

Zircon's expertise and flexibility proves invaluable to Invensys Rail

Zircon recently worked with Invensys Rail to develop an on-train data logger and decoder for the upgrade of London Underground's Victoria Line. This enabled them to successfully get a new control and signalling system into service within a tight timeframe.

Background



Invensys Rail was recently awarded the contract to provide a new signalling system and control centre on the Victoria Line of the London Underground. Part of this project involved developing and installing automatic train control equipment on the new rolling stock – an automatic train protection (ATP) unit and an Automatic Train Operation (ATO) unit.

Although there is a driver on the train who can handle all operations manually, these two units will do everything completely automatically - pulling away, braking, responding to signals, operating the doors, and so on. Given this fact, the system had to be totally reliable and dependable.

As with any new system there are bound to be teething problems, so rigorous testing is essential - any anomalies must be identified, rectified, then retested. This process involved the collection and analysis of huge quantities of data so that engineers could accurately observe exactly what was happening – this information was to be captured by an on-board logger.

The challenge

A few months before the system went into service it became apparent that the logger, which was not supplied by Invensys Rail, was not performing as well as expected. All the elements of the Invensys signalling and control systems were successfully communicating with each other, but the information was simply not being recorded in a way that made for sufficiently detailed analysis.

Andy Chapman, Automatic Train Control (ATC) Project Engineer overseeing this aspect of the contract at Invensys Rail, explains that "we decided that a new logger was required. Whilst we had the people in-house to develop it, they were busy, and we wanted to be sure the task would be successfully tackled in the timeframe. So we decided to outsource the job."

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"We got the system into service, safely and without taking risks, on time. That's a great result."

"We regularly work with Zircon, and were confident they could do everything that was required."

"Because we have developed a very close relationship with Zircon over the years we were able to collaborate successfully and rise to some very awkward challenges."

"The decoder we eventually came up with is working extremely well and we're still using it today."

The Solution



working saved an awful lot of time and proved very efficient – much better than giving them a huge document and then hoping they'd come back with a suitable solution in a few months."

"This also allowed us to develop two solutions in tandem. The first was a quick and easy option, if you like, running on a standard laptop, just to get the system into service. It did everything that was asked of it, but long term it wasn't suitable – laptops don't last forever, and aren't designed for use on trains.

So we also developed hardware that would run off the train's power supply, rather than batteries, plus was smaller and more robust. Using the laptop solution got us into service on schedule, while giving us more time to develop and thoroughly test the unit we'd use for the long term."

Further developments

Every day three Victoria Line trains now carry these loggers. They generate a huge number of files which are downloaded every night and sent to the Invensys Rail office in Chippenham, so anomalous events can be identified and analysed, then improvements made.

Zircon were also asked to develop a decoding tool that made this task easier. "We get large text files from the trains" explains Andy. "We needed something that would import this data into Excel so we could investigate everything with less difficulty. We worked together on this, through a number of different iterations. The decoder we eventually came up with is working extremely well and we're still using it today."

Results

Andy comments that "we found ourselves in an awkward situation that was not of our own making. Zircon not only overcame a variety of different technical problems to provide an excellent solution within a tight time frame – they also understood that a very flexible approach was required, given the situation and the fact that the scope of the project was continually changing. It was demanding for us, and for them.

Because we have developed a very close relationship with Zircon over the years we were able to collaborate successfully and rise to some very awkward challenges. The outcome is we got the system into service, safely and without taking risks, on time. That's a great result."