

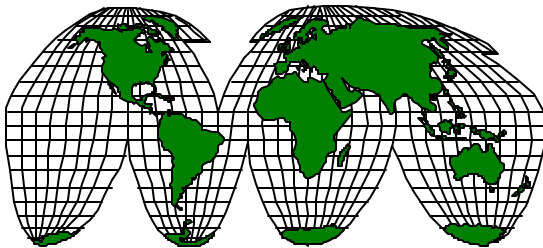
Agency Approvals

Overseas manufacturers have known that in order to compete in the North American markets, they must design equipment to meet US and Canadian safety standards. Domestic manufacturers are learning that product certification to international safety standards is a critical step to successfully market and sell products abroad.

Safety Standards

Safety standards have been developed in order to ensure that products meet national requirements for product safety. Within a specific country, certification reduces the need to individually inspect products and systems, and can assure consumers that a particular device is safe as designed.

Across national borders, certification is an assurance that a product meets applicable safety standards, even though it was originally designed for different a voltage supply, frequency, or environment.



Even when certification is not legally required, such certification can reduce manufacturer liability and increases product acceptance by corporate or government customers.

Product Testing

Safety testing of electrical products is complex: components are inspected for voltage ratings and spacings, enclosure and chassis design, temperature ratings, grounding, overcurrent protection, labeling, and other parameters.

Application Note - AN-4

These additional parameters depend upon the type of equipment and the application; most countries have safety standards written specifically for a particular type of device or application as well as common requirements within a particular country's standards.

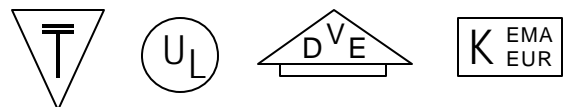
Development engineers and regulatory groups must ensure that a product is designed to meet the safety standards for the intended markets.

Approving Agencies

There are as many approving agencies as there are countries. Historically, each country established or authorized an organization to perform safety testing. Each organization has a particular mark or label that is used to indicate that a product has been tested, recognized, or listed.

In many countries, safety certification is done through a government body. Other countries have authorized independent testing organizations or laboratories to perform safety testing and certification. Finally, many countries are joining together under unified standards that permit products to be certified to one standard that is accepted across national boundaries.

In the past, selling a product in a specific country often meant expensive testing and certification to that country's standard. It was not unusual for a product to be listed or tested to many standards: UL (United States), CSA (Canada), TUV (Germany), JET (Japan) and many others. Such testing and paperwork added considerably to the cost of doing business internationally.



Today, there is an increasing trend towards unified standards. The European Community, under the umbrella organization International Electrotechnical Commission (IEC), has been unifying standards for many years. The United States (UL) and Canada (CSA) have also been moving towards the IEC standards.



The adoption of **CE Marking** by the European Union removes much of the red-tape and complexity of dealing with separate standards in Europe and world-wide. However, the individual "harmonized standards" may be more stringent than the individual national standards that they have replaced.

The Testing Process

In order to certify a product for sale internationally, the applicable standards must first be researched. In many cases, multiple standards will apply.

Engineering must then design the equipment to meet all of the desired standards. A prototype or initial production unit is submitted to the testing organization. Many testing laboratories are now certified to test products to a number of international standards.

The testing organization will test the product (often this testing is destructive) and either certify the device or report on any deficiencies. After one or more redesign and limited retest cycles, the product is certified or listed. Any product changes that occur after the fact must be submitted to the testing laboratory for review and retest if required.

The manufacturer incurs substantial costs to certify a product for safety.

- A destructive test may be required to certify a product.
- Many engineering and regulatory hours are required to properly research, design, and guide a product through the safety testing process.
- Safety certification is often a critical path task in the product development cycle. This can slow the time to market, especially if redesign is required.
- Testing laboratory costs for labor and project fees can be substantial.

While some manufacturers have the expertise and manpower to seek agency approvals for their systems,

many others find the cost and complexity of dealing with approvals for each individual component and sub-system to be overwhelming.



Quality Certification

Many customers have begun to insist on the quality documented through ISO-9000 certification. Such certification does not ensure safety or regulatory compliance, but does indicate that the manufacturer adheres to industry standard levels of quality.

Outsourcing

In many cases, manufacturers find that outsourcing subassemblies can greatly simplify the safety certification process.

- Eliminating redesign cycles can substantially reduce certification time and costs.
- An outsourced sub-system, supplied with certification or listing, minimizes engineering and regulatory labor.
- Outsourcing subassemblies can substantially improve the time to market.



Teal Electronics is an industry recognized expert at designing, building, and certifying AC Power interfaces to international safety and quality standards.