

# Milestones

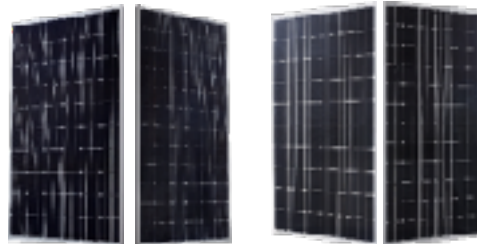
1986

Was Founded in Ninghai, Zhejiang



2006

Started PV Module Business



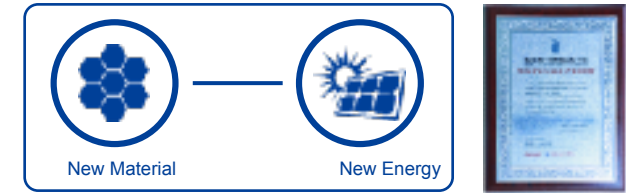
2014

Photon Ranking Top 2



2017

- “Two New Strategies”
- Ranked “Top 500 World Famous Brand of New Energy”



Started Solar Business



2002

IPO in Shenzhen GEM Stock (300118)



2010

- Ranked “Top 3 Global PV Module Manufacturer”
- Bloomberg Tier 1 Company



2015

Manufacturer	Annual production module capacity (GW)
Jinko	9,000
Canadian Solar	8,700
Jah Solar	8,500
Hanwha Q-Cells	8,000
Solar Edge	8,000
Risen Energy	7,800
Largie	7,800
SOCL	6,400
Solbrex	4,500
Sambui	3,500
EWSolar	3,200
Resurion	3,000
Flex Solar	2,800

Risen

# Global Networks

- Headquarters
- Sales Service Center
- Production Base



**8.8 GW +**



**Capacity**

**7,000 +**



**Employees**

**500,000 +**



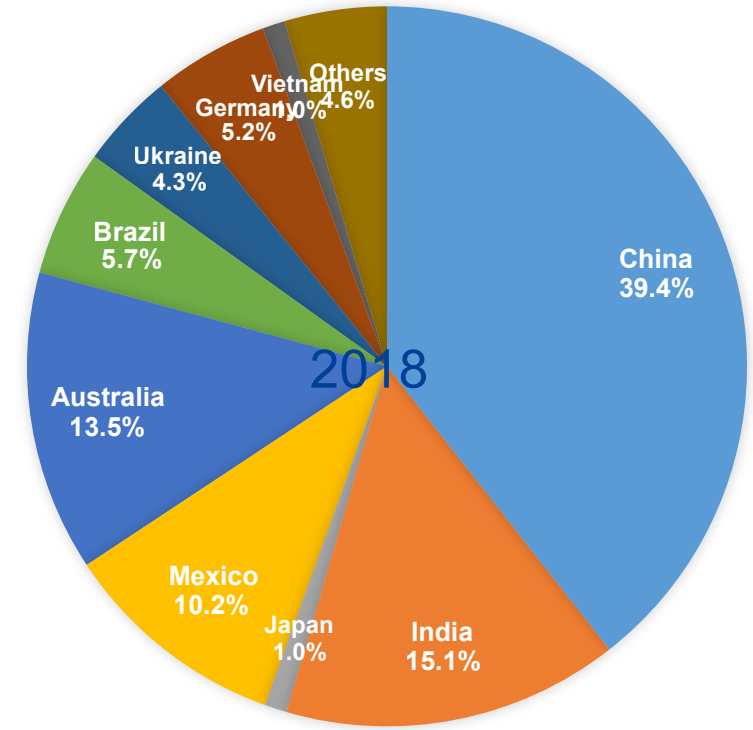
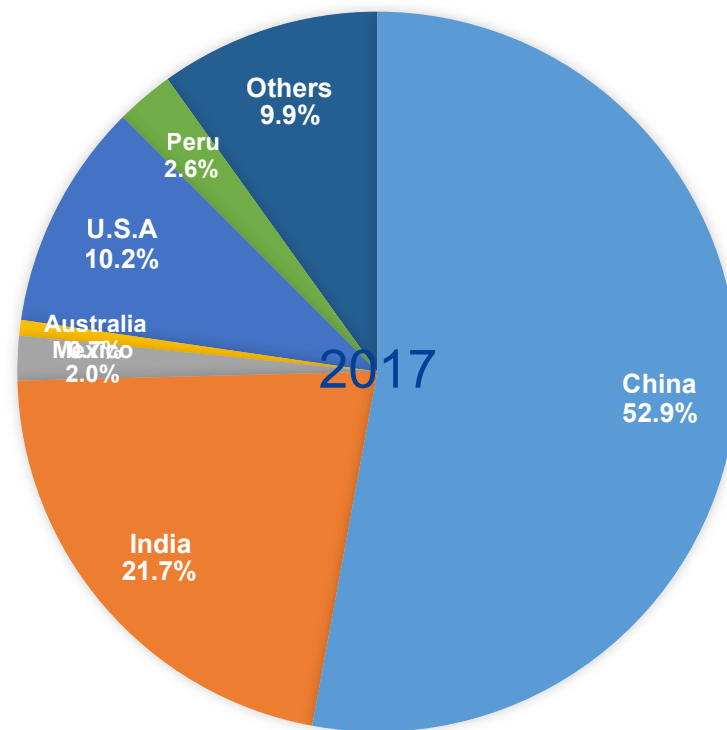
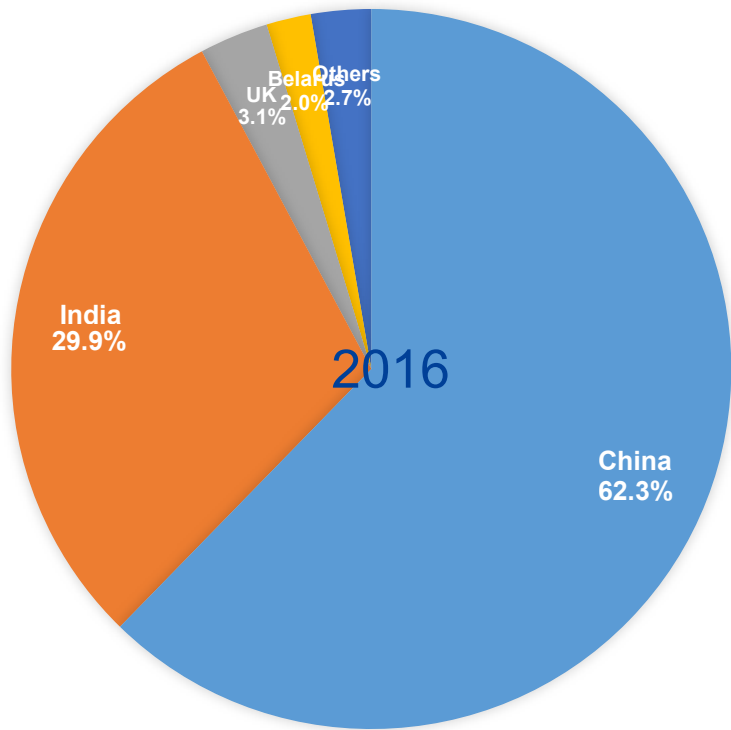
**Clients**

