

**SOLAR POWER  
IS NOT ABOUT**

**FASHION  
IT'S ABOUT  
SURVIVAL**




An ISO 9001:2015 Certified Company



**we** Are Committed To Each Customer,  
To Quality Installations,  
And To Making Going Solar  
An Effortless Experience."



# What is Solar Energy ?



## SOLAR ENERGY FACTS

**T**he consumption of non-renewable sources like oil, gas and coal is increasing at an alarming rate. The time has finally come to look after some other renewable sources of energy i.e. solar, wind and geothermal energy. Although many countries have started utilizing solar energy extensively but still they have to go a long way to exploit this energy to fulfill their daily demand for energy. Here are few facts on solar energy that can help you assess the potential of solar energy to meet global requirements.

## WHAT IS SOLAR ENERGY ?

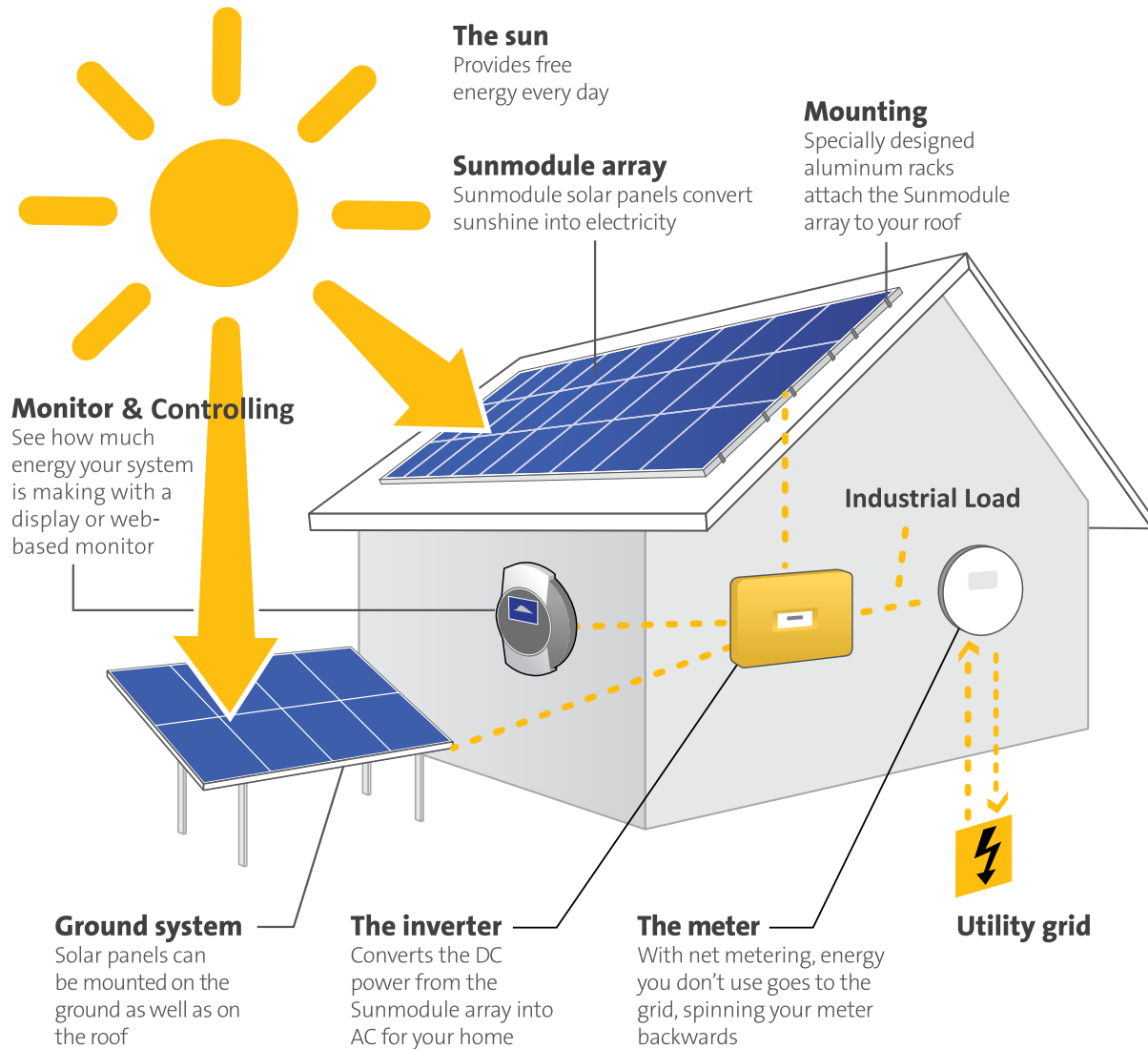
Solar energy refers to energy from the sun. The sun has produced energy for billions of years. Our sun is a natural nuclear reactor. It releases tiny packets of energy called photons, which travel the 93 million miles from the sun to Earth in about 8.5 minutes. Every hour, enough photons impact our planet to generate enough solar energy to theoretically satisfy global energy needs for an entire year.

