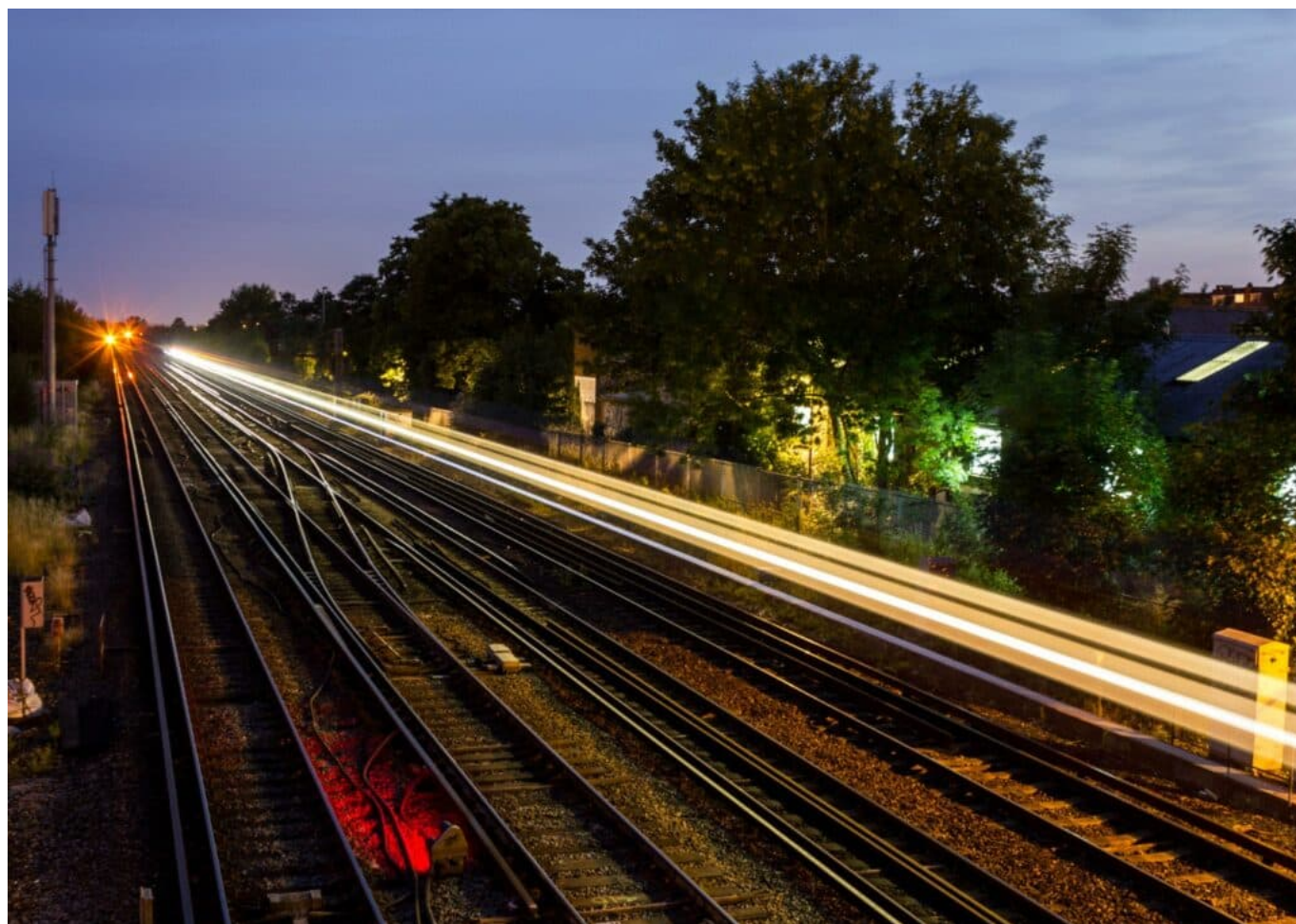


Rollingstock communications systems for the digital rail operations

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The sub-communications systems in rail environments, include train control systems, monitoring systems, passenger information systems, CCTV cameras, PA systems, and passenger Wi-Fi systems are almost becoming standard. Devices in rail environments must operate in harsh conditions such as vibration, shock, input voltage fluctuations, surge, and severe air pollution. Looking for more sustainable and cost-efficient solutions to connect all rollingstock sub-communications systems becomes the top priority for rail operators.