**10 billion +**



**Sales**




# Global Shipments





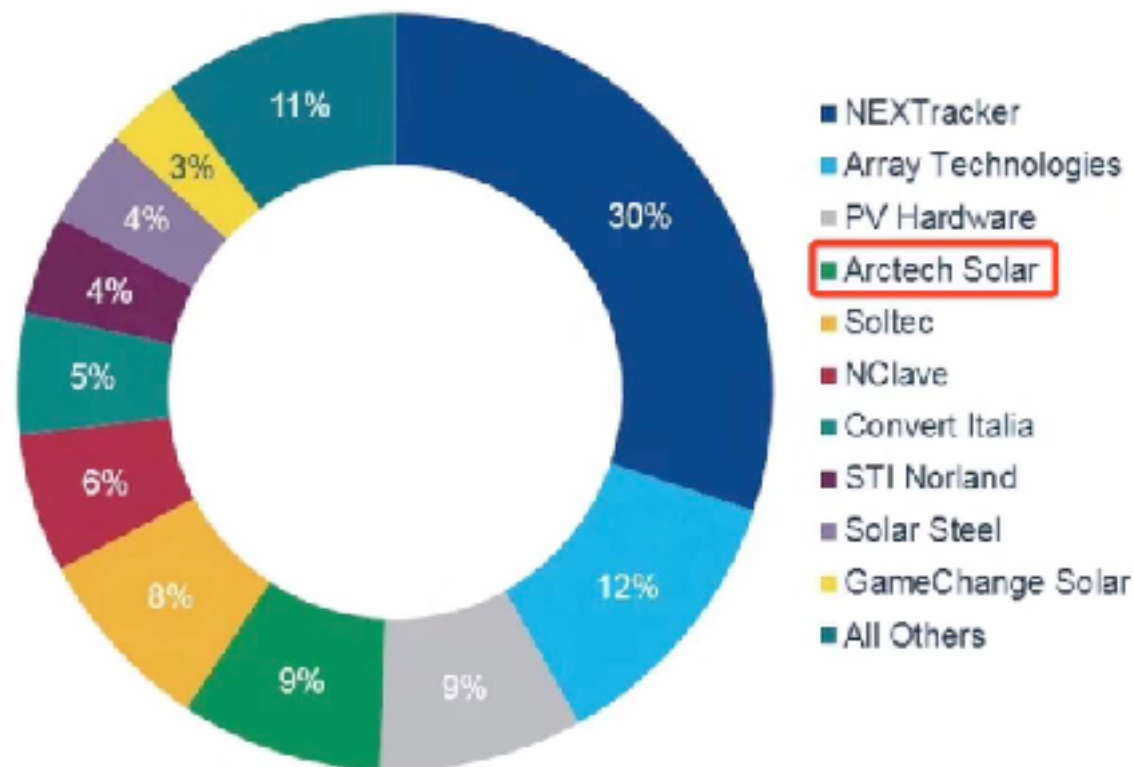
# Main Business

# Main Business

PV Products	PV Power Station(other branch)	Solution Provider(other branch)
		