Currently photovoltaic power accounts for only five-tenths of one percent of the energy consumed in the United States. But solar technology is improving and the cost of going solar is dropping rapidly, so our ability to harness the sun's abundance of energy is on the rise.

## HOW DO SOLAR PANELS WORK?

When photons hit a solar cell, they knock electrons loose from their atoms. If conductors are attached to the positive and negative sides of a cell, it forms an electrical circuit. When electrons flow through such a circuit, they generate electricity. Multiple cells make up a solar panel, and multiple panels (modules) can be wired together to form a solar array. The more panels you can deploy, the more energy you can expect to generate.

## How solar works



**we are**



**there...**

**Manufacturing** Entertainment industry petrol stations  
Printing & Packaging industry  
Pulp and paper industry **Automotive industry** Health care industry  
steel and iron industry Education industry electrical & electronics industry  
**construction industry** energy industry water treatment plant  
conventional hall and theatres Chemicals **Service Textile**  
hospitality industry Auto Showroom Agro Industries Processing  
**Food & Beverages** Cold Storage Chemicals **hospital**  
Residential & Commercial  
**Textile Processing** group captive and utility scale Cold Storage

industrial heating

# We are...



Business Areas

**Private Rooftop Installations**

**Commercial And Industrial Rooftop Installations**

**Solar Power Plants On The Ground**

**Concentrating Solar Thermal ( CST)**

Green Hitech Solutions is a solar power company providing solutions for both Thermal and Photovoltaic technologies. Today ghs has developed capabilities of setting up and commissioning MW scale power projects.

Green Hitech can develop economically viable and technically superior Engineering, Procurement and Construction (EPC) solutions in solar energy by partnering with core solar technology providers. In collaboration with world leaders in module and inverter technology, ghs offers turnkey EPC solutions with wrap guarantees. over the years, ghs has gained expertise in different solar technologies to design and execute solar power plants.

Partnering with the Best



Power and productivity  
for a better world™





**Vision**

Energy as green  
Energy by own

**Mission**

Get updated on renewable  
energy Technology  
Implementation of solar power by  
**Affordability ...**  
**Serviceability ... Reliability**

# what We do...



**Early-stage Development,  
Site Audit And Feasibility**



**Concept, Design,  
Engineering & Approvals**



**Procurement  
& Construction**



**Technical  
Management Services**



**Installation &  
Commissioning**



**Facility &  
Site Management**



**Plant Performance  
Management**





# Solar Power

for everyone

## Why



## Q CELLS



### Creating a More Sustainable Future for Our Planet

As a member of the Hanwha Group, **one of South Korea's eight largest corporations**, Hanwha Q CELLS is backed by a strong partner with a proud 65-year history. Hanwha Group specializes in other businesses, including manufacturing & construction, finance, and services & leisure. **Globally, it is ranked 246th among Fortune Global 500 companies and operates 258 networks worldwide.** At the center of it all, it is our group's belief and desire to lead a sustainable future for both mankind and our planet. These beliefs are what drive Hanwha Q CELLS to pursue different possibilities- developing and innovating new energy solutions.

