

Technology Presentation

Solar Power
Energy Storage

Solar Photovoltaic Technology



Powered by Aton Energy



A-Sun Benefits

We build the entire module



Class A
PID

1. FROM CELLS TO MODULES

Being vertically integrated allows us to guarantee a High Quality Standard on our PV Panels. We select and control each single cell and each module, all under TUV Rheinland and ISO9001 Certified criteria.

2. LATEST PV TECHNOLOGY

Fully Automatic German Machineries, for perfection. Over 50 automatic and human controls along the manufacturing process. On top, TUV Rheinland ensures our Quality Control on each production.

3. HIGH EFFICIENCY CELLS

First grade silicon cells with the highest purity are labeled as HEC+ to ensure the Output Warranty for the longest period. Only A-grade cells with a minimum power output on Flash-test control are selected.

4. BEST WARRANTIES + INSURANCE

If something goes wrong during the 25 Years? Our Warranties are covered by the 3rd largest insurance company in the World (CHUBB) for damages and financial losses. So relax and enjoy the Sun.

5. CUSTOMER SERVICE

Our experienced London - based team is dedicated to support our clients needs and to respond to any questions or inquiries, in order to advise you with the best solution for your Solar projects.

A-SUN is a photovoltaic manufacturer with 10 years of experience in the PV industry, working with high profile partners with a long history.

With a total production capacity of 1GW for silicon cells and PV modules, A-SUN is one of the most reliable factories in the world.

High Efficiency

High yield, safe and strong



We created a range of photovoltaic modules, in Monocrystalline and Polycrystalline, with outstanding advantages.



High efficiency
cell plus



Low light
Performance



Temperature
Resistance



Positive
Tolerance



Light weight

DID YOU KNOW?

Our products are certified for installations in coastal climates, withstanding **SALT mist corrosion** IEC 61701. Also, they meet the requirement of the **AMMONIA resistance certification** IEC 62716, proving they can be used in a corrosive environment such as livestock sheds where the ammonia rate can be high.

Design

Full black modules



The FULL BLACK LINE is the most amazing module since Photovoltaic exists. Why choose between aesthetic and efficiency, when you can get both.

"the FULL BLACK panel is a good deal ! I still produce high output without giving an industrial look to my beautiful cottage." Mr James



DID YOU KNOW?



And with the Full Black mounting system it looks even nicer!
Ask for A-SUN SYSTEM

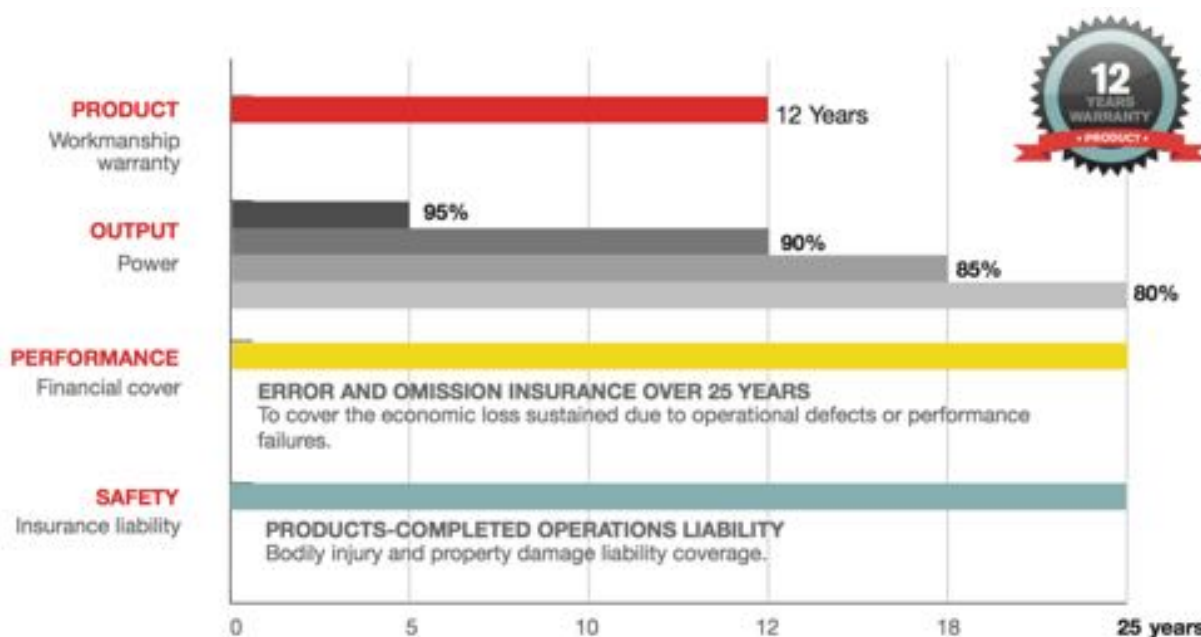
- Highest cells efficiency
- Long-life resistance back sheet for an ever-lasting aesthetic
- Perfect look for BIPV or residential

