Innovative Rolling Stock Solutions *Issue Two*

Train Tech

Cloud Based Rail Monitoring Here

Asset utilization and incident management has stepped into the future with the announcement that Australia's OEM Technology Solutions is offering cloud based web monitoring solutions.

OEM has integrated its recently released IO3640 Communications module, a product that adds GPS and 3G capability to the OEM PC3 Series Controller product range, with the Etherios Device Connector to provide train operators with web based monitoring.

"The connectivity provides remote access to critical train data such as location, speed, equipment status and other information via the web, allowing operators to improve their operations, safety, efficiency and their bottom line," said OEM Managing Director, Richard Gobee.

Etherios is a division of Minnesota based, Digi International, with whom OEM has had a relationship for more than 20 years.

OEM Technology Solutions equipment powers over 20,000 systems in rail cars in more than 20 countries.

Richard said that the new OEM product would allow these customers to implement a connected rail solution, a smarter way to decrease downtime due to unplanned maintenance.

Device Cloud by Etherios is a platform-as-a-service that provides two-way communication between any device and the cloud, allowing products to proactively communicate issues via the Web without the need for human intervention.

"In order for us to offer preventative service, or conditioned-based monitoring technology, we needed a way to connect our controllers to the Internet. Digi's products provided that wireless connectivity," Richard said.

"The customers who have seen the system are very excited. Rail systems are expected to be one of the fastest and most efficient means of transportation, and now the Internet of Things makes that a reality.

"Device Cloud by Etherios enables us to offer the Internet of Things as a solution to customers to simply and cost effectively benefit from operational efficiencies."

Digi International and Etherios offer comprehensive M2M end-to-end solutions, enabling

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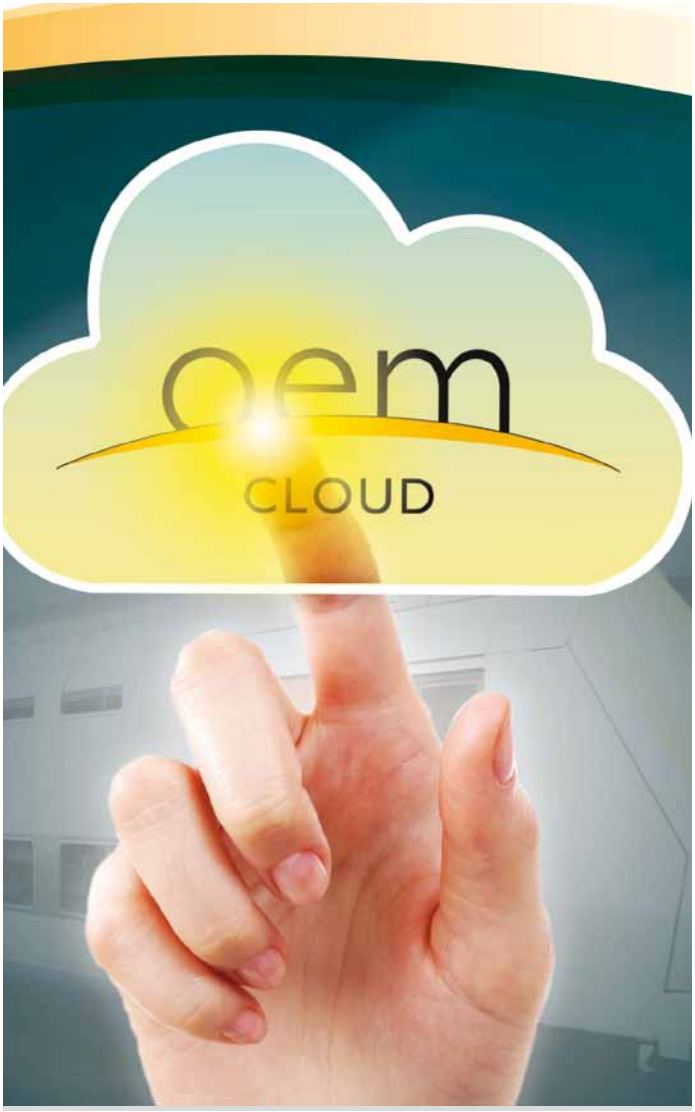


When German manufacturing giant Knorr-Bremse acquired Australia's Sigma Coachair group in 2010 many things changed in the company that had started as a family entity more than 40 years ago. One thing that remained unchanged was a 20 year relationship with OEM Technology Solutions.

