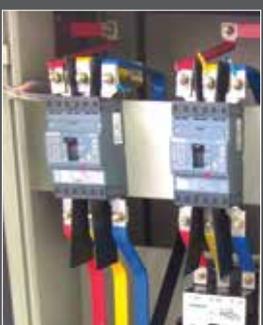
**Residential** - 75 kWp Oberai Garden Society, Mumbai

## End to End Concept to Commissioning solutions for Solar net me



### Grid Connected Inverter

- Suitable for high ambient temperature area
- High efficiency at lower radiation and lower loading
- Wide range of MPPT with 99% efficiency
- Wide range of output voltage
- Inbuilt remote monitoring
- Suitable for outdoor installation



### Grid Synchronization Panel

- Design compatible to respective regulatory authorities.
- Tailor made as per project requirements
- Equipped with Solar generation meter and islanding switch.



**Institutional** - 400 kWp SNJB College Chandwad, Nasik

**Institutional**

**Commercial**



**Commercial** - 51 kWp P N G Jeweler, Jalgaon

**Monitoring , Solar captive power plant and Solar plant with wheeling**

**Remote monitoring features**

- Mobile app
- Wi-fi / Ethernet based remote monitoring
- Provides online real time and past data
- Cloud based solution
- Data analysis
- Displays Errors



**Structure**

- Designed to get maximum generation
- Customized design to suite site & roof requirements
- Designed to withstand local design wind speed of site conditions
- Pre Galvanized structure

## Solar Module



Jain Photovoltaic Modules are made from high efficiency Crystalline solar cells. Suitable number of cells are interconnected in series and then encapsulated in low iron content, high transmissivity tempered glass using UV stable Ethylene Vinyl Acetate (EVA) sheets and premium quality back sheet. These encapsulating materials protect the cells from the harsh environmental conditions when laminated together thus ensuring long life. The laminates are then framed with anodized aluminum frame with holes for ease of installation. Junction box with bypass diode, preassembled cables and connectors fitted for quick and safe installation.

### Features

- PID Resistant
- Latest 5 busbar crystalline silicon solar cells
- High transmission Anti-Reflection (AR) coated toughened glass
- High quality screwless anodized aluminium frame to provide structural strength to the laminate
- TUV approved, IP65 rated 4 terminal junction box with 3 by-pass diodes
- Module as per IEC-61215; IEC-61730 safety class & IEC-61701 Salt Mist Test
- Narrow power tolerance for minimizing losses due to module power mismatch in an array
- Manufacturing facility certified for ISO 9001:2015, ISO 14001:2015, BS OHSAS 18001:2007 and EN ISO 50001:2011 standards

### A] Standard Poly-Crystalline Series

#### Typical Electrical Characteristics

Module Type	JJ-M660			JJ-M672			
	255	260	265	310	315	320	325
Maximum Power [Pm (Wp)]	255	260	265	310	315	320	325
Power Tolerance [Wp]	+ 4.99						
Maximum Power Voltage [Vmp (V)]	29.77	35.76	36.27	36.56	36.59	36.99	37.23
Maximum Power Current [Imp (A)]	8.4	8.39	8.41	8.48	8.61	8.65	8.73
Open Circuit Voltage [Voc (V)]	37.04	44.4	45	45.32	45.35	45.55	46.2
Short Circuit Current [Isc (A)]	8.96	8.86	8.88	9.02	9.1	9.12	9.17
Module Efficiency (%)	15.58	15.89	16.19	15.88	16.14	16.39	16.65
Max. System Voltage (Vdc)	1000						
Module Size (mm) (± 2mm)	1643x996			1960x996			

