



SUCCESS STORY

ASUS IoT and Hitachi Energy Transform Energy Industry with TRO610 Cellular Router

The Customer

Hitachi Energy is at the forefront of global efforts to develop more flexible, sustainable and reliable electricity systems. Headquartered in Switzerland, the company employs more than 40,000 people in 90 countries and with a turnover of approximately \$10 billion. It serves a broad range of customers in the utility, industry and infrastructure sectors with equipment such as high-voltage switchgear and power quality systems through to substations and grid edge solutions. With customers and partners, Hitachi helps develop technologies that enable the digital transformation of the power distribution networks, accelerating the energy transition towards a carbon-neutral future.

The Challenge

The development and upgrade of electrical networks worldwide has resulted in the deployment of many IoT-enabled smart assets out in the field – enabling better grid stability, supporting the launch of new customer services and reducing total cost of ownership. These intelligent devices, such as sensors and smart meters, can collect valuable data that must be transmitted to central control centres. However, the extent of these networks means many of these devices are located across vast geographic areas that are not always connected to wired communications

infrastructure. The solution is sending data in real time across cellular networks via routers at the edge.

Hitachi Energy recognized the highly secure, always-on connectivity requirements to enable grid modernization. This requirement progressed into the conception of a cellular router with state-of-the-art cybersecurity and communications that could perform in harsh environments in the field. The challenge was designing and building a high availability, reliability and throughput device, in a rugged and compact form factor, that would be capable of increasing field asset and application visibility.

"We had already launched a larger router with broadband mesh and cellular capabilities, but as grid providers deploy more assets in the field, it became apparent that there was a need for a smaller cellular-only device at a specific price point to drive connectivity and communication," says Michael Dulaney, Global Head of Wireless Sales at Hitachi Energy. "It had to be rugged to withstand extreme temperature and humidity variations and compact enough to be installed in various locations."

Typically, Hitachi Energy would design the product and then rely on an original equipment manufacturer (OEM). But in this

case, it wanted to pursue a more in-depth relationship with an original design manufacturer that could take the initial specifications and provide a complete product development service to scalable production. "We wanted to give as much freedom to our ODM partner as possible to allow it to leverage internal economies of scale," said Dulaney. "We started a dialogue with ASUS IoT, and it became clear it was a perfect partner to engage with because they understood our technical requirements and the price point."

The Solution

Working from the initial specifications, Hitachi Energy partnered with ASUS IoT to develop a next-generation communication gateway – the **TRO610** cellular router – purpose-built to support industrial IoT applications. From the start of the project, technical teams from both organizations worked closely together to progress the design.

"We had weekly sessions where engineers from both sides would come together to talk about the scope of the product and to grow out the development phase," says Patrick Chiu, Product Manager at ASUS IoT. "Resource allocation changed significantly over time as we sought to meet each of the milestones that had been set. Up to 30 people were on the review calls at one stage – not only product managers but also electrical, mechanical, power, software, testing, and qualification engineers. Capturing all requirements was a real team effort."

This collaborative work ensured that the **TRO610** progressed to sign-off – with ASUS IoT aligning with customer expectations by meeting all specifications and delivering at the right price point. As a commercialized product, an NXP Layerscape processor powers the **TRO610**, providing edge computing capability and state-of-the-art cybersecurity in a compact and ruggedized form

factor. The device offers Bluetooth connectivity options, industry standards compliance, and always-on cellular connectivity, making it ideal for end-use applications in utility, petrochemical, and manufacturing environments.

In line with the 3rd Generation Partnership Project (3GPP*2) specification, **TRO610** operates on both public and private 3G and 4G cellular networks across multiple frequencies, including Citizens Broadband Radio Service, Anterix™, 410Mz, and 450MHz. The device is especially suited for power distribution networks through its compliance and certification for IEEE 1613 and IEC 61850 standards. Furthermore, the TRO610 can be managed through Hitachi Energy's Supros unified network management and monitoring system. Supros simplifies installation with the low-touch deployment of wireless devices and remote terminal units and supports over-the-air firmware updates.

The Outcome

Hitachi Energy has launched the **TRO610**, and the router is being manufactured in volume at ASUS IoT's production facility in Taiwan. Scalability has been built into forecasts to cater to increasing demand.

So far, the **TRO610** has been very well received by the market, and there are plans for the product to evolve – possibly by adding 5G connectivity. Such a development would require a new chipset and module, and discussions are ongoing about how that could be best achieved. Hitachi says these forward-looking discussions illustrate the high level of trust that was established and built up between the two organizations.

Hitachi Energy is also considering utilizing ASUS IoT's original design manufacturer capabilities for other systems and technologies, with perhaps routers for different verticals such as automotive and mining. In each case, ASUS IoT is seen as having the design, development and manufacturing skills to bring new products to fruition.

Looking back, Michael Dulaney at Hitachi Energy says the project was a resounding success. "All the way through, ASUS IoT provided us with visibility and transparency," he says. "The project team never made assumptions about what we required: there was always excellent dialogue, with ASUS IoT engineers keeping us informed about the deliverables. They were incredibly responsive to all of our needs."

Patrick Chiu at ASUS IoT says the partnership with Hitachi Energy has been an extremely rewarding experience. "We are delighted to support Hitachi Energy with the launch of this product and look forward to future collaborations," he says.



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