Sigma Air Conditioning Retains Relationship

Thirty year company veteran, Rail Division General Manager Joe Schembri, said that once Sigma became part of one of the world's largest component suppliers, previously outsourced manufacturing was brought back in house.

"But our relationship with OEM was one of the exceptions and continued unchanged, mainly because it had become more like a partnership," Joe said.

OEM has supplied Programmed Logic Controllers for Sigma's market leading train heating ventilation and air conditioning systems for more than 20 years.

Indeed, it was Sigma's specific requirement for such a unit that was to lead to OEM becoming an internationally regarded specialist.

"When I first met with OEM's CEO James McLeod he was running an embryonic, home-based business so it has been a very long relationship.

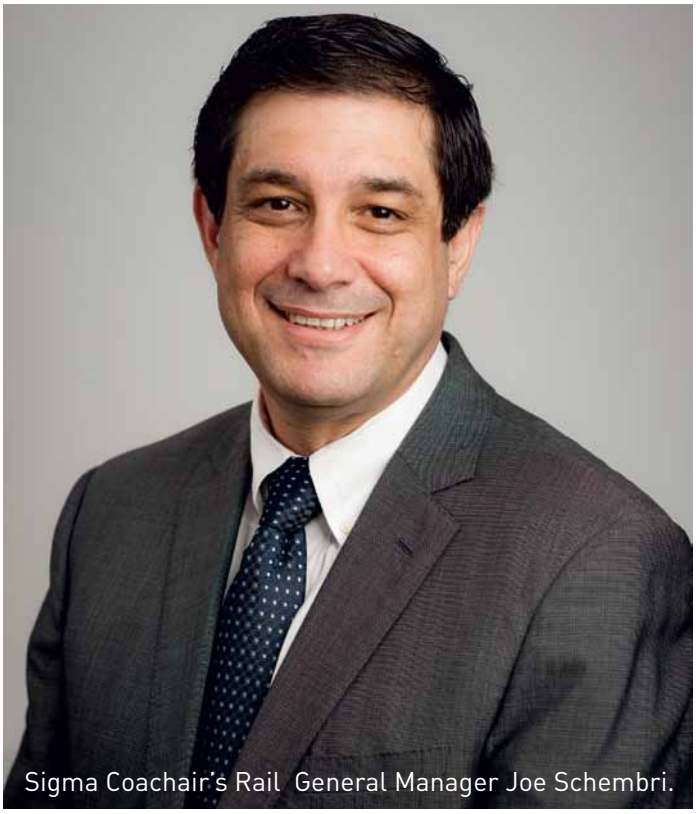
"At the time we were using PLC's that simply couldn't meet the specific requirements for rolling stock, requirements that were becoming tougher.

"We wanted somebody who could custom make a microprocessor that would suit our requirements and also meet all of the tough shock, vibration and electronic standards that were coming into the rolling stock industry and continue to burden us today," Joe said.

"I was the responsible design engineer at the time and met James almost at day one of our now 20 year relationship."

Harking back to his "partnership" comment, Joe said that that relationship was very much at the heart of the two companies' dealings.

"Their services, ideas and innovations give us at point of difference."



Sigma Coachair's Rail General Manager Joe Schembri.

Joe believes that OEM's responsiveness and speed have also been key to maintaining the ties.

"We are able to rely on them to deliver. In fact, we used to do a lot of our own software writing and functional specifications and now we don't do any, leaving the majority to them."

One of Sigma's advantages is a development of an OEM remote monitoring application that OEM had devised for another market area.

"OEM not only steps up to the bar time and time again from a technology perspective, but they are also prepared to support us commercially when a project is particularly price sensitive.

"In fact, far from taking us for granted because we are such a long term customer, they have continued to look at ways of recuing costs and over time the actual price of their PLC has gone down, not up.

"But their core strength is most definitely a very good intellect base. They have very good engineers who have been there for a long time. They understand our product extremely well and when something goes wrong, particularly during first up commissioning of a prototype, they will have someone on a plane the next day, sending them anywhere in the world to support us," Joe said.

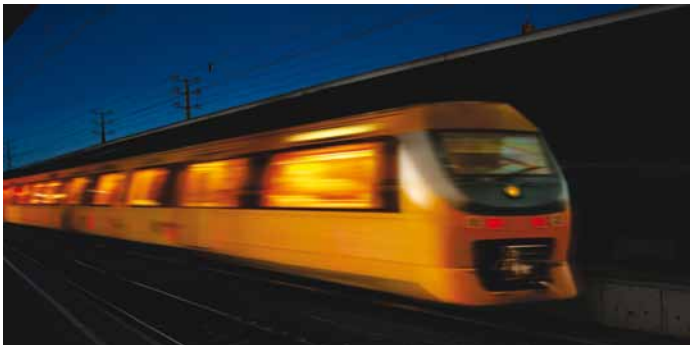
"We rely as much on their experience as we do o their innovative technology."