<p><b>Cell, EVA/Back Sheet, Module</b></p>	<p><b>Residential, C&amp;I, Utility Scale Station</b></p>	<p><b>Energy Storage Solution</b></p>
<p><b>Aluminum</b></p>	<p><b>Electricity Investment and Development</b></p>	<p><b>Smart Micro-grid Solution</b></p>
<p><b>Welding Belt</b></p>	<p><b>Off Grid Projects</b></p>	<p><b>Smart Energy Platform</b></p>
<p><b>Junction Box</b></p>	<p><b>EPC</b></p>	<p><b>PV Power Station Intelligent Solution</b></p>

Arctech Solar is the NO.1 mounting Tracker supplier in China, and be on the forth place in the global market share by shipments in 2018.

Global PV Tracker Market Shares by Shipments for Full-Year 2018 (MWdc)\*\*



\*\*Vendor market shares are accurately represented, but the pie chart total may exceed 100 percent due to rounding

# PV Products — High Performance Mono Perc PV Modules



- 60 - 156  
5BB Mono Perc (300 Wp – 310 Wp)
- 72 - 156  
5BB Mono Perc (365 Wp – 375 Wp)

High Performance Mono Modules



- 120 - 156  
5BB Mono Perc (305 Wp – 315 Wp)
- 144 - 156  
5BB Mono Perc (370 Wp – 380 Wp)

Half-cut Mono Modules



# PV Products — Half-cut PV Modules & Jager Mono Modules



- > 120 - 156  
5BB Poly Black Silicon (280 Wp – 285 Wp)
- > 144 - 156  
5BB Poly Black Silicon (335 Wp – 345 Wp)

Half-cut Poly Modules



- > 120 - 158  
5BB Mono Perc (315 Wp – 335 Wp)
- > 144 - 158  
5BB Mono Perc (380 Wp – 405 Wp)

Half-cut Jager Mono Modules



# PV Products — Bifacial Double Glass PV Modules



➤ 60 - 156  
5BB Mono Perc (300 Wp – 310 Wp) (Whole)  
(305 Wp – 315 Wp) (Half-cut)

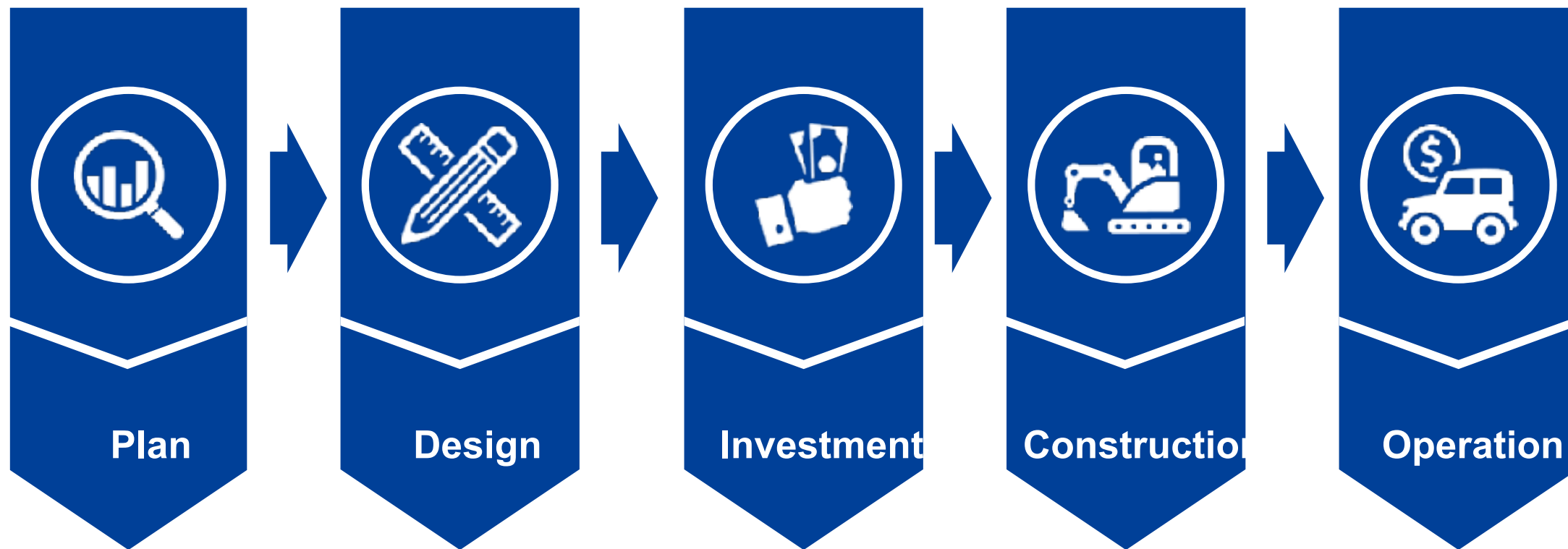
Bifacial Double Glass PV Modules



➤ 72 - 156  
5BB Mono Perc (365 Wp – 375 Wp) (Whole)  
(370 Wp – 380 Wp) (Half-cut)

