Keep rail-related sourcing on track

With more electronic components used in rail applications than ever before, it's vital to stay abreast of evolving standards, keep up with new technologies, and steer clear of grey-market sourcing

Purchasing components for the rail industry can be challenging thanks to strict industry standards, coupled with the necessity for robust, rugged components. Sourcing for rail, rolling stock, infrastructure and signalling covers a surprisingly wide variety of electronic components. Various types of circuit breakers, sensors, power conversion, power supplies, magnetics, optoelectronics, capacitors, resistors, thermostats and motor protectors are all supplied by Charcroft Electronics into rail applications.

Stringent EMC standards

Industry standards for this sector are equally diverse. Products destined for rail applications may be required to achieve a variety of safety, fire and EMC approvals, such as EN50155, EN50121, EN61000, EN60695, BS6853, EN9100, EN45545, NFF16, and RIA12.

EMC certification, particularly for power supplies, is a key requirement of sourcing for rail applications. In recent years, with a greater prevalence of electronic components in rail applications, there is certainly more emphasis on these more stringent requirements. For rolling stock, the standard EN50121-3-2 is required, while for trackside applications the increased field strengths of EN50121-4 are required.

Increased converter demand

Over the last 10 years, Charcroft has seen significant changes to the rail component sector, the greatest being the dramatic increase in the volume of electronic components required. With a large increase in the amount of electronic systems installed in rail applications, there has been a shift from the traditional electromechanical components to electronic components instead. We are seeing features being incorporated into carriages such as Wi-Fi, LED lighting, sockets in seats and charging facilities, all of which require more electronic components.

This increase in subsystems is also creating increased demand for DC/DC converters. Most train battery voltages are 110V, so DC/DC converters are utilised to convert this to more manageable voltages for the various subsystems and functionalities, such as CCTV systems.

Safety is a huge driver when sourcing for rail rolling stock and infrastructure

An increase in rail subsystems is boosting demand for DC/DC converters

Modernising rolling stock

Electronic components are increasingly used in both new builds and in major maintenance overhaul. During maintenance refurbishment, safety critical components such as thermostats in heaters, ventilation and air conditioning systems are routinely changed, however,

this is often seen as an opportunity to modernise the facilities and capabilities within the train by installing new systems, such as wi-fi and charging facilities.

Looking to the future, Charcroft, sees the main advances for rail and rolling stock as a move to greener power. With the UK government pledging to phase out diesel only trains completely by 2040, various other technologies are being developed, with the most likely replacement being hydrogen trains. Hydrogen trains are proposed to be introduced within the next two years on certain lines, offering emissions-free rolling stock, more effective performance during acceleration, and nearly zero noise.

Rail-specific expertise

As with the rest of the electronics industry, lead times for rail components have been affected, and it can be tempting to consider sourcing outside of usual channels. Charcroft strongly recommends, however, that purchasers do not fall into that trap. Make sure you continue to rely on franchised sources, and ensure you use reputable distributors that know the rail industry and requirements.

An understanding of the approvals required, and the rugged components needed, can help specialist distributors offer alternatives that meet the required fit, form and function. Also, where possible, it provides the flexibility to offer customised solutions. These same factors should also be considered when dealing with obsolescence.

When parts are designed specifically for use in rail applications, manufacturers are generally aware of the necessity for a longer product life cycle, in line with the life cycle of the end application. As with any component, however, there will be natural obsolescence of certain parts. As an obsolescence specialist, Charcroft can assist with sourcing requirements for problem parts, bespoke solutions, and offer alternatives.

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