Weekly Whitepaper
Week #23

Component Selection for CE Marked Products

Do the components need to be CE Marked?

A Whitepaper for both component and finished product manufacturers.

Are Components *required* to be CE Compliant?

Replacement parts and field installed components sold "over the counter" must be CE compliant and show the CE mark on the component or the component packaging. This includes fuses, switches, conduit, circuit breakers, and other similar components that are sold directly to the consumer to install.

If the component is only intended to be installed by a product manufacturer, CE compliance of the component is not required. However, for other important reasons detailed below, components should be CE compliant and meet all applicable CE Directives.

Component Applications and CE:

Components that are not sold over the counter are typically not required to be CE marked. However, the finished products that are built using these components must meet all applicable CE Directives. And compliance of the finished product is highly dependent on compliance of the critical components. Many CE Directives/Standards such as the product safety standards under the Low Voltage, Medical, ATEX, and Machinery Directives require all critical components to comply with the appropriate component safety standard. Other Directives/Standards such as the EMC Directive involve testing on the finished product, testing that will conclude with "failing" results if your EMC critical components do not comply. If you make a component, do you want to hear that your customer failed CE testing and traced the problem to the component you sold them? Of course not!

Therefore, it is highly suggested that manufacturers of critical components comply with all applicable CE Directives and Standards. Otherwise, you will be selling your customer a problem = leaving it to the finished product manufacturer to verify that the component meets the applicable component directives/standards – an expensive and time consuming process that will also require important design and material details for the component. And, after all the cost and effort, the component could be found to not comply. If you make a component, wouldn't it be better to sell parts that have already been found to meet all applicable CE Directives & Standards? So your customer has no problems with your component when they get CE on the finished product. And so you do not need to provide proprietary component construction details to the finished product manufacturer so they can verify compliance of the component.

Component CE Compliance:

The CE process is the same for components as it is for the products using the components = go through the CE Directive list and identify which Directives apply. Then verify that the component meets the appropriate standards listed under each applicable CE Directive. This process involves reviewing the component construction and performing the appropriate tests in accordance with the component standards - motors, motor controllers, transformers, relays, power supplies, wiring, cables, plugs, sockets, etc.

Component Sourcing for CE Products:

All critical components should comply with the applicable CE Directives & Standards. Every component that puts your product in compliance with any clause in any of the applicable standards is a “critical component” (LVD, EMC, Machinery, Medical, ATEX, RoHS II, etc.).

To determine if a CE marked component meets your application needs, request a copy of the CE “Declaration of Conformity” (DoC) from your vendors for all critical components. The CE DoC must show the CE Directives to which the component complies. Are the CE Directives that apply to your finished product on the component CE DoC? For the safety directives, is the applicable component safety standard on the component CE DoC?

Using CE Components – Special Considerations:

a) The Machinery Directive contains a special exception for machinery components and subassemblies that are incomplete in construction such that they are unable to be evaluated for compliance until they are incorporated into the finished product. In this situation, the Machinery Directive allows the component manufacturer to defer compliance to the finished product. Such components and subassemblies are shipped with a CE Declaration of Incorporation (DoI) instead of a CE Declaration of Conformity (DoC). Components and subassemblies shipped with a DoI are not required to comply with any CE requirements. Accordingly, the CE Mark is prohibited on products provided with a DoI.
b) Electrical components usually find their CE Safety standards are listed under the Low Voltage Directive (LVD). That includes electrical components that are used in products that fall under the Machinery Directive. Only machinery components should comply with the Machinery Directive (MD). The same is true for most electrical components used in medical products. Only electrical components that perform a medical function would need to comply with the Medical Device Directive (MDD) – although some electrical components may be required to comply with the electrical medical safety standard EN60601-1 (isolating components in electrical medical products must meet the addition electrical insulation requirements of this standard - this includes power supplies & transformers).
c) The Low Voltage Directive is a “self-declaration” Directive. This means that a company that manufacturer’s an electrical product or electrical component that must comply with the LVD is permitted to declare CE-LVD compliance without any 3rd party assistance or certification agency approvals. Unfortunately, few manufacturers have the knowledge and resources to verify and document compliance. This helps explain why there is such a high error rate with manufacturer generated CE reports. Consequently, you want to avoid CE components that are declared CE compliant based on a manufacturer generated CE-LVD report. You want to source critical electrical components that are declared CE safety compliant based on an accredited lab report or, are CE safety with additional certification marks from other countries on the component (i.e. UL/CSA). UL or CSA certification in addition to CE on a component is beneficial because the component construction is then controlled and is subject to ongoing factory inspections. Even if the UL/CSA standard isn’t similar to the CE component safety standard, the same component design elements apply – and if the component is UL or CSA certified, those critical design elements are being controlled by the certification agency. Therefore, to help insure compliance quality, select a UL/CSA/CE component.

Non-CE Critical Component Options:

Ideally your critical components meet all applicable CE Directives and Standards.

a) If your product is required to meet the RoHS II Directive, you want to make sure that ALL your components and materials meet the RoHS II Directive. If a component or material is not declared compliant with RoHS II on its CE DoC, you will have to test the component to verify compliance.
b) If you use any safety critical electrical components that are not CE for safety:
    1. Note that the manufacturer doesn't necessarily have to mark "CE" on a component for it to be CE compliant. You should review the component spec sheet for an initial indication. Ultimately, you will want to obtain a copy of the CE DoC from the component manufacturer to verify compliance.
    2. Does the component bear any European safety certification marks? (VDE, TUV-GS, BSI, etc.) Such a mark usually means the component it is independently certified to the appropriate EN safety standard = which would mean that the component meets CE safety (CE safety standards are usually titled "EN").
    3. Does the component bear any North American safety certification marks? (UL, CSA) If so, what UL or CSA standard is the component certified? Is it a "harmonized" standard - harmonized with the IEC standard? Most EN standards are harmonized to the IEC standard. So if a component is UL or CSA certified to a UL/CSA standard that is IEC harmonized, the component is likely to also meet the CE safety requirements. For non-harmonized standards, you can compare the contents of the UL or CSA certification standard to the applicable EN component standard. If you can verify that the UL or CSA standard is equal or more stringent that the CE-EN component safety standard, the component meets CE safety. Only those areas in the EN standard that are more stringent than the UL or CSA component standard would need to be reviewed for compliance.

CE Component Sourcing Conclusions:

a) The best solution utilizes the fewest number of critical components that are not CE compliant with all applicable CE Directives and Standards (also avoid using CE compliant parts that have been modified).
b) Selecting a non-CE part based on component cost savings is a very bad idea. The cost savings will be more than offset by the added cost and time necessary to have the component evaluated for CE compliance. Or worse, the non-CE part could cause you to fail an EMC or RoHS II test requiring component replacement at the last minute.

Don't be caught by surprise

CertifiGroup performs Preliminary Reviews to UL, CSA, EN-CE, and IEC standards

CertifiGroup can help you properly source your components for compliance

CertifiGroup can evaluate your uncertified components