Bifacial Double Glass PV Modules

# PV Power Station — Projects



# PV Power Station — Projects



Completed: 2013

Location: Italy

Project size: 10.1 MW

## PV Power Station — Projects



Completed: 2016

Location: Henan, China

Project size: 100 MW

## PV Power Station — Projects



Completed: 2017

Location: Ninghai, China

Project size: 99 MW

## PV Power Station — Projects

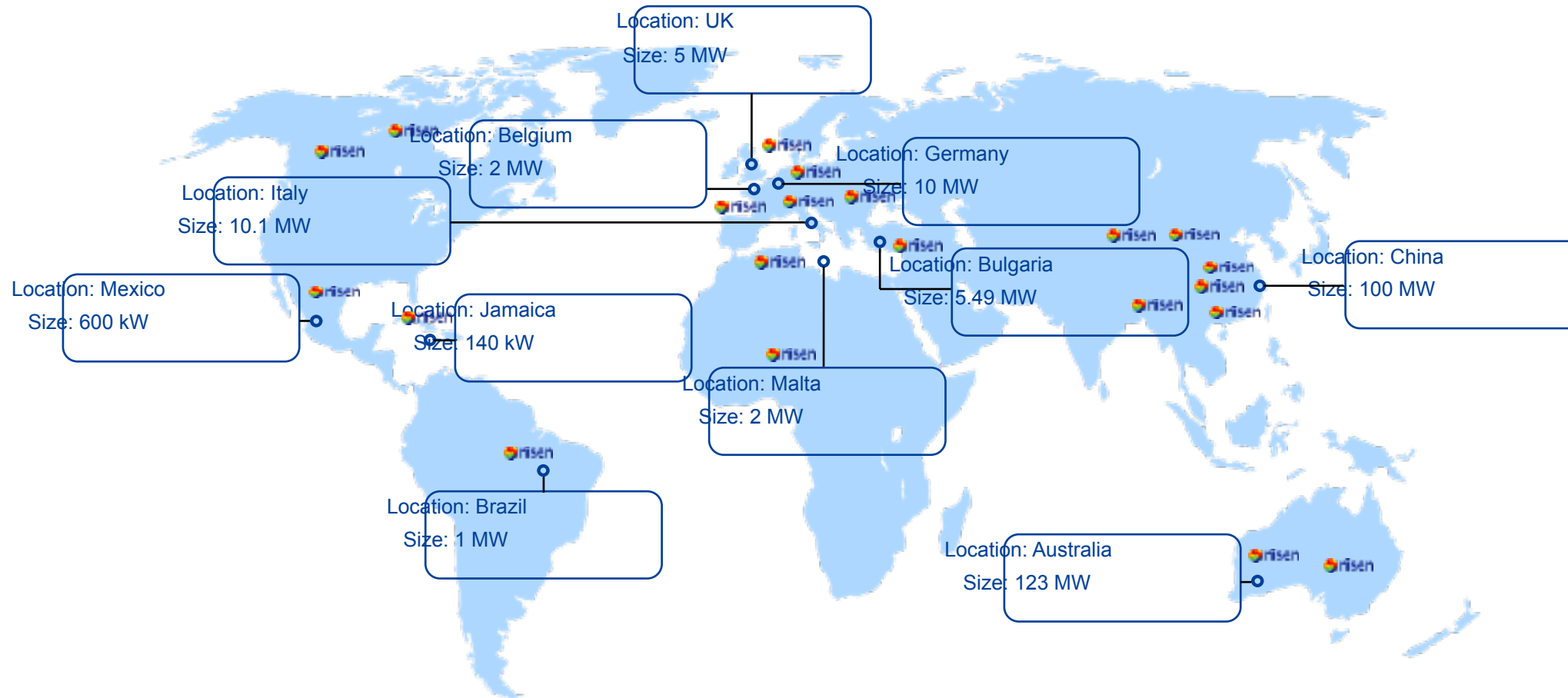


Completed: 2018

Location: Kazakhstan, Qaraghandy

Project size: 40 MW

# PV Power Station — Projects



Global Overseas Projects 5000+

# Solution Provider — C&I, Utility Energy Storage Solution



Frequency Regulation



UPS Function



Peak Load Shifting



Stabilize Voltage



Grid Support



Cost-effective





# Solution Provider — Residential Energy Storage Solution

**2.59 / 5.18 / 7.77 / 10.36 kWh**  
Capacity

**5000**  
Cycle Life (90 % DOD, 25 °C)

**10 years**  
Warranty



Safety



System Diversity



Modularized



Flexible Installation



Expandable



Emergency  
Power Back-up



Cost-effective



# Our Advantages

# Reliable Brand

## Ranked Tier 1

Table 1: Solar module manufacturers meeting BloombergNEF's tier 1 criteria as of 1Q 2019

