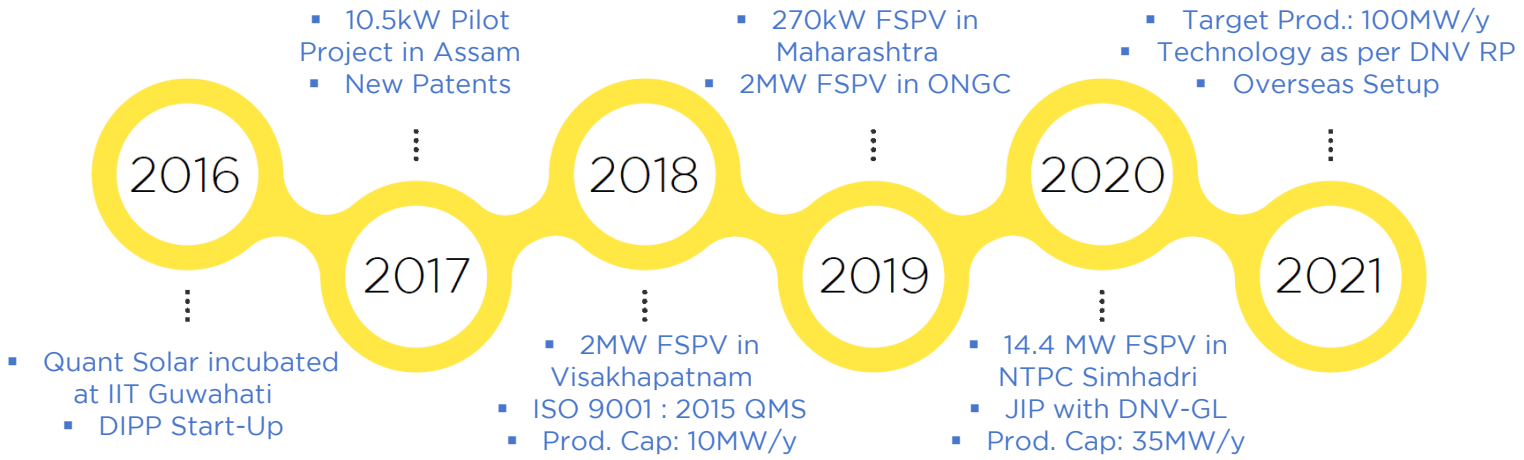
FLOATING SOLAR

QUANT SOLAR TECHNOLOGIES PVT. LTD

ABOUT QUANT SOLAR

- Established in 2016. One of the first movers in the floating solar space
- Co-Founders (IIT Kharagpur) with 20+ years of experience in global marine/ offshore industry
- 15 patents on the floating system, mooring/anchoring system etc.
- In-house Design, Engineering and R&D capabilities
- State-of-art manufacturing facility for Floating System with present capacity of 50MW/year
- Complete Design, Engineering, Analysis, Manufacturing, Installation & Commissioning services
- Site specific engineering capabilities (incl. anchoring/mooring) for any scale floating solar project



WORLD'S FIRST RECOMMENDED PRACTICES FOR FLOATING SOLAR

DNV publishes world's first recommended practice for floating solar power plants. DNV has developed the world's first recommended practice (RP) for floating solar power projects following a collaborative joint industry project (JIP) involving 24 industry participants, including **Quant Solar**.

PROJECTS EXECUTED BY QUANT SOLAR

(A) 10.50 kW Floating Solar Plant in Assam: First of North-East India

Quant Solar installed a pilot project of 10.5 kW capacity on a pond in a remote village in Assam as 'proof of technology and at the same time to promote an integrated development of rural community.

(B) 2MW Plant in Vizag: First MW Scale Floating Solar Plant of India

Quant Solar developed the biggest floating solar plant of India of capacity 2MW at Mudasarlova Reservoir, Visakhapatnam. The scope of work included complete design, engineering, supply and installation of floaters, module mounting system, Solar PV modules, mooring/ anchoring system and related components.

PROJECTS EXECUTED BY QUANT SOLAR

(C) 270 KW Plant in Nagpur: First Floating Solar Plant of Maharashtra

Quant Solar installed the 270 kW Floating Solar Plant in Nagpur in September 2019. The scope of job included complete design, engineering, manufacturing, supply, procure, transportation, storage, insurance, erection, testing and commissioning of 270 KW Floating Grid connected solar PV power plant on turnkey basis with 5 years of comprehensive operation and maintenance.

