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Data highway

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A greener and more efficient supply chain is already within our grasp via the capabilities of modern IoT technologies, writes ORBCOMM's **Christian Allred**

As the global demand for goods increases, so does the need for innovative solutions to mitigate the environmental impact of expanding supply chain operations. As processes and capabilities evolve to service customer requirements, many producers, suppliers and shippers find themselves at the crossroads of environmental responsibility and operational efficiency, yet the latest generation of telematics solutions means the choice no longer has to be binary.

Telematics provide real-time visibility into container status, location, and condition and is a powerful tool that can simultaneously enhance supply chain operations and reduce greenhouse gas (GHG) emissions. It offers stakeholders unprecedented control and insights into the movement of goods through the multimodal supply chain, allowing them to comply with regulations, exceed customer and investor expectations, and reduce costs all while meeting corporate decarbonisation goals. These goals are crucial not only to mitigate incoming carbon taxes, but also because the general public has an increasing interest in greener products – which means companies that can offer low-carbon or carbon-offset products may benefit reputationally.

TELEMATICS DRIVING CHANGE

A recent World Economic Forum (WEF) white paper recognised that: 'Measuring and report-

'Automatically setting reefers to idle when internal temperatures meet carriage requirements can significantly cut port energy waste, lower GHG emissions, and reduce operational costs'

ing emissions in supply chains can be a key lever for decarbonisation globally.’ However, noting challenges – particularly concerning Scope 3 (all other indirect emissions) reporting – it concluded that any measurement system must be accurate, feasible and interoperable.

As companies focus on delivering more efficient and sustainable operations, many recognise that telematics solutions can address this complex operational requirement. By integrating advanced sensors, communication technologies, software and data analytics tools, telematics automate the collection of container-related emissions data, regardless of the assets’ location or mode of transport.

Some logistics providers are already using telematics-enabled emissions tracking to reduce carbon footprints. For example, DHL’s ‘GoGreen’ programme offers ‘carbon-efficient ocean freight’ using green carriers, and leverages telematics solutions to track and reduce emissions from its transport operations and warehouses.

International shipping companies such as Hapag-Lloyd are rolling out telematics solutions for their dry container fleets to augment their smart reefers. Haulage companies, such as US-based Decker Line Trucks, have also benefited from the power of data for increased operational efficiency. The company achieved a 45% decrease in reefer engine run hours by switching from continuous cooling mode to start/stop mode, saving fuel, improving trailer utilisation and reducing carbon emissions.

Different operators are applying improvements to their fleets on individual legs of the supply chain to enhance efficiency and facilitate accurate emissions reporting.

However, many sustainability-minded beneficial cargo owners (BCOs) – such as IKEA, Amazon, Walmart and others – will want to calculate end-to-end emissions across multiple modes of transport to ensure that they reap the reputational benefits of working with green partners or to offset the total carbon emitted from transporting their goods.

As shippers and BCOs increasingly transition to environmentally sustainable practices, transparency and data validity help shippers meet corporate environmental, social, and governance targets and select greener transport options, which can then attract eco-conscious customers and enhance the bottom line. But to maximise the benefits, standalone solutions must be interoperable and

data-compatible to make it easy to see the big picture and minimise the reporting burden.

REDUCING PORT-RELATED EMISSIONS

Reducing transport-related emissions is vital to decarbonising trade. However, the focus should not be to the detriment of critical nodes within the multimodal supply chain, such as ports.

As the nexus between sea and land, ports and terminals contribute to national economies and local businesses. However, they also emit a significant volume of GHG emissions. While switching to electricity from renewable sources is vital to lower emissions associated with generating purchased electricity (Scope 2), optimising local energy consumption (Scope 1) also contributes to a smaller carbon footprint.

insights enable port operators to fully utilise terminal capacity to reduce congestion and delays and enable logistics providers to schedule container deliveries and pickups to reduce vehicle idling at the port, lowering fuel consumption and associated emissions.

EMPOWERING SUSTAINABLE PRACTICES

To ensure supply chain visibility, users of telematics solutions can leverage GPS and satellite and cellular connectivity to track the status and location of their containers. Depending on the set-up, metrics such as distance travelled, duration, use of shore and diesel genset power, temperature fluctuations, engine performance and driver behaviour can be analysed to assess performance. Companies can then review policies, procurement decisions, employee

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Through its ability to remotely monitor reefer performance in real-time, for example, container telematics can significantly lessen the number of pre-trip inspections (PTIs) needed. This reduces port energy consumption and the need to transport reefers to designated PTI areas, reducing haulage

emissions and energy usage. Similarly, automatically setting reefers to idle when internal temperatures meet carriage requirements can significantly cut port energy waste, lower GHG emissions, and reduce operational costs.

With access to capabilities to track and analyse reefer and dry container movements and storage in real-time, terminal operators and logistics providers can also better plan container handling operations and reduce the energy needed to power cargo-handling equipment such as cranes and forklifts. Access to immediate real-time information on container status also minimises the number of empty container movements and optimises stacking and storage. Such

education and training programmes, and compile accurate emissions reporting, contributing to overall CO₂ emission reductions.

Such data granularity allows shippers to identify and avoid unnecessary movements, calculate optimal transport routes and make dynamic decisions to avoid congestion, delays, and detours. It can also shape operations procedures, for example, to reduce vehicle speeds, idling and dwell time at nodal points and empty miles. Such alterations can shorten journeys, improve asset utilisation, lower fuel consumption and emissions, all while increasing customer satisfaction.

Automating data collection and analysis and fusing it into one all-encompassing platform underpins ORBCOMM’s architecture and design ethos. Our comprehensive suite of telematics solutions seamlessly integrates the dots of container-related operations-generated data from port terminals, road, rail, and sea to calculate total emissions, down to the container level, per each leg of the supply chain journey. This information can either be fed into bespoke systems run by the shipping lines or accessed via our configurable platform – meaning that setting up a single point of access to multi-

modal data is extremely easy and BCOs can use relevant data to offset emissions and offer customers carbon-neutral products.

ACCURACY, INTEROPERABILITY, AND ACCESSIBILITY

IoT technologies transmit a large amount of reliable data which, when fed into digital platforms and integrated

with open enterprise systems, can be analysed and interpreted to help inform decision-making. For example, ORBCOMM's Maritime platform provides a single view of all assets typically operated by shipping lines (including third-party telematics data), dry and reefer containers, chassis and gensets on one platform to simplify asset management, performance benchmarking, and emission reporting.

The platform provides real-time data and analytics on the location, status, and condition of the assets, as well as historical reports and trends. From a transparency perspective, it enables transport operators and shippers to share, calculate and report their point-to-point GHG emissions for each transport mode across the supply chain.


ENHANCING RESILIENCE AND COORDINATION

Sustainability is a global imperative, and businesses are looking for ways to reduce their carbon footprint and report emissions from the point of manufacturing to the end customer. Container telematics can enable a greener and more resilient supply chain ecosystem, and allow indus-

tries to hit the dual goals of economic viability and environmental responsibility.

Exchanging telematics data, using API standards, increases transparency and can contribute to building trusted partnerships now. It can also help better coordinate port terminal operations and promote modal shift from road to more carbon-efficient modes of freight transportation, such as coastal shipping, inland waterways and rail, to reduce emissions.

Using telematics to automate the collection of accurate and cost-effective data and digital platforms to present the analysis can help answer many of the concerns that the WEF white paper flagged about the measurement of data. Early adopters of this IoT technology will likely be well-positioned to meet the demands of an increasingly environmentally conscious market and reap the financial rewards of being greener, more transparent and also increasingly efficient.

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