Warranty

Double insurance

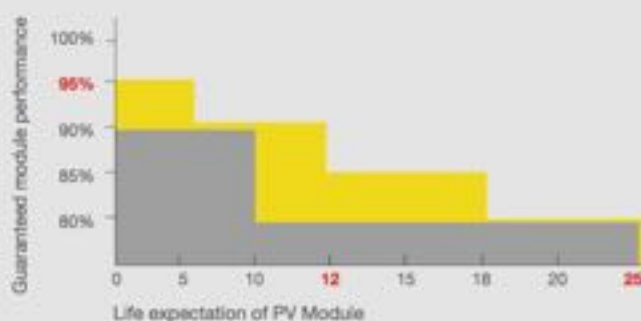
The PV module manufacturer A-SUN delivers every module with strong warranties and an insurance policy by **CHUBB** Group of Insurance Companies. All our products are covered for 12 Years on workmanship and the Output Performances for 25 Years. They also include an Insurance Liability and a Financial Cover if the panels do not perform, as they should.

We supply you with **4 LEVELS OF WARRANTIES**.



CHUBB is the Top 3 Insurance Company in the World. For more than 125 years, the Chubb Group of Insurance Companies has been delivering exceptional property and casualty insurance products and services to businesses and individuals around the world.

COMPARISON



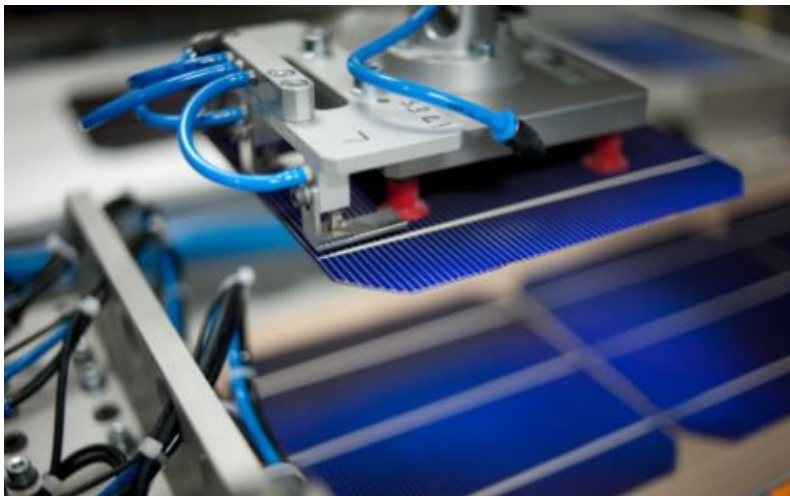
● A-SUN power output warranty
● Other power output warranty

Over 25 years, A-SUN warranties are recognized to offer you the best: reliability and efficiency for your PV system, but also for your own safety and for your property.