(D) 2MW Plant in ONGC: First MW Scale FSPV within Industrial set-up globally

Quant Solar installed the 2MW Floating Solar Plant at ONGC in May 2020. Quant Solar performed complete design, engineering, manufacturing, supply, installation and commissioning of 2MW Floating Solar plant on a turnkey basis. This project is unique in many ways:

- First MW Scale Floating Solar Plant in Karnataka State
- One of the few MW Scale FSPVs in an Oil Refinery globally
- Largest Floating Solar Plant within industrial premises in India

PROJECTS EXECUTED BY QUANT SOLAR

Yr 2021

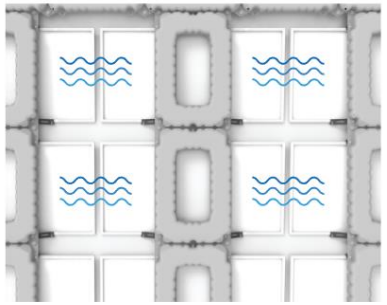
- 36 MW Plant at NTPC Simhadri
- One of the world's largest Floating Solar Plant and India's largest till date
- Spread over 360,000 square meters, it will reduce carbon emission by 48,600 MT per annum

KEY FEATURES OF QUANT SOLAR TECHNOLOGY

- Modular Design configurable for all scales
- Designed for extreme weather conditions
- Tested for up to 200 kmph wind speeds
- Compatible with almost all types of pv modules
- Floats life expectancy 25+ years
- ISO 9001:2015 QMS certified
- Premium quality Raw material, Colour Additives, and UV stabilisers
- Skilled Blow Moulding team with 10+ years of industry experience
- Proprietary software/app for Quality Assurance of floats