Firm's brand	Annual module capacity, MW/year	Firm's brand	Annual module capacity, MW/year
Jinke*	10,000	Sumco/ Phono Solar*	2,000
Canadian Solar*	8,700	Jinneng	2,000
<b>Risen Energy*</b>	<b>8,800</b>	REC Group*	1,500
JA Solar*	8,500	Wazirco	1,500
Hanwha Q-Cells*	8,000	HT-SAAE*	1,500
Trina Solar*	8,000	Adani/Mundra*	1,200
Longi*	7,500	Vikram Solar*	1,100
GCL*	6,400	ET Solar	1,000
Talesun	4,800	Neo Solar Power/ URE	1,000
Seraphim*	4,000	Lightway	1,000
Suntech*	3,800	Boviet*	800
Henesola	3,500	Hansol Technics	600
ZNShine*	3,200	S-Energy	500
First Solar*	2,900	AU Optonics	500
Chint/Astronergy*	2,500	Shinsung	300
LG Electronics*	2,500	Heliana*	250
BYD*	2,400	Sharp	210
Egging	2,100	<b>Total</b>	<b>113,490</b>

Source: BloombergNEF, Methodology [here](#). \* denotes module makers for which a technical due diligence report is available from PV Evolution Labs (PEL), formerly part of QM (GL). Contact Tara.Doyle@pel.com for details.