THAT'S BETTER THAN "FAMOUS" BRANDS.

Durability

Selecting the best material



Factory ISO-certified



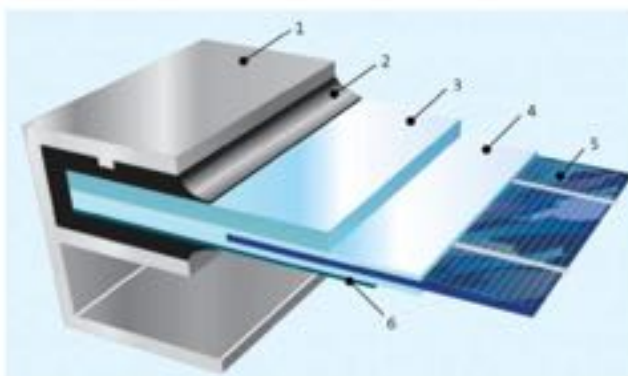
Grade Cells type A



TUV Rheinland Periodic inspection

We manufacture our own cells, to ensure quality and competitive cost. We select each cell and assemble every single module on our own site. We closely work with Inspection Laboratories to control along the production process and before shipment, because **WE LIKE TO DO THE RIGHT THINGS PERFECTLY.**

Over the years, we developed a strong partnership to ensure consistency in our supply chain. Thus, we are only working with High Profile companies with a strong background and with dedication to quality and service, **AS MUCH AS WE ARE.**



1 Anodised Alu Frame

2 Silicon Gel

3 Glass Micro - structured

4 EVA

5 Cells

6 Backsheet TPT

DOH CORNING



SAINT-GOBAIN



BRIDGESTONE



JA SOLAR



KREHPOL GROUP



+ JUNCTION BOX with Diode by pass
MC4 Connectors

Reliability

Quality Management System



MCS certified



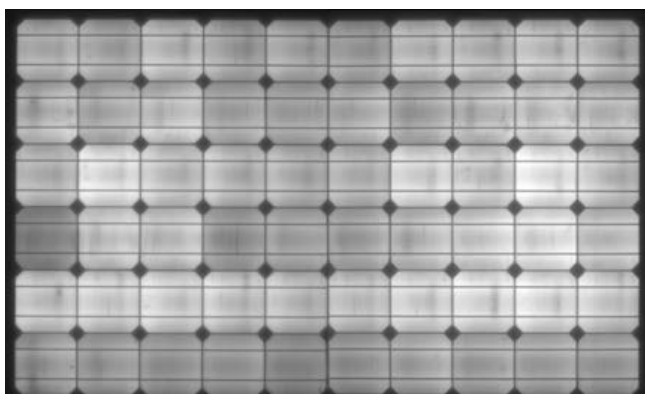
Qualified IEC 61215
Safety tested IEC 61730



IEC certified

A-SUN Modules are Certified for **EUROPE**: IEC 61215, IEC 61730, CE, TUV and MCS. The major accredited Testing Laboratories certified our products into their own facilities, respecting the strictest regulations and approving the quality of our products, TO BE STAMPED “SEHR GUT”.

There are two essential tests to check quality and to record traceability on every panel: **Flash Test and Electroluminescence Test**. Only 5% of the Manufacturers have the facilities to do it, YES, WE HAVE.



ELECTROLUMINESCENCE TEST

- Test to control Micro-crack and quality of Cells
 - Done automatically on every module
 - Before and after lamination
- IF THE MODULE FAILS, IT'S REJECTED.

FLASH TEST

- Test to control exact Output of the module
 - Done on every module
 - Tracking number for a better traceability
- FOR EACH DELIVERY, A FULL QC REPORT.

Challenge

To create a better product

Everyday, we challenge ourselves to design, to produce and to deliver better products. Always with the same goal: respect our clients and the environment.