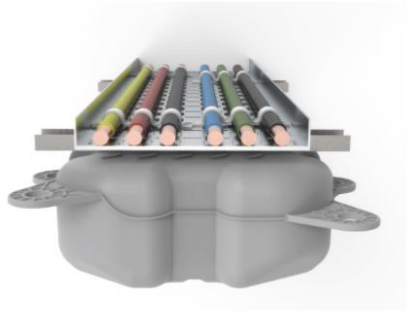
Our Clientele

FLOATING SOLAR TECHNOLOGY BY QUANT SOLAR

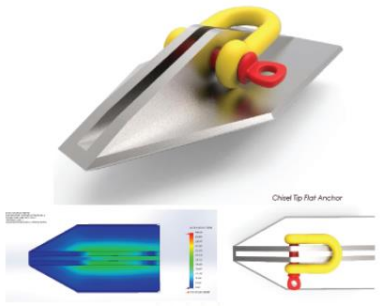


Smart Cooling

Smart Mounting



Smart Cabling

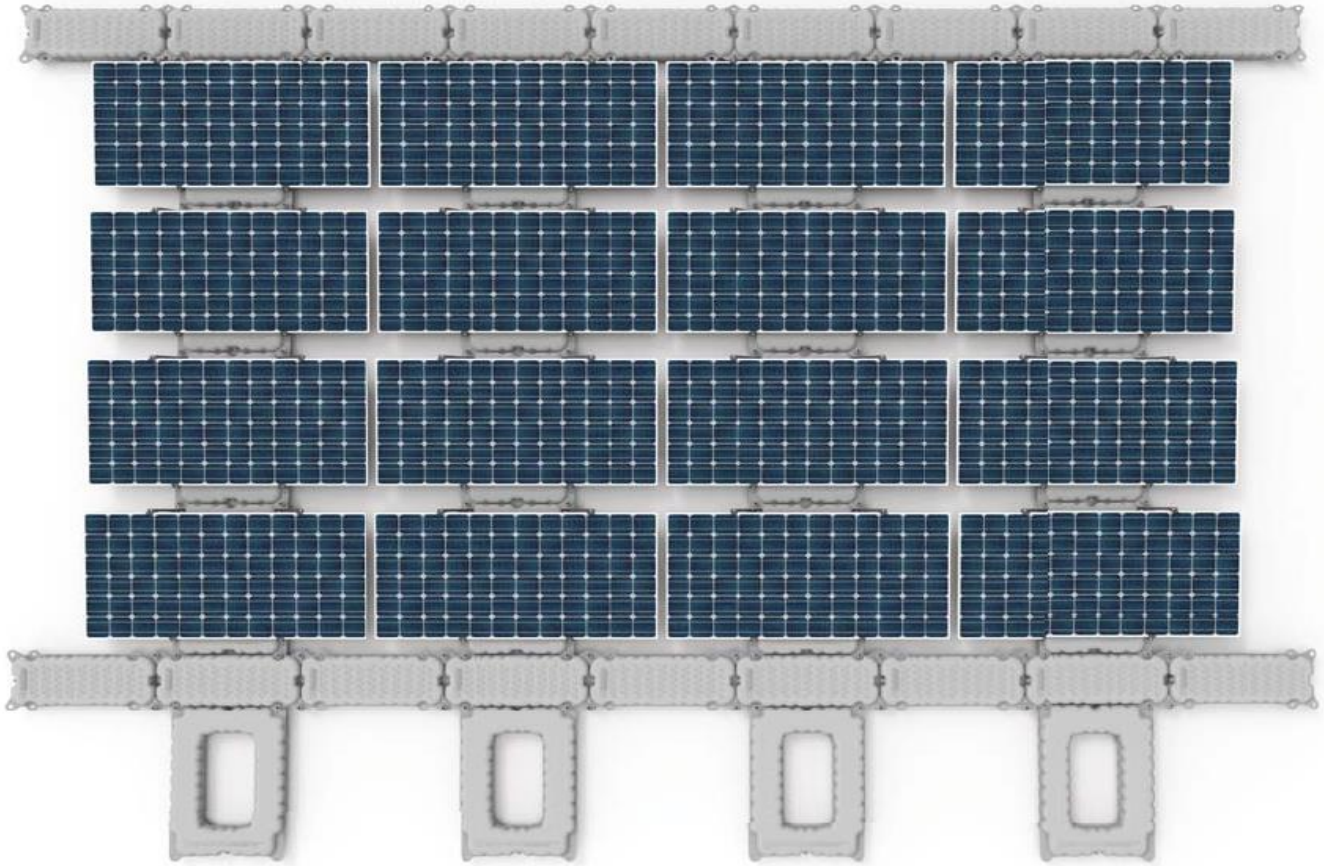


Smart Anchoring

Smart Logistics

OPTIMIZED/ ECONOMICAL CONFIGURATION

CONFIGURATION: 4 PANEL ROW X 1 WALKWAY ROW



TWO FLOATS FOR COMPLETE SYSTEM

PV FLOAT

It is used for mounting solar panels. Solar panels are inclined on the PV float using fibre-reinforced mms and secured using aluminium clamps (Gr. 6061-T6) with SS nut/bolts.

WALKWAY FLOAT

It is used for creating pathways for operation and maintenance in between the four rows of PV float as well as on the periphery of the floating plant.

Floats are made with Premium quality Raw materials, Colour Additives, and UV additives

21 COMPREHENSIVE TESTS TO ENSURE HIGHEST QUALITY

QUANTSOLAR COMPLIES WITH FOLLOWING TESTS ON ITS FLOATING SYSTEM

- Buoyancy
- Drop Test
- Density Test
- UV Ageing Test
- Tensile Modulus
- Automated Leakage Test
- Notched Impact Strength
- Flexural Strength/ Modulus
- Heat Resistance Cracking
- Tensile Strength and Elongation Test
- Destructive Test for thickness measurement
- Environmental Stress Crack Resistance (ESCR)
- Colorimetry
- Creep Analysis
- Fatigue Analysis
- Shore Hardness
- Precipitate Analysis
- Impact Brittle Temperature
- Thermo gravimetric Analysis (TGA)
- Differential Scanning Calorimetry (DSC)
- Fourier Transform Infrared Spectroscopy (FTIR)

FLOATER SELECTION CRITERIA

Considerations

- Site Environmental Conditions
  - Wind
  - Wave and Current
  - Temperature and Humidity
  - Water level variation
  - Water quality
- Block Size and layout
- Mooring Arrangement
- Material strength and durability

Functional Requirements

- Provide adequate buoyancy and stability
- Durable and maintain structural integrity during design life
- Have adequate strength to support PV module/ Equipment
- Allow access for unrestricted maintenance activities
- Minimize stresses on cables

ANCHORING SYSTEM

Main mooring solutions applicable for FPV include:

A. Submerged Mooring: Several individual lines connected to the FPV at the top end and anchored to the waterbed at the lower end. The individual lines can be arranged in a catenary or taut configuration

B. Shore Mooring: Several lines connected at the FPV at one end and to the bank or other land based infrastructure at the other end. The restoring force is provided by the elastic stiffness of the line.