That OEM's technology is continually evolving is very much a plus for Sigma and a matter of some personal satisfaction for Joe who sees the faith Sigma placed some 20 years ago in a start-up home business daily being validated by the diversification and expansion of that business.

"We introduced them to the rail industry with our HVAC requirement and they're now producing condition monitoring systems for trains worldwide, CCTV systems for the Waratah train in NSW and much more.

"They're at all of the world's big industry exhibitions and their key staff spend as much time on international flights as I do.

"In fact, the last time I bumped into James we were both flying off to China," he added



Thales Promoting OEM Internationally

The Australian arm of France's giant international electronics and systems group, Thales, has identified a Sydney-based technology solutions company, OEM, as a possible global partner.

Thales Australia's Industry Engagement Unit is charged with facilitating opportunities for local companies within the Thales supply chain serving defence, aerospace and space, security and transport markets throughout the world.

The advantages for those companies include greater export opportunities, access to Thales's extensive supply chains, increased knowledge of current and future projects, and direct connections with relevant Thales decision-makers across the business and around the world.

Thales Australia's Purchasing Director, Michelle Richard, said OEM Technology Solutions had come to her attention as the result of a contract to provide 312 DVRs and 156 video display computers to Thales for the Downer-EDI Waratah train project's Communications & Surveillance Sub-systems.

Michelle, who has worked for Thales in France, Canada and the UK during a 20 year career, said that OEM has been in rail longer than Thales and the supplier due diligence process took very little time.

"They have the right credentials and everybody I've met has said OEM is extremely knowledgeable, often more than us," she said.

For the Waratah Suburban Passenger Vehicle project, which involves 78 new train sets (624 carriages) for the Sydney Metropolitan train network, OEM was essentially a re-seller of a German product.

Thales could easily have bought direct from the manufacturer but, according to Michelle, the decision was taken to go via OEM in order to utilise the firm's expertise for software integration and hardware configuration as well as have access to a local support centre.

"It was a very un-Thales-like thing to do but going with them proved a very, very wise decision on our part," she said.


Michelle Richard

"We didn't know the hardware like they did and they were very responsive and knowledgeable. If they hadn't been there it would have been a lot more painful.

"They know their business and are extremely customer focused. When I talk to OEM requesting something they have someone available immediately and are extremely supportive, exactly the kind of behavior we want from a supplier.

"What they're supplying is the very heart of the system and without their help we'd still be trying to figure some problems out."

Thales has some 4000 suppliers in Australia and Michelle makes no bones about the fact that she believes they have 50% too many. But OEM is not on any hit list.

"I am a very strong supporter of OEM. They have a couple of niche products that are pretty cool. I wish I could buy more from them because when I'm looking for innovation I go to my suppliers.

"When I looked at them and the way they do innovative things, it opened my eyes to other avenues for Thales

"There are certainly some opportunities for OEM within Thales worldwide.

"For technological innovation the French normally will look to France first and then to Europe as we have a lot of technology in France where it is part of the culture. But there are some innovations at OEM that we're interest in.

"Plus, they've positioned themselves with service.

"They've been extremely customer focused and knowledgeable and they're not just ticking boxes and sending product off to a shipping address. They are actually adding value and expertise.

"Indeed, they add value to the entire process," Michelle said.

Cont. from P.1

Web-based Monitoring In The Cloud

customers to choose from a full suite of products and services, from hardware to application integration.

OEM Technology Solutions first turned to Digi International for its hardware, such as the ConnectCore Wi-9C embedded wireless module and Digi Transport WR44 cellular gateway, to enable its products wirelessly.

The wireless connectivity allows vendors and rail operators to gather information remotely, so they can understand how assets are working or not working.