R&D - INNOVATION

The most efficient module is ever to come yet! Yes, because our engineers work hard to keep improving the performances of our products and find ways to deliver the most efficient silicon cells and modules. Our goal is to obtain stellar products and services within tight time frames, at a cost that represents the best possible value to our customers.
NO WORRIES, WE ARE ALREADY AT THE ULTIMATE YET.

RESPONSABILITY

Our Code of Conduct requires to ensure safe working conditions, to establish and maintain environmentally responsible manufacturing processes. Over the years, A-SUN has developed an entire ecosystem of suppliers who support our business operations. We're committed to creating and ensuring high standards of social responsibility, and we insist on business partners WHO SHARE OUR VISION OF A BETTER WORLD.

SERVICE

Because we build the entire product — from cells to assembling to the full system — we also take care of its delivery. A-SUN can provide expert technical and commercial support. Get the technical support and details on our products by contacting us via phone or e-mail.
THERE IS ALWAYS SOMEONE TO TAKE CARE OF YOU.

Performance

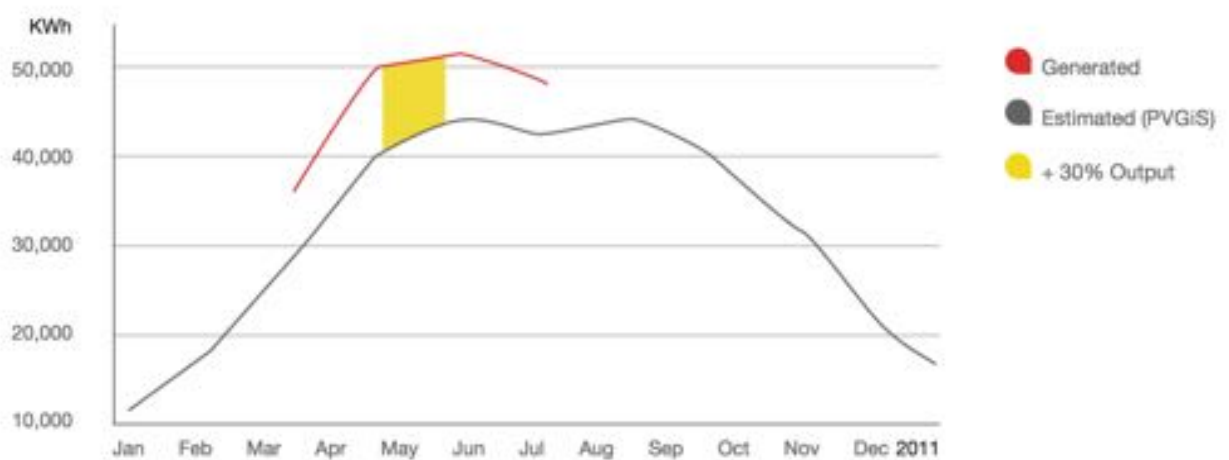
Results beyond expectations

Not convinced yet? Have a look to the monitoring results we received from our UK clients.

JB WHEATEN LOGISTICS Somerset, UK

- System size: 396 KWp
- Commissioned date: March 2011
- A-SUN 190W monocrystalline, silver color
- German brand inverter

"Our PV System generated 30% more income than our initial Business Plan. It's very good, considering weather conditions have not been fantastic." JB Wheaton Owner



References

Utility scale

Elms Farm UK

SIZE 29 MWp

116,000 PANELS

ASUN-250 Poly

November 2015



Bower House UK

SIZE 10 MWp

40,000 PANELS

ASUN-250 Poly

January 2016



References

Commercial & Industrial

Brecknell Willis

SIZE 200 kWp

1,000 PANELS

ASUN-200 Mono



South Chard

SIZE 1.2 MWp

6,000 PANELS

ASUN-200 Mono



AE Energy Storage Technology



AE Lithium Battery Benefits

Cutting-edge technology built to last

AE has been building energy solution systems in solar and energy saving for 10 years. The same degree of expertise, quality control and technological innovation has applied to our process of developing high-performance batteries for the energy storage systems.



