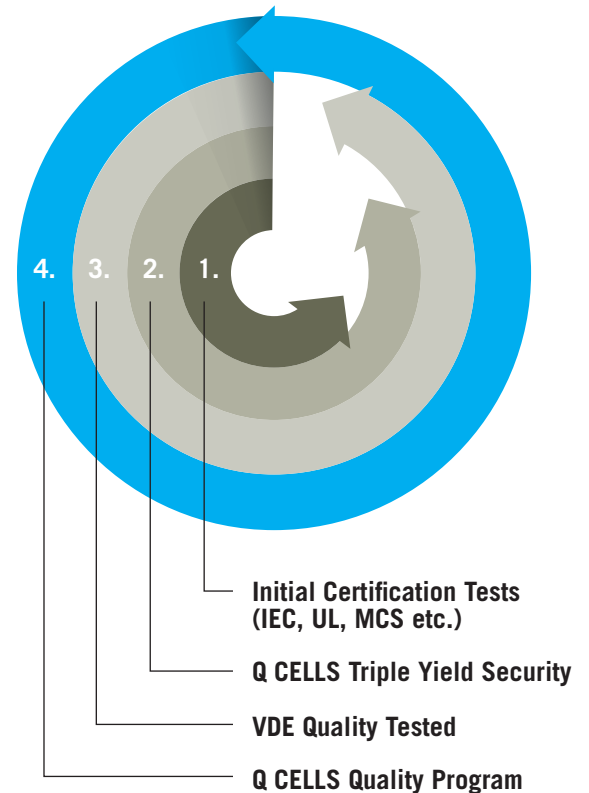


# QUALITY WITHOUT COMPROMISE - TESTING TO THE MAX

Q CELLS unites four quality programs in its daily production and in doing so goes far beyond the conventional initial certification test. For this reason, our products are the best monitored, most secure and most reliable on the market.

1. Initial certification tests: the core is based on the international initial registration, e.g. as per IEC, UL, MCS, JPEC, and Kemco. They guarantee the electrical and constructional safety of the modules in accordance with international standards.
2. The Q CELLS Triple Yield Security has formed part of the warranty for reliable products from Q CELLS since 2011. It combines the guaranteed resistance to potential induced degradation (PID), with protection against hot-spots and product forgery.
3. The VDE Quality Tested program adds considerably to the initial certification tests. The VDE Quality Tested program ensures consistent quality and product safety at all times with its quarterly of modules from serial production.
4. The Q CELLS internal Quality Program checks on a daily basis that all products correspond to Q CELLS' high safety requirements. In the wet-leakage test, for example, the module is placed in a water bath and subjected to 1000 V. This makes it possible to test the module's insulation. Every module undergoes an electroluminescence test as part of the classification in order to ensure that only modules which are free from defects are dispatched.



## Q CELLS QUALITY REQUIREMENTS

REQUIRED TESTS	IEC CERTIFICATION	VDE QUALITY TESTED	INTERNAL TESTS
<b>TEST FREQUENCY</b>	Once, only for initial certification	Continuous sampling, quarterly monitoring	Continuous sampling and monitoring
<b>THERMAL CYCLING TEST (TC)</b>	200 cycles	400 cycles	Quarterly TC test for two modules - 100 cycles and 400 cycles respectively
<b>DAMP HEAT TEST (DH)</b>	1000 h	1500 h	Quarterly DH test for two modules - 250 h and 1500 h respectively
<b>HUMIDITY FREEZE TEST (HF)</b>	10 cycles	10 cycles	30 cycles
<b>LOAD TEST</b>	✓	Dynamic load test before TC & HF	Additional testing
<b>HOT-SPOT TEST</b>	✓	✓	100 % of cell production
<b>EL TEST</b>	Certification module only	100 % of module production	100 % high resolution EL inspection
<b>PID TEST</b>	–	–	Weekly production monitoring
	