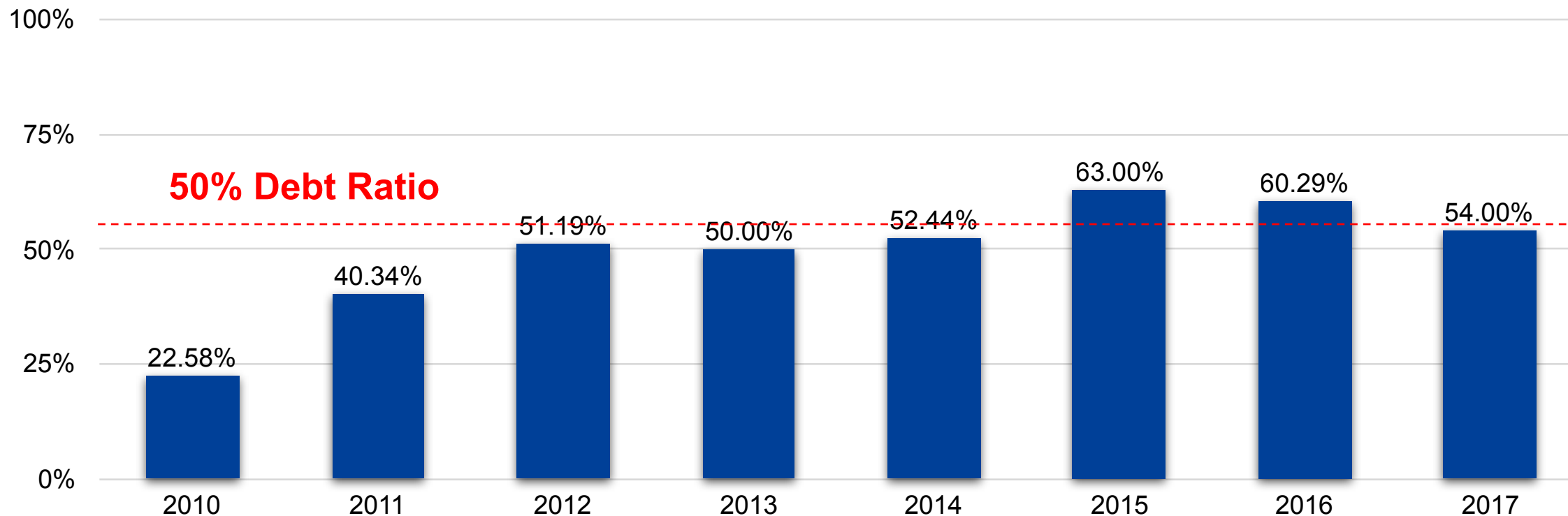
Data Source: Bloomberg

**High generation performance and long term use is the key competitive ability of Risen products !**

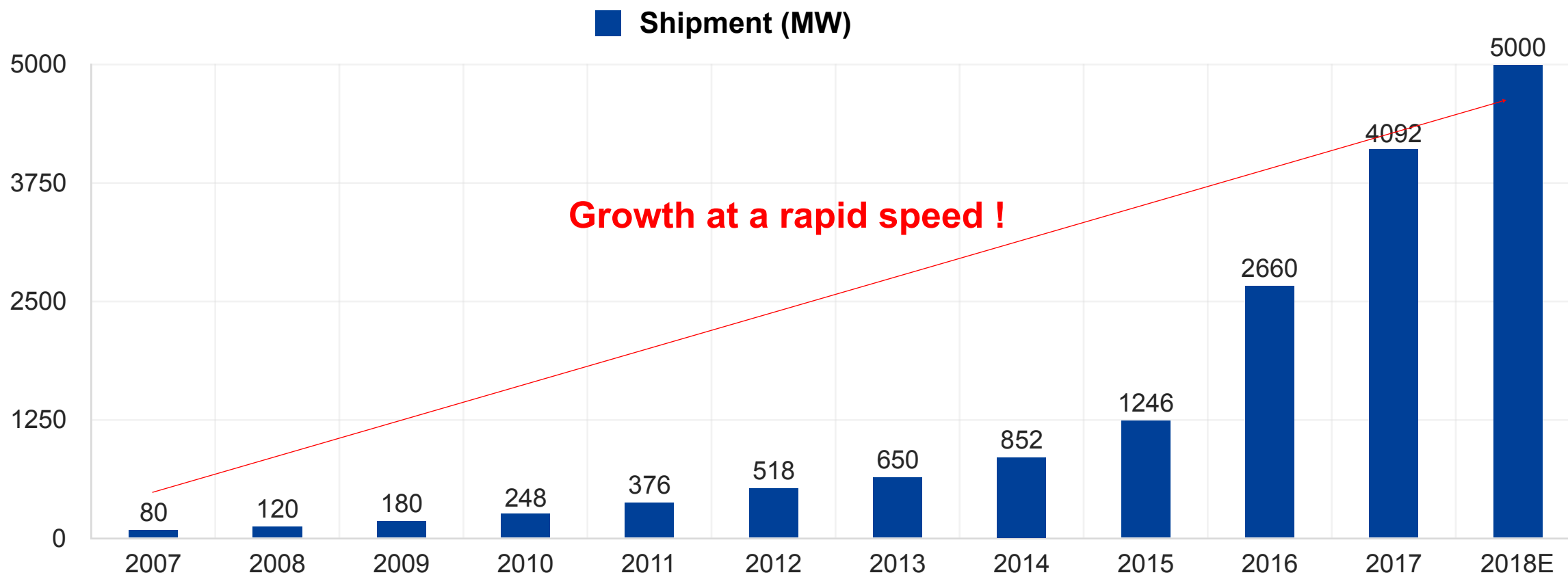
### PHOTON Lab's outdoor module tests: Results of 2014 yield measurements

2018 rank	Manufacturer	Model	Performance ratio (%) 2014	Yield (kWh/kW) 2014	Deviation from best winner (%)	Cell type	Origin	Production dates**	Installed in	STC power (W)	Module Area (m²)	Yield per area (kWh/m²) 2014	2018 rank
1	Joyway Energy	SM-138	94.9	1,183.3	-	Mon	-	-	1,2012	1808	1.28	179.7	1
2	Risen Energy	SP190S-M	94.7	1,175.7	0.22	Mon	CN	-	10/2012	1889	1.28	173.5	2
3	Sonolis	SL190-U-36M	94.4	1,173.0	0.45	Mon	CN	-	8/2012	1966	1.28	180.2	5
4	Sunpower	SPR-245NE-WHTD	93.9	1,165.4	1.01	Mon	-	-	1,2012	1452	1.24	230.7	-
5	Renesola	IC245AL34/Rw	93.7	1,163.6	1.25	poly/mono	-	-	10/2012	1466	1.63	176.0	8
6	Hanwha Q-Cells	Q.PRO-G2226	93.6	1,162.3	1.26	Multi	IL	-	11/2012	1269	1.67	164.9	4
7	Beangle Photovoltaic Technology	HR-23036P	93.0	1,162.0	1.38	Multi	CN	-	1,2012	1317	1.04	164.2	-
8	Sunpower	SPR-37ME-WHTD	93.5	1,160.8	1.49	Mon	-	-	1,2012	6298	1.63	232.0	-
9	Risen Energy	SP253M	93.4	1,159.7	1.58	Mon	CN	-	7/2012	1437	1.63	173.4	6
10	ET Solar Industry	ETM600250WV	93.2	1,158.1	1.71	Mon	CN	-	12/2012	1489	1.63	176.9	3
11	Sunpower	SPR-330NE-WHTD	93.1	1,156.3	1.87	Mon	-	-	1,2012	1255	1.63	230.9	-
12	Jinke Solar	JKM27SP72	92.9	1,154.1	2.05	Multi	-	-	4/2012	1755	1.94	163.9	14

