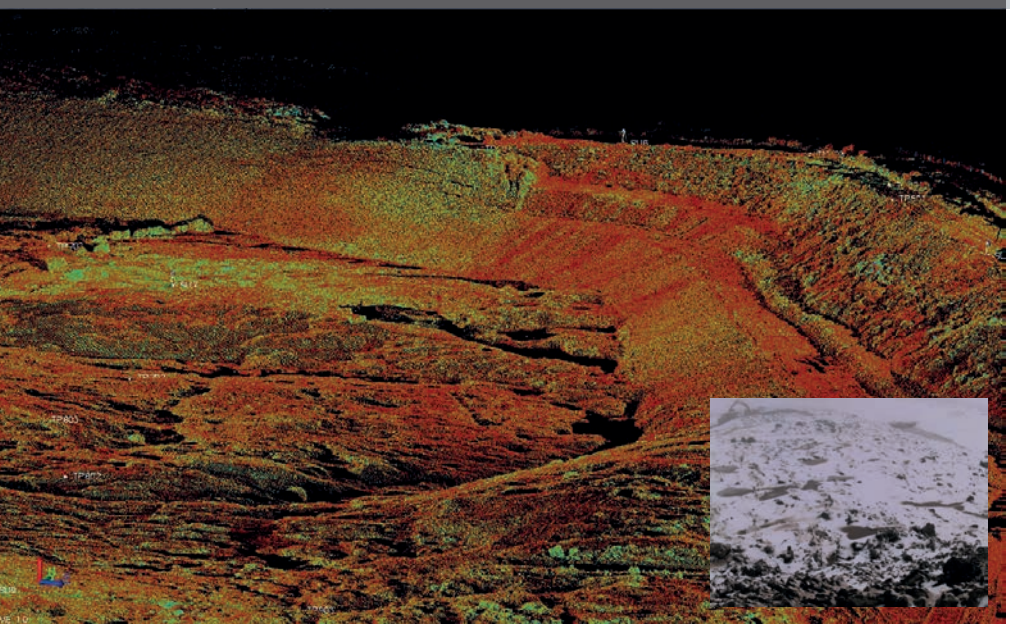
Customer:
Tri-Tech Ltd

Project:
Using an SX10 to replace a UAV in snowy conditions

Solution:
Trimble SX10 Scanning Total Station

Case Study



Beating the 'Beast from the East' with the Trimble SX10

When snow derailed a monthly UAV overburden survey, Tri-Tech Ltd ensured that their client wasn't disappointed thanks to the 600m range of Trimble's SX10 Scanning Total Station.

Based in Yorkshire, Tri-Tech Ltd is a company that prides itself on getting the job done, a 'can do' ethos instilled from the top by Owner, Ted Harland. Having worked for one of the first company's in the UK to adopt robotic total station technology, Ted has ensured that the Tri-Tech survey fleet reflects a similar commitment to innovative technology with instruments including Trimble's R10 GNSS, S-Series Robotic Total Stations and a TX8 Laser Scanner, along with a UAV and most recently a Trimble SX10 Scanning Total Station. Consequently, the company is equipped to carry out a wide range of land and engineering surveys throughout the UK.

For Ted any new purchase of survey equipment must make perfect business sense with that instrument increasing the efficiency of his survey team, bringing in new work or solving a problem. In the case of the SX10, it was all three.

Increased efficiency: The SX10 combines imaging, survey precision measurement and fast HD laser scanning (up to 26,600 points per second) in a single instrument along with tried and tested workflows and importantly for Ted, integrated surveying (IS) with his Trimble R10 and S-Series total stations. This would allow him to tie scans into the OS Grid with maximum efficiency and also to multi-task, setting up the SX10 to scan and then flipping to an R10 GPS survey as required, all with the same logger.

New business areas: Following a demonstration of the Trimble SX10, Ted was immediately convinced that its fast scanning, easy capture of high resolution site imagery and straight forward set up would make it ideal for him to expand his work into meeting more complex projects on behalf of his civil engineering clients and also improve their workflow on measured building surveys.