Small and light weight

- 5 times lighter
- 50% less volume

Extended operating life

- > 5000 cycles
- Single cell monitoring

Wide temperature range

- Outdoor/indoor use
- Cold or hot

Safety

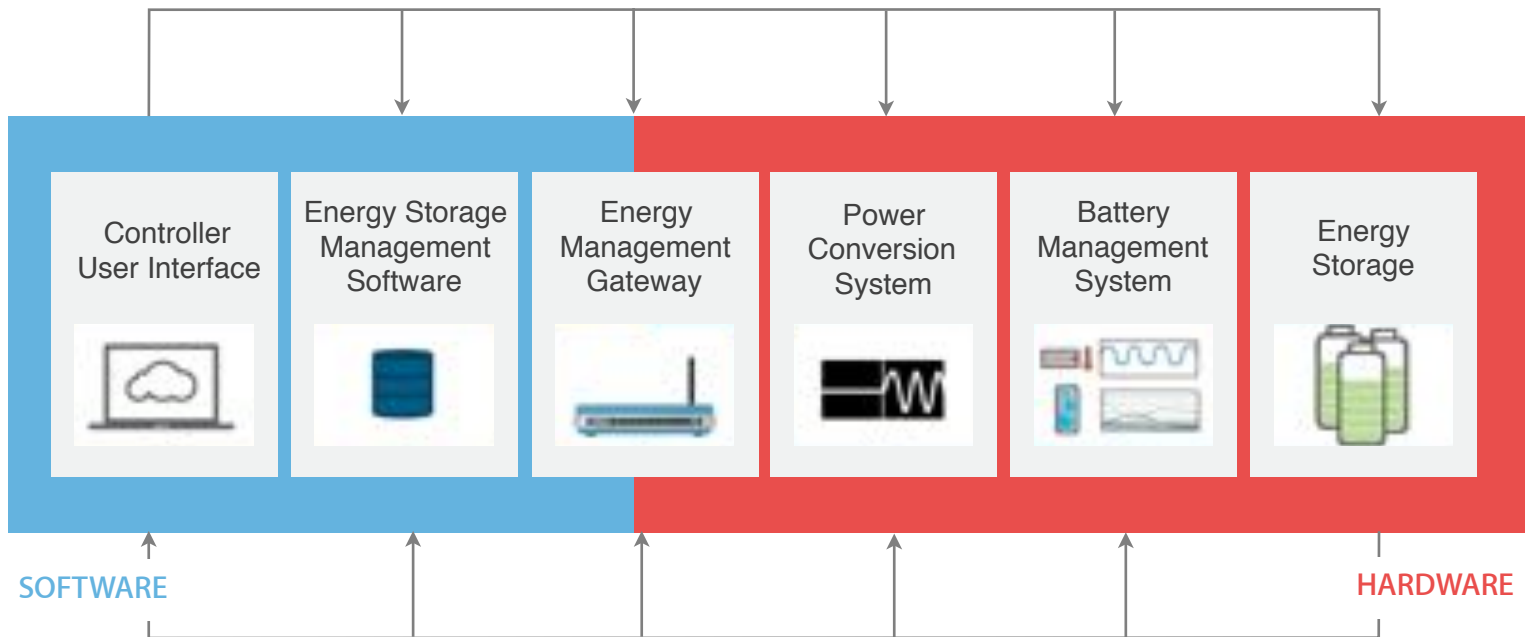
- International standards
- Runway risk free



Energy Management Platform

Multitask capability

AE offers a complete, pre-installed, easy-to-install and easy-to-use “plug n’ play” storage solutions. Our Energy Management System platform developed by AE can manage the entire grid, C&I use and facilitate the integration of renewables.