Through each of our businesses, we provide energy to our customers, partners, and communities for a sustainable and vibrant future. The sun powers everything that grows on earth- it is clean, cost-effective, and infinite. Driven by our corporate philosophy of giving and earning trust and loyalty, we are able to meet the energy needs of people and institutions in diverse markets. Our full-scale entry into the photovoltaic business in 2010 was a natural extension of this mission, allowing us to offer a world-class array of sustainable solar products and services for generations to come.

Hanwha Q CELLS has a strong heritage that dates back to its foundation as **Q.CELLS SE in Germany in 1999**, when it began as a true pioneer of advanced solar cell technology. Since then, Q.CELLS quickly became one of the solar market leaders for its innovations in the PV industry. In 2012, Q.CELLS SE became part of the Hanwha Group, forming Hanwha Q CELLS. Then in February of 2015, the merging of Hanwha SolarOne and Hanwha Q CELLS established Hanwha Q CELLS Co. Ltd. (NASDAQ: HQCL).

Today, Hanwha Q CELLS is a vertically integrated photovoltaics company and one of **world's top 5 Silicon Module Super League members**. We are the only solar company in the world with a **R&D network in 4 countries**, manufacturing plants in 3 countries, and a sales network in more than 40 countries worldwide. Our comprehensive product portfolio includes solar cells, modules, complete systems for commercial rooftop installations, and turnkey solar power plants. We develop and test our products at our headquarters for Technology and Innovation in Germany until they are ready for serial production at our manufacturing sites in Korea, Malaysia, and China. Our global distribution network then supplies our products worldwide.

The logo for Q CELLS, featuring a blue 'Q' followed by 'CELLS' in black.

Engineered in Germany

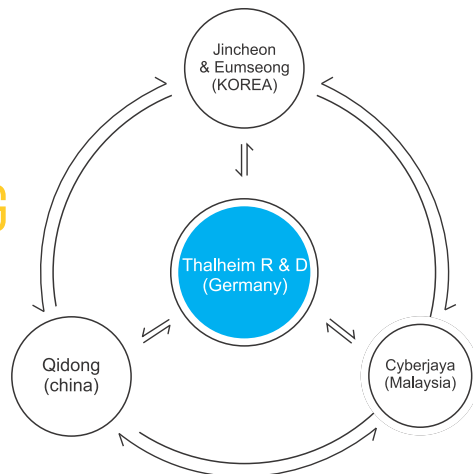
The text 'Our History' is written vertically in large white letters. The word 'Our' is at the top, followed by 'History'. There are decorative orange and grey circles behind the text.

# GLOBAL NETWORK GERMAN QUALITY

As a leading global manufacturer of solar modules, solar cells and PV systems, Hanwha Q CELLS boasts leading technology, financial stability, and a global network - for safe energy provision and a clean future.

- is German Engineering from Bitterfeld-Wolfen, Germany.
- is guaranteed quality with an outstandingly low rate of module degradation backed by a 12-year product warranty and a 25-year linear performance warranty.
- is the first manufacturer of solar modules to participate successfully in the Quality Tested program of the VDE - an independent certification institute from Germany. For the first time, periodic testing is now required.
- operates the largest technology and module test centre in the industry, as well as its own VDE - certified testing laborator.
- tests its products under extreme climate conditions, such as tropical humidity, desert heat, and arctic cold.

## GLOBAL MANUFACTURING NETWORKS



# MANUFACTURING EXCELLENCE

Hanwha Q CELLS is the Global no.1 photovoltaic cell producer.