In the article below, Ken Woolley, UK Sales Manager of [Lantech Communications](#) and Lantech Communications Sales VP, Amanda Lee discuss how the the company's sub-communication systems offerings are resolving long held challenges for the rail industry.

Lantech overcomes the challenges and has been chosen by major operators globally

[Lantech Communications Global, Inc.](#), a Taiwan-based company, provides the networking (switch and router) infrastructure for these sub-communications systems. Lantech's EN50155 solutions are adopted on

rollingstock across the world, including the German operator Deutsche Bahn's networks as well as the metro in Barcelona, Hong Kong, Amsterdam, Helsinki, Sydney, Melbourne and France's SNCF rolling stock.

Current conventional train communication networks (TCN) are facing several challenges to improving services, and Lantech is overcoming these, according to Lantech Communications Sales VP, Amanda Lee.

Embedded wide range DC-DC conversion for PoE applications, within an IP54 housing

Lantech's superior high frequency power conversion circuits are one of the reasons that Lantech's solutions were chosen over its competitors. These circuits inside the switches themselves allow for DC-DC conversion into regulated 54VDC voltages for Power over Ethernet (PoE) operation.

"As all these devices are IP based and digitalised, the system integrators wanted to use our switches, they wanted the switches not only to be able to provide the data communications, but to also have the PoE functionality, which eliminates the need to have additional power for each device, which is more convenient" Lee says.

Lantech is capable of providing wide range DC-DC conversion technology inside the switches to handle the different supply voltages for example 24 volts, 72 volts or 110 volts, the switch can boost or step down within the switch system to feed the power over Ethernet and comply with the PoE 802.3af/at standards.

"It is very costly for DC-DC conversion within an IP54 housing rated for a trains, our units can handle the DC-DC conversion therefore allowing us to make it in smaller housing and with a larger voltage input range, our customers have chosen us over our competitors."

Extremely flexible, more ruggedized, more sustainable that meets customer's needs

Aside from in-house expertise, Lantech is extremely flexible, and this is part of the reason for our advanced capabilities within the products, according to Lee.

"Requirements for networking infrastructure are different from project to project. Competitors who may build their protocols based on third party solutions have trouble adapting to project requirements quickly. Our switches are fuelled by the Linux platforms, which allow Lantech to adapt and customize those features to the requirements."

"Because PoE is transmitted by a copper wire, which can easily conduct a surge or EFT and cause damage to the switch / router system, you need to have an isolated design to prevent this from happening. To effectively prevent the problems encountered with rolling stock network infrastructure, these environmental conditions are difficult & complicated, the design of our products have taken these factors into account."

10G uplink for future rail

The impending uptake of 5G networks will need to be capable of 10G - referring to internet speeds of 10 gigabits per second, is one of the challenges Lee says Lantech is overcoming.

“Since 10G is so fast the heat generation is substantially higher, therefore it is very easy to hit the temperature limits, added to this, the need to have DC-DC conversion inside the switches, this is why there are very few competitors who offer 10G uplink switches for onboard train applications because you need to resolve the heat dissipation”

Lantech is at the forefront of providing the technology to enable these speeds right now and are receiving enquiries to provide solutions for European projects.

“With 5G coming, lots of devices will need higher bandwidth. We’re in a leading position with regards to providing these sustainable communication systems immediately. Our solutions are future-proofed for the next 5 years down the line, this is what they’re looking today.”

Wireless solutions for rollingstock

The company is undergoing an exciting period, aside from being in a leading position with our current offerings, Lantech has also launched a series of routers which integrate a lot of the functionality that covers PoE, LTE, Wi-Fi, VPN, managed switch functions, and Modbus gateway.

“We come from a background of ethernet switches, so that’s where we have some of the most interesting products for new solutions.”

Within these router solutions, Lantech is always adding more features & benefits. One of the latest developments we are adding is InstaAir, the cloud-based fleet management system for routers allowing over-the-air device monitoring, configuration, and software upgrades anytime, anywhere.

[Click here for more details.](#)

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