

# Quality, Innovation & Bankability



**Quality  
Management  
enabling MLPE  
Innovations to  
scale Globally while  
Driving Sustainable  
Profitability.**

## Summary

Headquartered in China, APsystems is organized across 4 regional business units located in North America, Europe, Latin America and Asia Pacific to serve customers in more than 120 countries via local teams. With an R&D center in the silicon valley, the company has developed genuine expertise in innovative Power Electronics technologies over the past 10 years. Offering the widest range of microinverters available on the market including the high performance single phase DUO with the YC600 and QUAD with the QS1, and the only native 3-phase QUAD microinverter with the YC1000, APsystems has become since 2019, **#1 multi-module microinverter manufacturer worldwide in MW shipped in 2018 & 2019**, the company continues to be... to be a leader in the ever-growing solar MLPE segment with solid financial performance, profitable every year since 2012.

**This paper describes the crucial aspects of quality control and management taken by APsystems to achieve industry leading standards and scaling its operations globally while improving its financial performance year on year.**



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## The Manufacturing Advantage

APsystems works in partnership with manufacturers in China, employing Lean Manufacturing with several process improvement tools and techniques to maximize operational effectiveness and productivity while eliminating waste from each step of the production process.

**APsystems uses Kanban, 5S, Six Sigma principles and JIT inventory management, as well as ISO 9001 certified processes.**



*Production & test chamber facility  
APsystems, Jiaxing China*



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**Its primary contract manufacturer, TDG Technology Co. is ISO 9001, ISO/TS 16949 and ISO 14001 certified.**

APsystems uses an asset light business model which allows it to leverage experienced, quality contract manufacturers without taking on burdening assets and overheads. Our manufacturing processes have been certified by international standards bureaus, assuring product quality. All products are backed by industry-leading warranties, including extended warranties available to match the design life of the products.



*Assembly line facility, APsystems, Jiaxing China*

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## Supply Chain Management

The quality of the components determines the performance and reliability of an end product to a very great extent. Only tier-1 suppliers are taken into consideration as candidates by APsystems. From the initial selection of supplier resources to final qualified enrollment, APsystems carries out a thorough investigation and analysis of the component itself as well as the qualification of the supplier.

After a strict review of product information and documents, rigorous sample testing, and in-depth supplier qualification examination, only components with best performance are approved. APsystems carries out strict Supplier Quality Management review processes, based on quarterly and annual supplier audits through both documentary and "on-the-spot" assessments.