The keys to Hanwha Q CELLS' excellent quality management are our fully automated manufacturing facilities and our on-site communication system that ensures real-time communication with our manufacturing sites and our R&D centers all over the world. Our state-of-the-art Manufacturing Execution System guarantees 100% traceability of cells and modules, from procurement to logistics. Furthermore, our system optimizes the entire production process by maintaining an optimum balance between production scheduling, inventory holding, manufacturing and product delivery. To date, we have mass-produced more than 1 billion Q.ANTUM solar cells. (As of July 2017)

 Hanwha  
**Q CELLS** Q.ANTUM  
SOLAR CELLS  
1 Billion

As of 2017, Hanwha Q CELLS has successfully mass-produced more than 1 billion Q.ANTUM solar cells, equivalent to more than 5 GW since 2012.

# QUALITY



**Q CELLS**

## LEVEL 1

### YIELD SECURITY

Since 2011, Q CELLS Yield Security has been the guarantee for the reliability of our products. It combines guaranteed PID resistance, Anti LID Technology, security against Hot-Spots, and protection against the counterfeiting of our company's products

## LEVEL 2

### ONE-TIME CERTIFICATION TESTS

The second level is comprised of international initial certification tests, for example, in accordance with IEC, CSA / UL, MCS, JET and Kemco. These guarantee that the electrical safety of the modules and the safety of its construction comply with international standards.

## THE FOUR LEVELS OF QUALITY

BEFORE A PRODUCT IS

WORTHY OF THE NAME Q CELLS ,

IT HAS TO UNDERGO AND PASS

FOUR INDEPENDENT QUALITY PROGRAMS

---

## LEVEL 3

### VDE QUALITY TESTED

The "VDE Quality Tested" program exceeds the initial certification testing.

In addition, monthly re-testing guarantees consistent quality and product testing at all times.

## LEVEL 4

### Q CELLS QUALITY PROGRAM

Q CELLS internal quality program ensures that all products meet our company's high standards on a daily basis.

# THE FIGURES SPEAK FOR THEMSELVES

## **4 R&D Centers**

With scientists in Germany, China, Korea and Malaysia, Hanwha Q CELLS continues to innovate at the forefront of the global solar industry.

## **Tier 1 Bloomberg Rating**

Hanwha Q CELLS has a Tier 1 Bloomberg rating. That makes us the perfect partner for investors.

## **40+ Countries**

Hanwha Q CELLS' global footprint spans Europe, Asia-Pacific and North America, with sales offices in more than 40 countries.



## **German Engineering**

Engineered in Germany and developed by 485 engineers across four R&D centers, we provide top quality solutions with unparalleled performance.

## **8 GW Capacity**

Hanwha Q CELLS' cell production capacity of 8 GW and solar module manufacturing capacity of 8 GW makes us the largest cell manufacturer and one of the biggest solar module manufacturers in the world (As of January 2018).

## **Fully Bankable**

Backed by Hanwha Group, one of South Korea's 8 largest corporations, Hanwha Q CELLS provides optimal business stability, reliability and continuity.

## **1 GW Track Record**

Hanwha Q CELLS and its predecessor company, Q Cells SE, have installed over 1 GW of solar power plants.

Bankability of ABB solar inverters  
A vital requirement to help mitigate risk  
and maximize return on investment

# Bankability

## A matter of trust

The concept of bankability is today critically important in the solar photovoltaics (PV) business due to the rapid growth of the PV market and the arrival of numerous new players all through the value chain. Bankability has therefore become an essential benchmark which investors, banks and other financing institutions use to assist with financing decisions.



A hand is shown holding a glowing lightbulb. The lightbulb is illuminated from within, and its glass surface reflects a landscape of solar panels under a blue sky with clouds. The background is a dark, solid color.

Power and productivity  
for a better world™



# A reliable solar inverter is the heart and brain of any PV system

In any PV system, the inverter acts as both the heart and brain, safely and efficiently transforming DC power to AC to be used locally or fed to the distribution grid. Thus, to meet bankability requirements, it is absolutely critical that the inverter is highly efficient, reliable, safe and serviceable.