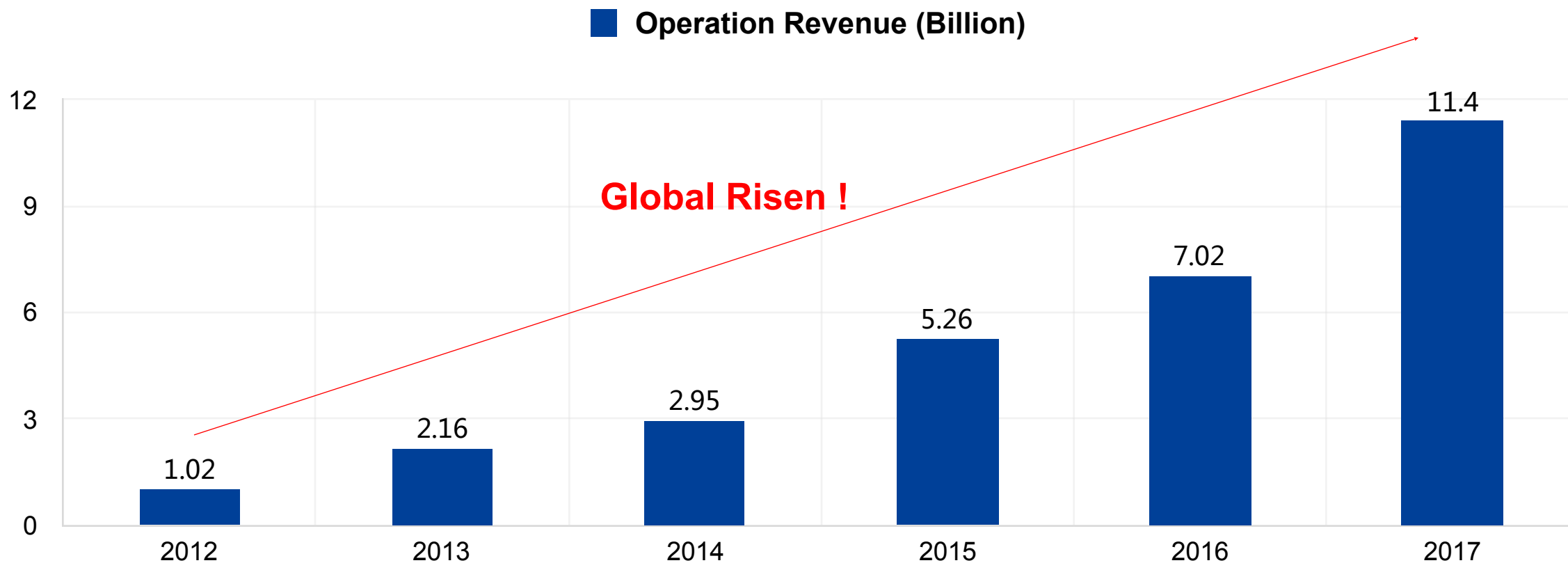
■ Debt Ratio



**Low debt ratio in PV industry, which is an insurance of return for customers !**



**Risen Energy's Global Shipment keeps growing up !**



**Risen-A value of 10 billions more, Risen-A brand renowned worldwide, Risen-A future of 100 years beyond !**

# Quality Control



**Supplier Quality Management**

- Annual audit and supervision
- Daily assessment
- Major abnormal improvement
- New Material Introduction and Change Management



**Quality Risk Management**

- Reliability control
- Standardization and unification
- System construction
- Cross-regional auditing
- Quality and performance management



**Product Quality Control**

- Monitor production
- Promote quality management



**Global Customer Service**

- Serve customers
- Deal with complaints and complaints
- Improve customer relationship
- Investigate customer satisfaction
- Feedback customer problems

# Quality Control

- Great Quality Guarantee Team
- Fast and Active
- Brilliant Thoughts



- World Leading Equipment
- 61 Test Points
- Continuing Update



- Perfect Supply Management
- 80% Raw Materials Self-produced
- Deep Connections



- ISO9001 Quality Control Standard
- Excellent Performance Management
- Unique Integrity System



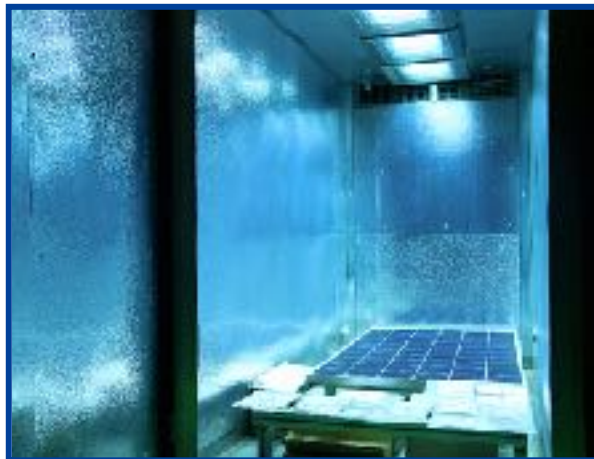
- CNAS National Lab
- IEC61215/61730 Test
- Strict Aging Test