Solving a problem: One of the drawbacks of UAV surveys is that windy weather can derail a project for days. Ted saw an immediate use for an SX10 in his survey fleet as a reliable alternative to a UAV for his quarry work if conditions proved too windy for an aerial survey on the day – something that had occurred twice on recent trips to Scotland. The 600m scan range of the SX10 would enable him to set up at a safe distance away from works and still produce the high level of data required by his clients. This was a key driver in his decision to purchase the SX10 and one that is already starting to pay off.

First opportunity – using the SX10 as an alternative to a UAV

Although Ted had been taking the SX10 with him on all his UAV jobs as a back-up to ensure that there would be no more fruitless long drives for the Tri-Tech surveyors or disappointed clients, it wasn't until the bad weather in March that he had a chance to use it as an alternative solution. Since September 2017, Tri-Tech had been visiting a site near Glasgow to undertake a monthly measure of excavated materials. On each occasion, the client required a volume report showing how much cut material had been excavated with the materials broken down into peat or clay etc backed up by an isopachyte drawing. Usually this work required a half day of flying with data delivered 2-3 days after.

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>
> **Ted Harland**
> **Tri-Tech Ltd**

▲ Ready to go with the SX10 and R10

▲ Set up was in elevated positions thanks to the SX10's 600m scanning range

The day before this particular scheduled visit, the 'Beast from the East' was already biting hard and Ted was aware that conditions would likely render an aerial survey impossible. The site was on uneven soft ground with active heavy plant so Ted knew that it would not be possible to carry out the survey on foot using GPS or a total station. He therefore loaded the SX10 into the van and set off at 4.00am on the morning of the job.

Despite blizzards and drifts, the SX10's 600m scan range meant that Ted could set up in elevated positions around the perimeter of the site and take a total of 10 scans using the R10 for IS setups so no targets were required. These scans included full dome scans as well as more detailed high-density scans. Laser scanners often capture significantly more data than needed so Ted therefore scanned some areas selectively. The SX10 is driven by Trimble Access on a tablet which means he could draw a polygon over the tablet's live video feed enabling him to define the scan area and scan density based on the software's estimated time frame. The tablet also gave him clear visuals of the scans captured so he could be sure that all areas had been captured. Despite the difficult weather conditions Ted completed the work in less than 3 hours – comparable to timescales to flying the site with the UAV.

Back at the office, the registered scan was dragged into Tri-Tech's Trimble Business Center software which was used to clean up the data removing plant noise and unwanted areas. The final pointcloud was good enough for the measure and compared to the UAV, very close to the tie in points which gave Ted confidence in both the new and previous work. "I was surprised at just how well the SX10 performed in these conditions and I now appreciate that in our quarry work, I can be a lot less choosy about the weather knowing that the SX10 can be used in place of our UAV. Whilst we pick up more detail with the UAV, we get better accuracy with the SX10, either way I know that I am equipped to supply high quality data within our client's requested time frame."

Flexibility and Versatility

Ted reports that the SX10 has been received with enthusiasm by the Tri-Tech surveyors. In particular, they find that driving the instrument through the tablet has brought a powerful visual edge that they didn't have previously as well as bringing a few useful extras like 'pinch and zoom' on the graphics page and 3D orbit.

He concludes, "The SX10 was always going to make great business sense for us in that we saw an immediate need for it as a back up to our UAV scans as well as it being an overall useful addition to our general survey and scanning work. For example, we've just used it for a topo survey of 1.5 acres of trees and stumps, including their diameters. We just set the SX10 on to a horizontal band scan and with just 3 or 4 locations were able to digitise every tree and the top and bottom of surrounding embankments. The time saving was massive and we were able to capture lots of additional data as well.

However, for us, it will always be about choosing the best instrument for the job and the SX10 brings versatility and flexibility to the equation. The SX10 is a great bit of kit and the support from KOREC has been second to none with the team sharing great advice, often out of office hours. It's the people that make an organisation and the SX10 is backed up by a support service that's worth its weight in gold."

Many thanks to Ted Harland, Owner of Tri-Tech Ltd, for providing the information for this casestudy.

Contact us:

Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

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