Power and productivity  
for a better world™ **ABB**

# Service

What you need,  
when you need it,  
where you need it

Service can play a decisive role in the success or failure of any long-term investment. With many PV installations expected to have a working lifetime over 20 years, fast reliable service for the long-term is a critical consideration.





# This is **ABB**

As one of the world's leading power and automation technology companies, we help our customers to use electrical power efficiently, to increase industrial productivity and to lower environmental impact in a sustainable way.

- ▶▶ 135,000 employees in about 100 countries
- ▶▶ \$38 billion in revenue (2011)
- ▶▶ Formed in 1988 merger of Swiss and Swedish engineering companies
- ▶▶ Predecessors founded in 1883 and 1891
- ▶▶ Publicly owned company with head office in Switzerland



# SOLAR MOUNTING STRUCTURE

- SS 304 fasteners are provided
- Virgin Aluminium 6063 T6 grade material
- Portrait and landscape orientation feasible
- Universal clamping system of solar PV panels
- Saw tooth serration are used in rails to increase the surface contact area by four times in order to increase the friction force
- All supporting clamps and angles supports are minimum 5mm.



UNIQUE ANTI  
THEFT ALLEN  
SCREWS



Living.  
Improved daily.

- UV resistant weather proof sealant provided for metal sheet roofs





# PHOTOVOLTAIC CABLES

Electrolytic Multi Stranded tinned copper  
conductor flexible as per IEC60228 Class 5