Multipurpose Applications

Utility Grid

We enhancing security of energy supply and decarbonising the energy grid



Commercial & Industrial

We improve your energy profile and help you generate extra incomes



Microgrid

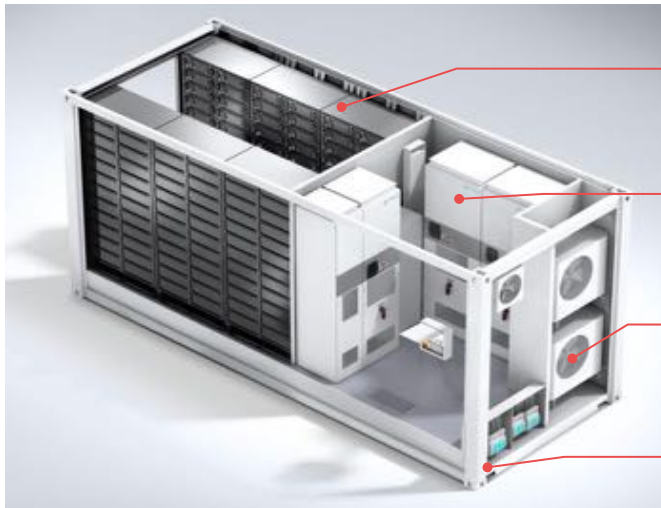
Full back up and resilience to ensure power all time, and best for operation isolated from the grid.



Customised Design

All-in-One Solution

AE has been building energy solution systems in solar and energy saving for 10 years. The same degree of expertise, quality control and technological innovation has applied to our process of developing high-performance batteries for the energy storage systems. We fully integrate all our premium components into an AC-connected solution with everything you need.



Battery Racks:
Store the electricity

Power Conversion System:
Converts the electricity
from DC into AC

HVAC:
Maintains operation
temperature

Container:
Easy installation



Battery cells

- Thermal runaway prevention
- 3-phase separator
- Overcharge safety



Battery Rack

- Bundle of 256 cells
- Rack system for easy maintenance
- Highly scalable

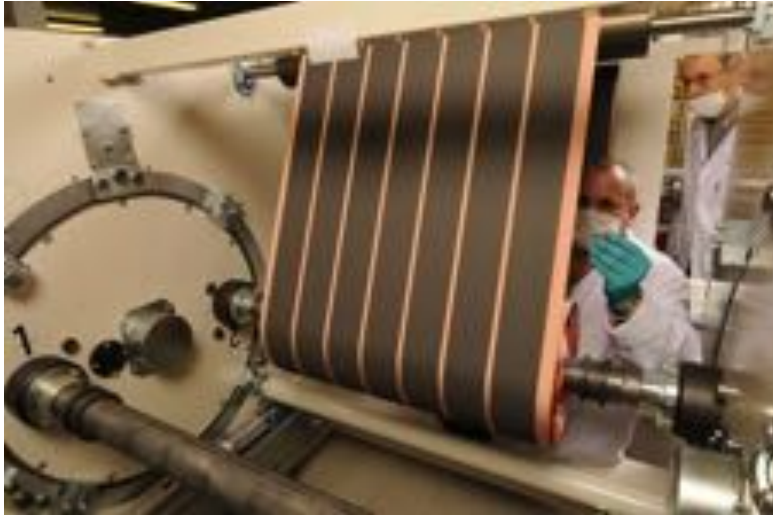


Battery Management System

- Over & under voltage protection
- Over current protection
- Voltage & temperature balancing