## B] High Efficiency PERC\* Series:

### Typical Electrical Characteristics

Module Type	JJ-S660				JJ-S672				
Maximum Power [Pm (Wp)]	275	280	285	290	330	335	340	345	350*
Power Tolerance [Wp]	+ 4.99								
Maximum Power Voltage [Vmp (V)]	31.79	32.17	32.54	32.91	37.72	38.08	38.43	38.78	39.13
Maximum Power Current [Imp (A)]	8.65	8.71	8.76	8.82	8.75	8.8	8.85	8.9	8.95
Open Circuit Voltage [Voc (V)]	38.38	38.61	38.85	39.08	46.12	46.4	46.68	46.96	47.25
Short Circuit Current [Isc (A)]	9.29	9.37	9.45	9.52	9.22	9.27	9.32	9.38	9.43
Module Efficiency (%)	16.80	17.11	17.42	17.72	16.90	17.16	17.42	17.67	17.93
Max. System Voltage (Vdc)	1000								
Module Size (mm) (± 2mm)	1643x996				1960x996				

\* All electrical measurements are at STC (25° C, 1.5 AM, 1000 W/m²)

\* Positive power tolerance system applied while categorizing the module in various powers ranges.

### Coefficients

	JJ-M660 / JJ-M672	JJ-S660 / JJ-S672
Temperature coefficient of Pmax	- 0.43%/°K	-0.39%/°K
Temperature coefficient of Isc	0.046%/°K	0.052%/°K
Temperature coefficient of Voc	- 0.33%/°K	-0.30%/°K
NOCT	45 ± 2 °C	45 ± 2 °C

### Mechanical Characteristics

Module Type	JJ-M660/ JJ-S660	JJ-M672/ JJ-S672
Front Cover	Low Iron tempered AR coated glass	Low Iron tempered AR coated glass
Solar Cells (Quantity / type / arrangement / size)	60 pcs/crystalline/ 6 x10/156mm x 156mm	72 pcs/crystalline/ 6 x 12/ 156mm x 156mm
Junction Box	TUV approved, IP67 rated 4 terminal junction box with 3 by-pass diodes	TUV approved, IP67 rated 4 terminal junction box with 3 by-pass diodes
Cable (length / size)	1000 mm/ 4.0 mm²	1000 mm/ 4.0mm²
Connectors	MC4 type	MC4 type
Dimensions (LxWxH)	1643 mm x 996 mm x 35 mm (± 1 mm)	1960 mm x 996 mm x 35 mm (± 1 mm)
Weight (APP)	18.0 kg	21.5 kg

### Operating Conditions

Max. System Voltage	1000 VDC
Safety Class	II
Maximum Series fuse	15A
Operating Temperature	-40°C to +85°C

### Note

- For any kind of technical or design support, you may contact Jain Irrigation System Ltd.

### Warranty

- Manufacturing defect & workmanship: 5 Years
- Power Production (Limited Warranty): 90% for 10 years & 80% for 25 years
- For details of our warranty (terms and conditions), Contact Jain Irrigation System Ltd.

**At present Solar Modules are available from 10 Wp to 350 Wp.**



## The Corporation

There is more to Jain Irrigation than irrigation

8.5 MW Solar Power Generation Project

**Global Presence:** Jain Irrigation Systems Ltd. (JISL) derives its name from the pioneering work it did for the Micro Irrigation Industry in India. However, there is more to Jain Irrigation than Irrigation. Now Jain Irrigation is a diversified entity with turnover in excess of Rs. 8200 crore. We have a Pan- India & Global presence with 33 manufacturing bases spread over 4 continents. Our products are supplied to over 126 countries with a strong network of more than 11000 dealers and distributors worldwide.

**Micro Irrigation:** The Corporation has pioneered and raised a new Micro Irrigation industry in India and thereby helped harbinger a Second Green Revolution. The Micro-Irrigation Division manufactures a full range of precision-irrigation products and provides services from soil/topographical survey, engineering design, supply, installation and commissioning to agronomic support for millions of farmers worldwide. It is the only company in the world which has the largest basket of product and system solutions that can suit any climatic/topographical/crop conditions. The division's pool of over 1000 agronomists, irrigation engineers and technicians are well equipped to support the farmer customers across the globe. The company nurtures a sprawling 2300 acre Hi-Tech Agri Demonstration farm and a training Institute.