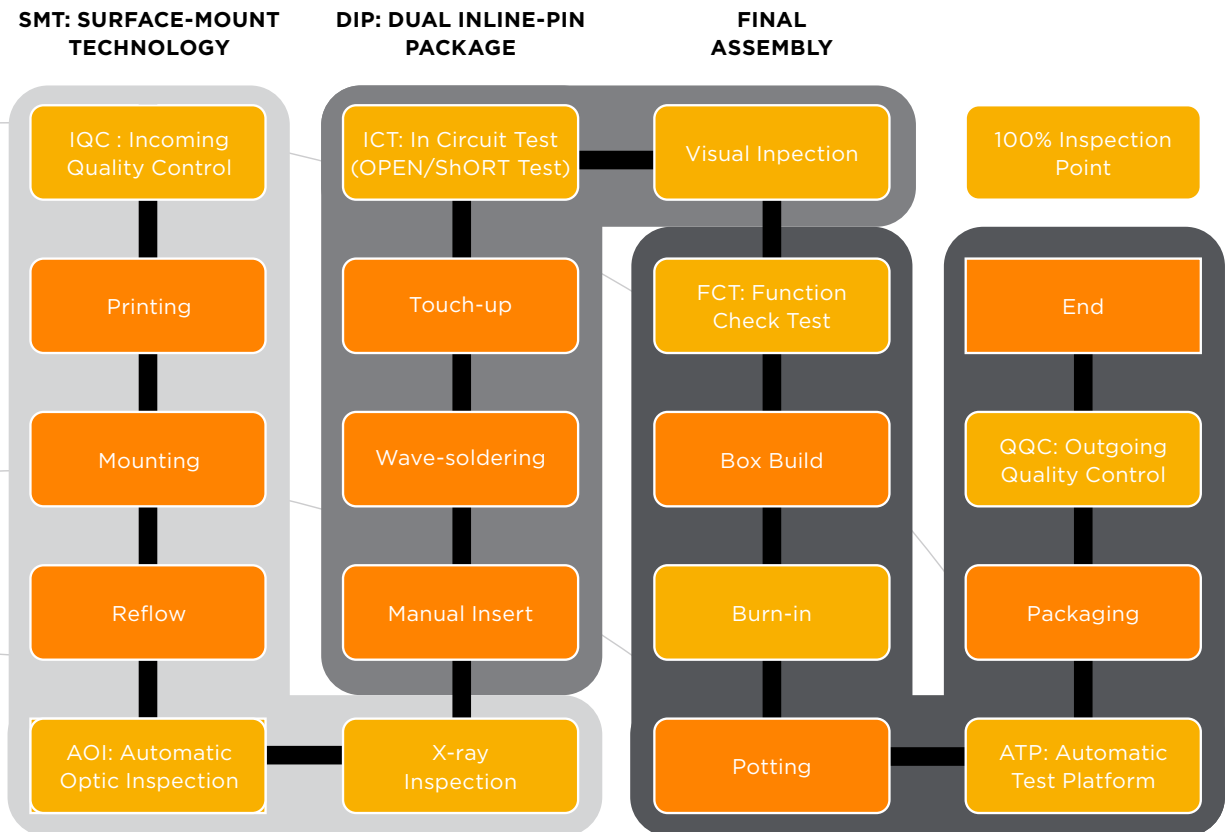
## Production Process Control

On the APsystems production line, quality is given top priority through strict and systematic quality production procedures, including Automatic Optical Inspection (AOI), Functional Check Test (FCT), and burn-in testing for early-life failure identification.

**Figure 1** shows APsystems' products production flow & key quality control process. The whole production process is not only restricted to a finished product coming off the line. To ensure optimum performance in any kind of climate, and reduce the possibility of failure in any conditions which may be experienced

in the field, APsystems products go through numerous and rigorous Quality & Reliability Verification Tests and simulations, including high-low temperature test, salt spray test, waterproof test, drop test and vibration test.

✓ **Figure 1:**  
Production Process flow & Quality Control



## Product Traceability

APsystems uses UID to control production of every unit and keeps all production and testing data. UID for each unit will be checked throughout the whole production and testing process.

*“All test equipment automatically transfers all data to the database, eliminating any chance of human error”*

**Hai Liu**, Operation Director, APsystems.



## Certification & Market approval

As leading manufacturer in advanced Module Level Power Electronics, APsystems always assures its customers that its systems comply with regional and local grid regulations and certifications. Leveraging its certification department, APsystems has already been approved on numerous certifications required to access targeted markets worldwide, including CQC, CSA, CE, SAA, ETL but also VDE 4105, RD 1699/2011, G83-2 and G99, RD 413/2014, EN50549 certifications.

**With 750 MWp total installation capacity reached by end of 2019 and 10% of APsystems' workforce dedicated to quality and product verification, the company does not compromise in quality** to reach excellence in performance standards for its products and leading market recognition worldwide, covering more than 120 countries located in Asia, America, Australia, Europe and Africa.

## Investors and Bankability

APsystems is in the exclusive business of developing, manufacturing, and distributing photovoltaic Module Level Power Electronics for residential, commercial, and utility use. APsystems was founded in Silicon Valley in 2010 by Dr. Zhimin Ling and Dr. Yuhao Luo, two senior managers from Xilinx, Inc. While these founders brought the initial concept and the required breakthrough technology, they enlisted the financial and manufacturing support they needed from two main investors: TDG\* and Halead\*\*.

These investors, who provided the initial funding, are active on the Board, and are supportive of rapid global growth. These two initial shareholders have each made a multi-million USD investment in APsystems. Two other investors, XingKe Investments and SHBC, also made early seven figure USD investments. Combining a tremendous growth with robust financial management, has led **APsystems to reach profitability since 2012.**

## Notes

*\*TDG Holding Co., a Shanghai stock market-listed company with a \$500M market cap was founded in 1984. TDG focuses on electronic materials and components, sophisticated electronic equipment, and new energy and environmental technology and applications. TDG's energy and environmental technologies are both deep and broad in PV, LED applications, and environmental integration technology and applications. More info on TDG can be found at [www.linkedin.com/company/tdg-solar](http://www.linkedin.com/company/tdg-solar).*

*\*\*Halead was established in 2001 and is now listed on the Shenzhen stock market with a \$400M market cap. Halead has exceptional strengths in coatings, fibers, and thin sheet, and brings this technology and production experience to APsystems. It also brings significant international market development experience, with sales in more than 80 countries. More info can be found at [www.halead.com/en](http://www.halead.com/en).*

# APsystems



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