Durability

High quality cell construction



Factory ISO-certified



High grad Lithium



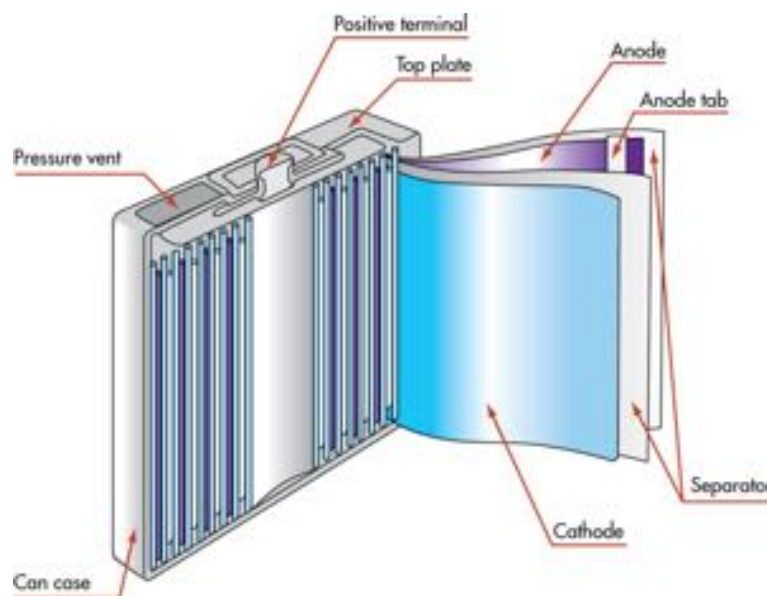
TUV Rheinland Periodic inspection

Material qualification

All the materials used in the production of our battery cells first undergo thorough testing to establish their suitability as a production material. We do everything a manufacturer can possibly do: materials are tested mechanically, electrically, thermally and visually. This way, we can be certain that only the very best materials are used for our batteries.

Material testing

All battery components that arrive at our production plants are subjected to the sharp-eyed inspection of experienced technicians. Only high quality and flawless materials are allowed to enter the production cycle. Particular attention is given to materials dedicated to the safety and reliability.



Reliability

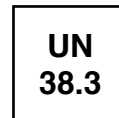
Every single cells is tested and approved



Product life cycle tested



IEC 62619 Safety
IEC 62620 Performance



Transport Safety Certified

Four main tests are performed to qualify our battery performance:

- **Electrical Performance Testing:** available capacity at different loads and surrounding temperatures, cycle lifetime, calendar lifetime in storage, charging receptivity, etc.
- **Environmental Safety Testing:** vibrations, falls, knocks and blows, damp, high temperatures, quick temperature changes, etc.
- **Failure Analysis Testing:** overcharging, short circuiting, incorrect installation, etc.
- **Effect on the environment:** chemical analysis of heavy metal content



In Third Party Inspection we trust:

Our laboratory experts provide to high-quality testing facilities, and allows us to draw on the in-depth know-how of our technical team.



Batteries, we know who you are using your barcode:

- For each battery at the beginning of the production process.
- For Record of the results of the aging and safety tests
- Keep track of what materials were used in each battery.

Challenge

Higher energy density, lower cost

Our R&D team works on even more economical and environmentally friendly processes and products, using the most advanced technologies in design, development and testing in their quest for even greater efficiency, longer service lives and better environmental protection.



High Efficiency, High Value

Further R&D will lead to improvements in the performance and durability of PV systems and the development of low-cost manufacturing processes.

Advanced Technology, Maximum Performance

Next generation battery cells are beginning to emerge in the marketplace after approximately 20 years of research and development. They will play a significant energy role in applications and markets such as low-power consumer electronics, and small size system applications.

Trendy, aesthetic and highly efficient

R&D targets focus on overcoming technical barriers to enable market success including: significantly reducing battery cost, increasing performance (power, energy, durability), reducing weight & volume, and increasing battery tolerance to abusive conditions.

Contact

Aton Energy Asia

Aton has a strong manufacturing capability and solid partnerships based to supply the best sustainable and innovative technologies to the European market.

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Aton Energy Europe

Through technical excellence and financial capability, our project development team has created an innovative model that drives down clean tech infrastructure prices and paves the way for its rapid deployment.

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