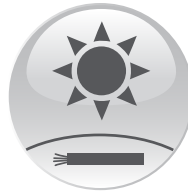
## Severe Weather Resistance



Maximum Conductor Temperature  
120° C<sup>(1)</sup> IEC 60216



Resistance to Extreme Temperatures  
Minimum: -40° C IEC 60811-1-4



Resistance to Ultraviolet  
Rays (UV) UL 1581



Resistance to Ozone  
IEC 60811-2-1



Resistance to Water Absorption  
IEC 60811-1-3

## Life Expectancy



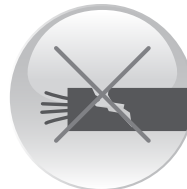
Design Life Time 30 Years  
IEC 60216



Impact Resistance  
IEC 60811-1-4



Abrasion Resistance  
EN 50305



Tear Resistance  
IEC 61034-2

## Mechanical Resistance

## Severe Weather Resistance



Environment-Friendly



Halogen Free  
IEC 60754-1



Low Corrosive Gas Emission  
IEC 60754-2



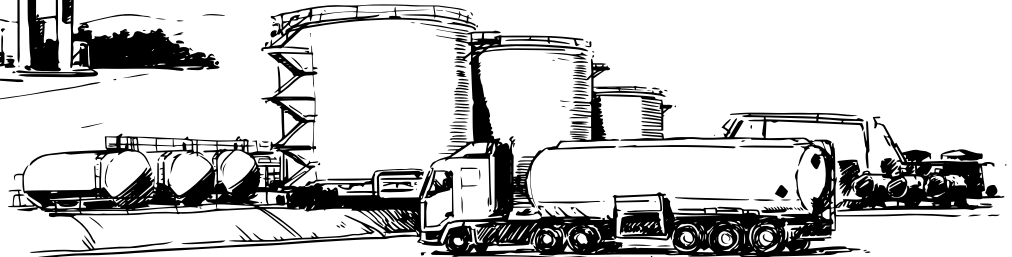
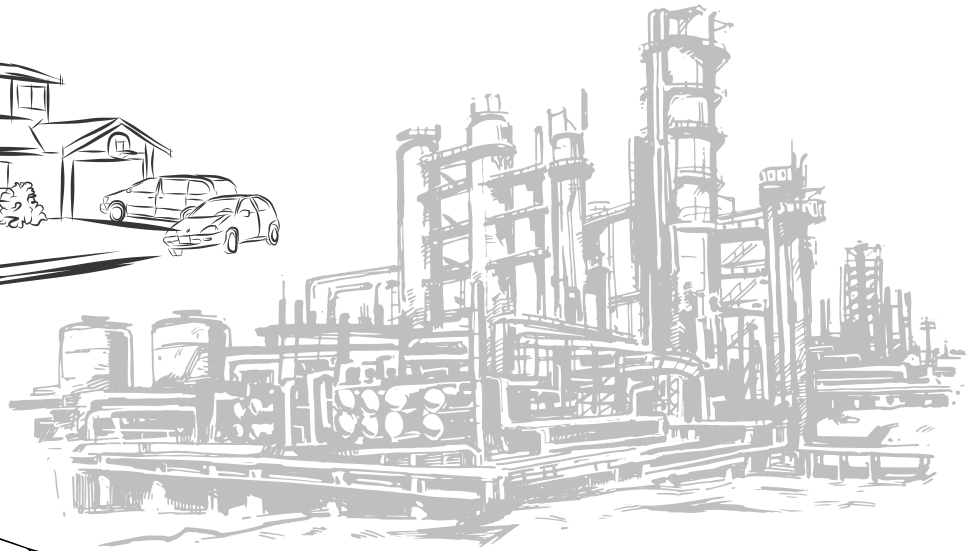
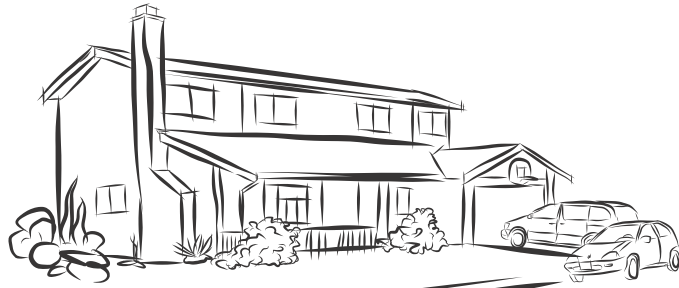
Low Smoke Opacity  
IEC EN 61034-2