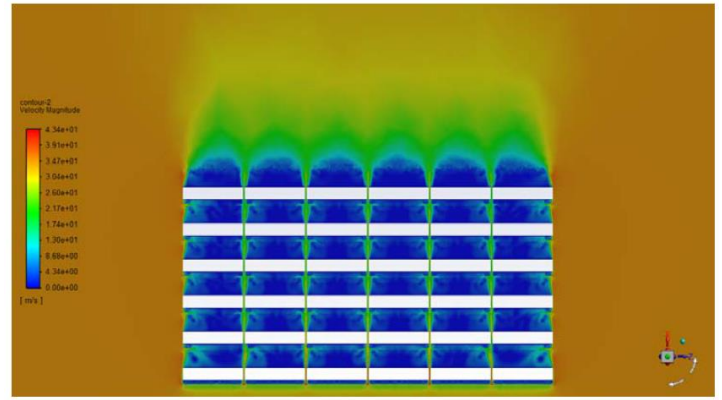
C. Hybrid Mooring: A combination of submerged and shore mooring lines. Typically applied when one or two sides of the FPV are close to the bank.

KEY FEATURES OF A GOOD ANCHORING SYSTEM

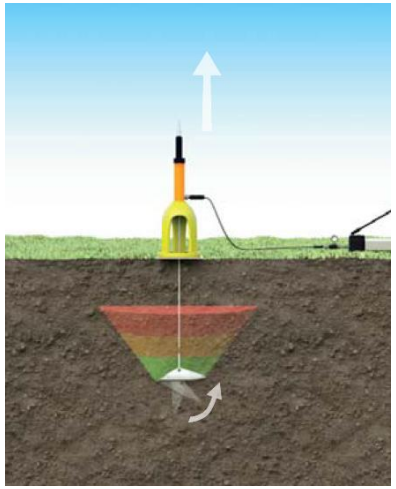
- Bathymetric Analysis
- Mooring Loads Calculation
- Max. Wind Speed & CFD Analysis
- Eight Direction Wind Loading
- Variable Water Depth Assessment
- Mooring design validation
- Fairlead Design and FEA Analysis
- Anchors: Piles/Deadweight/Earth Anchors
- High Design Life Mooring Ropes
- Skilled team for easy and secure installation