**Plastic Piping:** Presently, JISL is the largest producer in Asia of PVC and PE piping systems for all conceivable applications with pipes ranging from as small as 3 mm to 2500 mm in diameter and in pressure ratings ranging from 1.00 kg/cm<sup>2</sup> to 25 kg/cm<sup>2</sup>. JISL has a production capacity of over 5,00,000 tonne per annum or 8000 km/day of plastic pipes. The Piping Division includes a variety of PVC and PE Fittings catering to irrigation needs of the farmers apart from the urban and rural infrastructure needs. The pipes are manufactured conforming to BIS, DIN, ISO, ASTM, TEC, Australian Standards as well as other customised specifications.

Plastic sheet division's globally marketed products help conserve forests by providing alternatives to wood in the home building market.

**Biotechnology:** The Tissue Culture Division produces Banana, Pomegranate, Strawberry, Guava, Coffee, Sugarcane plantlets and has established vast primary and secondary hardening facilities and R&D labs.

**Green Energy:** Jain Irrigation Systems Ltd (JISL) is the topmost solar company which provides end to end solar solutions in residential, commercial, industrial and agricultural sectors. JISL is a solution provider company with more than 1 million satisfied solar customers across India since its inception in 1994. JISL is also a pioneer in Solar Water Pumping and solar Powered Irrigation projects in India. As a one stop Solar shop, JISL is dealing in product manufacturing and application / solution provider of solar photovoltaic modules, solar roof top plants, solar farms, solar trackers, solar pumping systems, solar water heaters and solar appliances. It is the only company having product range from consumer products to MW scale solar farms.

All these products are in harmony with the Group's mission "Leave This World Better Than You Found It".

**Food Processing:** Jain Farm Fresh Division processes tropical fruits such as Mango, Banana, Guava, Pomegranate into Purees, Concentrates & Juices. The company also has a Dehydration facility which dehydrates Onions & Vegetables. The Company has also launched a range of fruit pulp based retail FMCG Products under the brand of "Jain Farm Fresh". Agricultural and Fruit processing wastes from these processing plants are converted to Bio-Energy

to partially run the plants. The residue after the Bio-Energy generation is used as an Organic Manure.

**Turn-key Projects:** JISL undertakes Integrated Agricultural Development Projects on Turn-Key basis from Concept to Commissioning with value added services. JISL offers cost effective, down-to-earth solutions for complex challenges backed by our core strength of global knowledge and experience combined with local man-power which is an ideal combination of technology, intelligence and common sense. Whatever be the nature of the project requirement, JISL can assure Total Turn-Key solutions and maximum value for the farmers. It can also undertake Watershed or Wasteland development projects. Such projects normally begins with selection of site, survey of the command area, identification of appropriate crops, designing of the suitable irrigation systems, determination of agronomic practices, use of other hi-tech agro inputs, providing on-going technical services & training and pre & post harvesting techniques, provide assistance for operation and maintenance of the systems.

The Company has successfully executed large scale turn-key irrigation projects from conception to completion not only in India but also overseas.

### Jain Irrigation offers following turn-key Solutions:

- Integrated irrigation solutions
- Integrated agricultural development projects
- Reuse of waste water for agriculture
- Dust suppression
- Lift & Gravity water pipelines
- 24x7 Water Supply
- High-tech Urban Utilities Solutions
- Effluent conveyance & disposal systems
- Gas distribution System
- Industrial fluid conveying systems, sewerage lines etc.
- Marine On-shore & Off-shore piping
- Relining and rehabilitation of existing pipelines
- Plumbing Systems
- Solar power generation project
- Solar powered Integrated Irrigation project
- Solar pumping systems
- Solar water heating projects

In a nutshell, the Corporation is the only 'one-stop shop' encompassing manufacturing and marketing of hi-tech agricultural solutions/systems and piping services as well as processing of agri produce. No wonder, it has distinguished itself as a leader in the domestic as well as global markets. The corporate product range improves productivity and adds value to the agri-sector. Conservation of scarce Natural resources, protection and improvement of the environment emerge as a blessed outcome. The reward has been over millions of smiling farmers and scores of customers in more than 126 countries.

**Sustainability:** Every business of JAINS, ensures to create shared value, nurtures the environment and contributes significantly to the Water, Food and Energy security of the World.



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