**Unique Integrity System = ISO9001 + Excellent Performance Management + Certified Product System**



# CNAS Certified National Laboratory



▲  
**Mechanical Load Test**  
▼

▲  
**Wet Leakage Test**  
▼

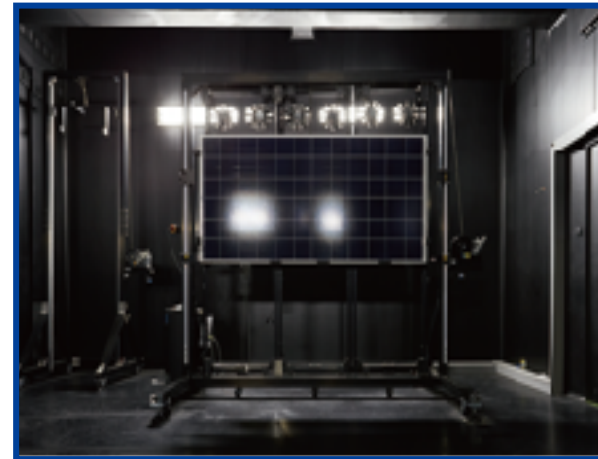
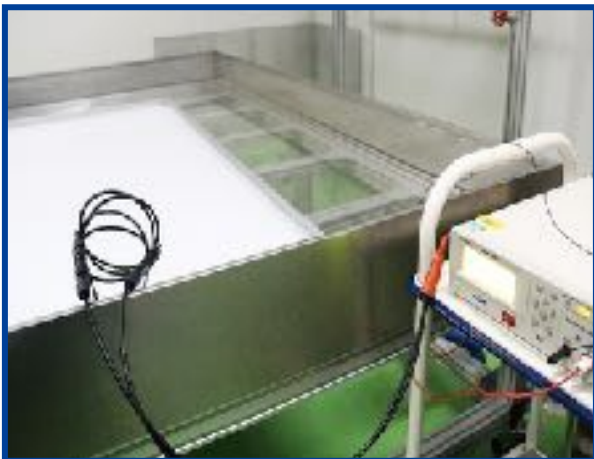
▲  
**Destructive Testing**  
▼

▲  
**Hot Spot Durability Test**  
▼

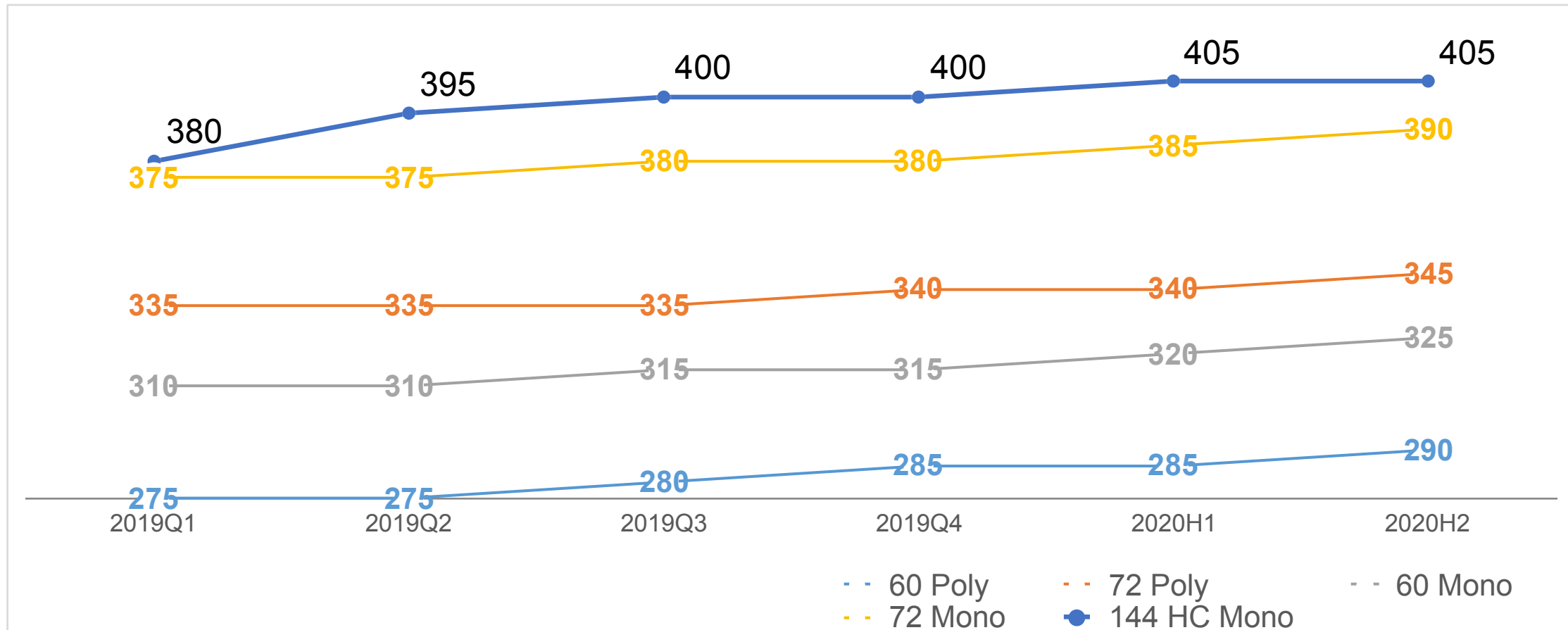
▲  
**UV Test**  
▼

▲  
**Borger Test**  
▼

▲  
**Solar Simulator**  
▼



# Leading Technology



**Continue to enhance the conversion efficiency of our solar cells**