Non Fire Propagation  
IEC 60332-3

Power and Heat

# industrial Commercial Public Residential



OUR SERVICE AREA

# TEXTILE INDUSTRY

SPINNING

WEAVING & KNITTING

DYEING AND PRINTING

TEXTILE PROCESSING

GARMENT INDUSTRY



OUR  
SERVICE AREA

# FOOD-BEVERAGE INDUSTRY

SPICE MANUFACTURERS

JUICE & CARBONATED

PACKAGED DRINKING WATER PLANT

EDIBLE OIL REFINING INDUSTRY

FLOUR MILLING INDUSTRY

POULTRY & FROZEN FOOD INDUSTRY

BREWERIES & DISTILLERIES

COLD STORAGE



OUR SERVICE AREA

# DAIRY INDUSTRY

DAIRY FARM

MILK PROCESSING UNITS

MILK BY PRODUCTS PLANTS

ICE CREAM PRODUCTION PLANT

SWEET & SAVORY MANUFACTURING

BAKERY PRODUCT UNITS

FEED MILLS



OUR SERVICE AREA

# HOSPITALITY INDUSTRY

HOTEL AND RESTAURANT

RESORTS & SPA

LAUNDRY UNITS

CLUBS & BARS





OUR SERVICE AREA

# ENTERTAINMENT INDUSTRY

CINEMA THEATRES

MULTIPLEX

EXHIBITION COMPLEX

MARRIAGE HALL

SHOPPING MALL

RECREATION CLUBS

THEME PARK



OUR SERVICE AREA

# HEALTHCARE INDUSTRY

HOSPITALS

PHARMA COMPANIES

COSMETIC MANUFACTURERS

OUR SERVICE AREA

# CONTINUOUS PROCESS INDUSTRY

STEEL AND IRON INDUSTRY

CEMENT INDUSTRY

PAINT MANUFACTURING UNITS

PULP AND PAPER

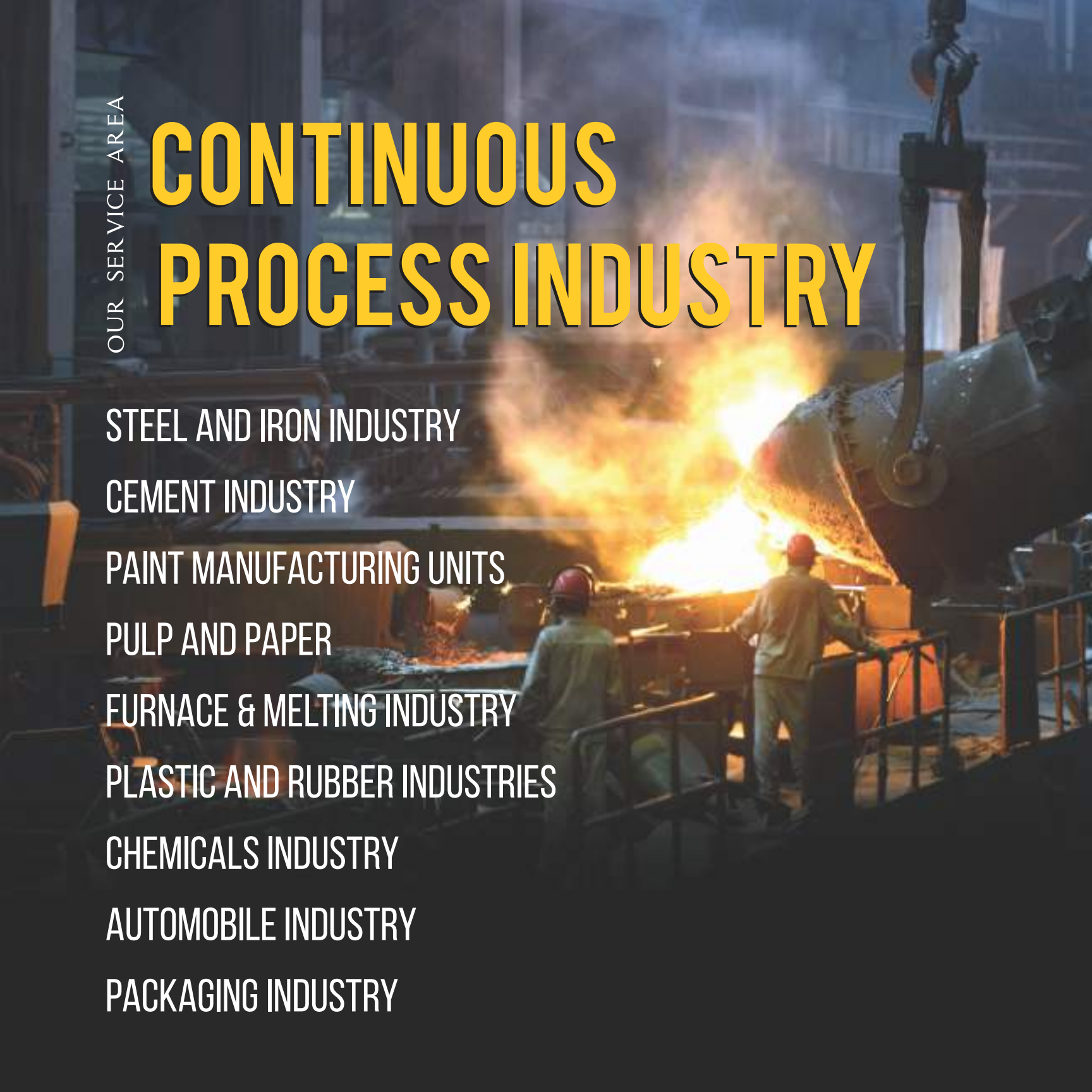
FURNACE & MELTING INDUSTRY

PLASTIC AND RUBBER INDUSTRIES

CHEMICALS INDUSTRY

AUTOMOBILE INDUSTRY

PACKAGING INDUSTRY

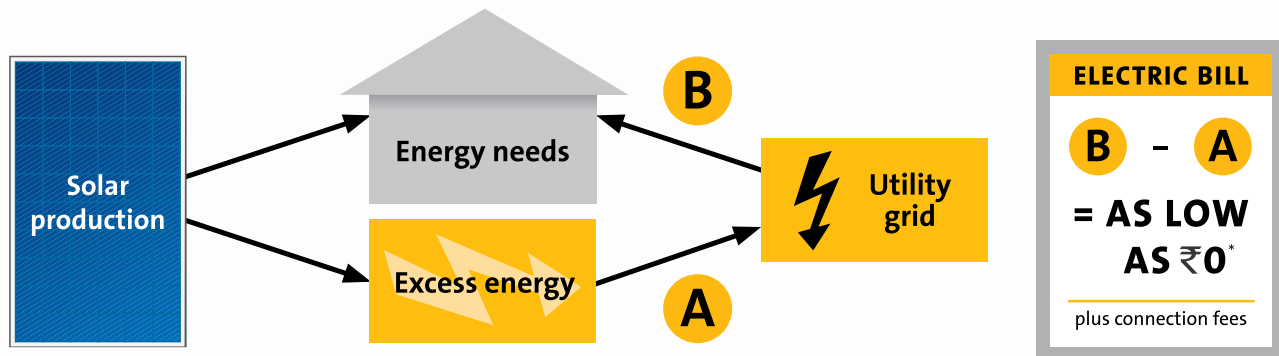


# Commercial Public Residential

Our Service Area

- EDUCATION INDUSTRY
- VILLA & APPARTMENTS
- JEWELLERY SHOWROOM
- CAR SHOWROOM
- CORPORATE OFFICE

## How net metering works



\* Not all systems achieve 100% energy bill reduction.



## **BENEFITS FROM THE GRID CONNECTED ROOFTOP SOLAR SYSTEM**

Solar Rooftop System provides following technical benefits:

- Utilization of available vacant roof space
  - Accelerated depreciation benefits
  - Low gestation period
  - Lower transmission and distribution losses
  - Improvement in the tail-end grid voltages and reduction of system congestion