ANCHORING SYSTEM

CFD Analysis

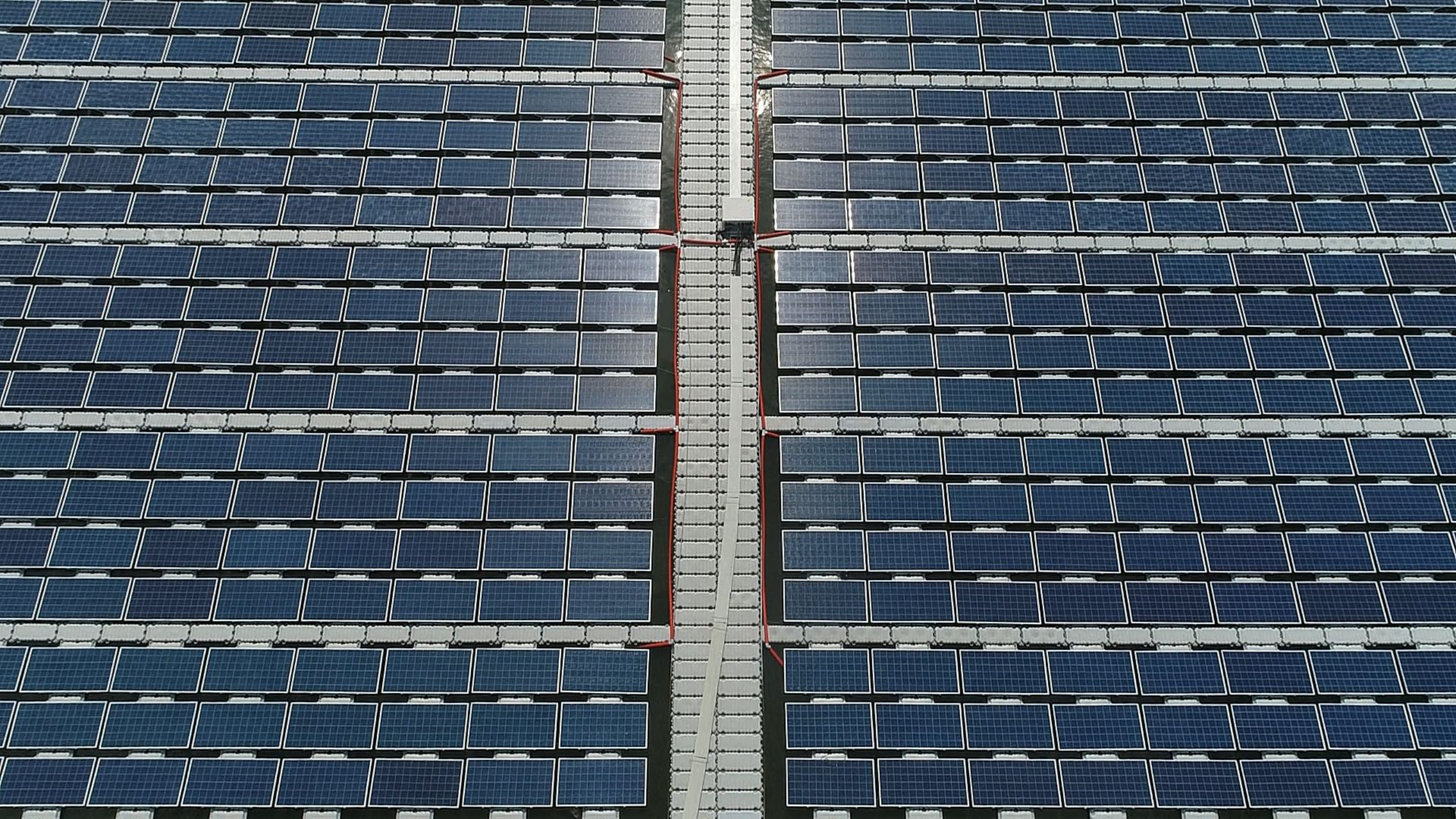


Innovative Anchoring



NTPC SIMHADRI – FLOATING SYSTEM

NTPC SIMHADRI – ANCHORING SYSTEM



TEAM QUANT SOLAR

PROMOTERS

Pankaj Kumar, *Co-Founder & Director*

B.Tech & M.Tech Dual Degree, IIT Kharagpur

Indian Register of Shipping
Resolve Marine Group Inc. USA
Calm Oceans, Singapore

- 17+ years of experience of global Marine and Offshore Industry
- Expertise in International Ship Building Rules And Statutory Codes as per IMO
- Salvage & Emergency Response Services, Critical Shipping Operations
- Technology development, Intellectual Property and Patents
- Sustainable Solutions and Clean Technologies

Siddhant Agarwal, *Co-Founder & Director*

B.Tech, IIT Kharagpur

Goa Shipyard Limited
IntecSEA, USA
Calm Oceans, Singapore

- 10+ years of experience in global Marine and Offshore Industry
- Expertise in Design, Engineering and Construction of all kinds of ships
- Engineering Simulations and Structural Analysis
- Engineering of Offshore Jackets, Oil Rigs, Underwater Pipelines
- Experience in Clean Energy Solutions such as Offshore wind Farms, Tidal Turbines etc.

ADVISORS

Dr. Pankaj Biswas

Advisory -Technology

Asst. Professor, IIT Guwahati, Dept. of Mechanical Eng

- Manufacturing and Design
- Computational Weld Mechanics
- Finite Element Methods
- Solid State Welding

Rahul Prasad

Advisory -Finance

B. Tech, IIT Kharagpur
ISB, Hyderabad
I-Maritime, SBI, ICICI, Marsheq Bank Dubai

- 12+ years in corporate Finance
- Maritime Infrastructure Advisory
- Debt Syndication

Ajay Chaturvedi

Advisory –BD & Strategy

Ex-state Head of MP, NTPC
Ex MD, SunEdison India, USA
Ex Global CEO, MKG Energy, Singapore
Harvard Alumni

- 33 years in Transmission, Distribution , Policy & Regulation including Renewables
- APAC & Middle East operations
- Third Party Inspector with SECI, Govt of India

Quant Solar has over 30 members team of engineers (mechanical, electrical and power systems) and plastic production specialists

THANK YOU

Quant Solar

Floating Solar PV Systems

A(1): Plot 56B, Block E, Industrial Development Area
AutoNagar, Visakhapatnam - 530012
Andhra Pradesh, India

(2): Technology Incubation Centre
Indian Institute of Technology, Guwahati
Guwahati - 781039, Assam, India

T: +91 99038 57365/ +91 82947 08195
E: info@quantsolar.com
W: www.quantsolar.com