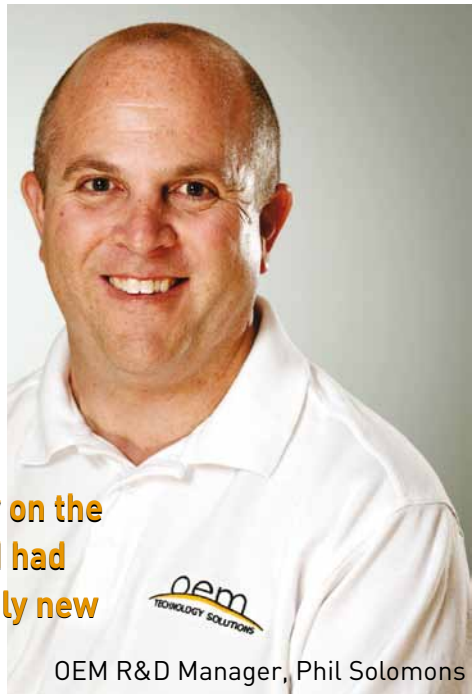
Now, Device Cloud by Etherios makes that information even more accessible and actionable by making it available via the web.

Any device can be connected to Device Cloud by Etherios with the Etherios Cloud Connector.

OEM Technology Solutions' offerings include wireless monitoring and control systems for essential subsystems such as video surveillance, passenger information, driver advice, speed measurement, air conditioning, fire detection, door control and lighting.

By giving their customers access to actual, real time operating data via the Internet they assist them to increase their product or system effectiveness, consequently leading to their improved bottom line.

High Speed Train Phil's Next R&D Challenge



OEM R&D Manager, Phil Solomons

Seventeen years ago Phil Solomon was a wide-eyed graduate engineer and the first full time employee of OEM. His first day on the job was spent commissioning a control system for trucks OEM had developed for Orica Explosives, trucks that featured completely new technology in the form of a differential GPS.

Today Phil is OEM's R&D Manager and he and his team of six R&D engineers are preparing to field test prototypes of another OEM first, ironically also featuring GPS technology at its core.

The Orica Trucks were a market leading first adopted worldwide - providing the ability to carry the component parts of explosives and mix them in the field.

Phil is quietly confident that his team's new PC3 programmable logic controller will have an even bigger impact and far wider applications.

"With GPS and 3G connectivity, the ability to interface to a PLC programming language and cloud connectivity, this is a device like no other," Phil said.

In some ways the GPS circle also reflects the growth of the company itself.

When Phil joined OEM the firm had developed on the premises that the industrial market generally had a need for specially developed, ruggedised computer systems. The theory was proven with the Orica contract and OEM grew to provide engineering services for commercial, off-the shelf industrial controllers.

Then, when a new client requested a PLC specifically to comply with rail standards that could be used to control heating, ventilation and air conditioning systems, it set the company on a course of developing its own range of industrial controllers, ultimately leading rail HVAC specialisation.

"We not only developed the controllers but added our own PLC programming language and suddenly we had a unique, niche product," Phil said.

That was 2000 and OEM developed three variants of that first controller, the PC1, each with different input/output (I/O) configurations.

"Soon we discovered that even with three models, a fixed I/O configuration could never quite satisfy the market so we came up with an even more modular concept – a processor and a broad range of I/O modules, the idea being when a client stipulated their I/O requirements we could put the right I/O module and processor together in an extrusion."

This became the genesis of the PC3 range that has since been systematically embellished and modified as part of an ongoing process, taking on board protocols like MVB, CanOpen and LonWorks as well as internet (IP) based protocols.

While OEM is diversified in so far as the company provides solutions for crane control, energy management and even gas monitoring, its core business has for some time been rail and in that industry it was, until recently, pigeon holed as a HVAC controller specialist.

Now, OEM is rapidly shaking that image and is increasingly fielding inquiries internationally for rail condition monitoring systems.

Phil believes that his team's latest PC3 will not only further cement that new image within rail, but will broaden the firm's appeal in a multitude of new markets.

"Because our products are designed to comply with international standards for rail, they are over engineered and extremely strong for just about any other application and that's a good thing as far as potential customers are concerned.

"We use the term 'ruggedised' because our controllers are built to deal with temperature extremes from minus 40 to 85 degrees Celsius and with extremes of elevation. They have to meet stringent shock and vibration requirements and are designed for an electrical environment where they can be subject to anything from lightning strike surges to surges generated from within a train running on massive currents."

Despite the pressures of his responsibilities for R&D and Production, Phil is still enamoured of his job.

"I work for a company prepared to invest around 10% of gross into R&D, have a team of six engineers in the R&D area plus another group of systems engineers and very talented production staff."

"I get variety and technical challenges daily.

"Right now, for instance, I'm grappling with the design of some systems for a Chinese High Speed train that will run through both deserts and mountains reaching altitudes as high as 4000m."

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