  - Loss mitigation by utilization of distribution network as a source of storage through net metering
  - Long term energy and ecological security by reduction in carbon emission.
- 
- Abatement of about 60 million tonnes of CO per year over its life cycle
  - Better Management of daytime peak loads by DISCOM/ utility
  - Meeting of the renewable purchase obligations (RPOs) of obligated entities which are targeted at 8% of electricity consumption
  - Minimal technical losses as power consumption and generation are colocated.
  - No Moving parts means minimal Maintenance.
  - Our 25-year warranties leave you worry-free.

Withstand extreme environmental conditions while maintaining the integrity of your roof.

Can be installed on nearly any roof.

Help keep your home cooler in the summer by providing shade from the sun and warmer in the winter by creating a heat barrier.

May extend the life of your roof by protecting it from the elements.

Elevated GI Structure



Metal Roof Structure



**ROOFTOP SOLAR SYSTEMS**



# GROUND MOUNTED SOLAR SYSTEMS

If you have a need for a larger system than your roof area will accommodate, a ground-mounted system may be right for you.

Ground-mounted solar systems:  
Anchor to the ground with a variety of foundation options.

Withstand extreme environmental conditions.

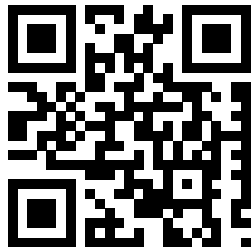
Can be installed on nearly any contour at a variety of heights and tilt angles. Can also function as shade structures for the back yard or driveway or carport.

"The nation that  
leads in renewable energy  
will be the nation that  
leads the world "

- Dr. A.P.J Abdul Kalam



**This catalogue ends.  
Our partnership continues.**



16/1, Bangaru Nagar,  
Opp. Vellalar Engineering College,  
Thindal (Po), Erode - 638012.  
Tel : 0424 - 2244111, 9842824111  
e-mail : admin@greenhitech.in  
Web : www.greenhitech.in

