Customer:
Academy Geomatics

Project:
Coastal Monitoring

Solution:
Trimble R10 GNSS

Case Study

R10 delivers at low tide

Survey technology is developing all the time. Sometimes the developments are industry changing - the arrival of robotic total stations, GPS and 3D laser scanning - sometimes simply additions or improvements to what's already there.

Investment in new technology requires research, demonstrations, trials, comparisons and purchasing decisions. New workflows need to be established and new instrumentation learnt. These can seem distractions to the day to day running of a survey practice, but for those prepared to invest, the paybacks include increased field productivity, increased work, new clients and better margins.

Based in the north east, Academy Geomatics has recently updated its existing fleet of total stations and GPS with instruments intended to be both a sound investment for the future and capable of meeting the existing challenges of their day to day projects. Director of Academy Geomatics and responsible for the company's survey instrumentation is Mark Anderson. During the last 12 months he has purchased Trimble S3 and S6 robotic total stations, two Trimble R10 GNSS, Trimble TSC3 data loggers with Access software, an R6 base and Trimble Business Center processing software. These new systems will replace older instruments and those from another manufacturer.

Robotics first...

Mark's initial investment was in the robotic S3 and S6 total stations. "My immediate concerns on using robotic instruments were practical ones - the safety of the Academy team and the security of un-manned kit", explains Mark. "Once I was sure that new workflow procedures could be incorporated to avoid these issues I then concentrated on what the S3 and S6 could bring to our business. Were the tracking and targeting capabilities sufficiently robust? Would they work in trees? How easy would it be to lock back onto the target?

"An initial demo from KOREC at our offices allayed these concerns and we followed this up with a weeks' hire of the kit which was hugely useful. We were able to see the instruments working in our environment using our workflow and on a real site. Seeing how well the instruments tracked in trees and undergrowth and how easy it was to re-acquire the target if lost gave a much more useful comparison against our old instruments. The S3 with its track lights is very powerful in trees for seeing sight lines and re-acquiring targets and both instruments are also very impressive in the early evening winter dusk. We were quickly able to adapt our work practices to suit the strengths of the instruments and became more productive in just that single week."

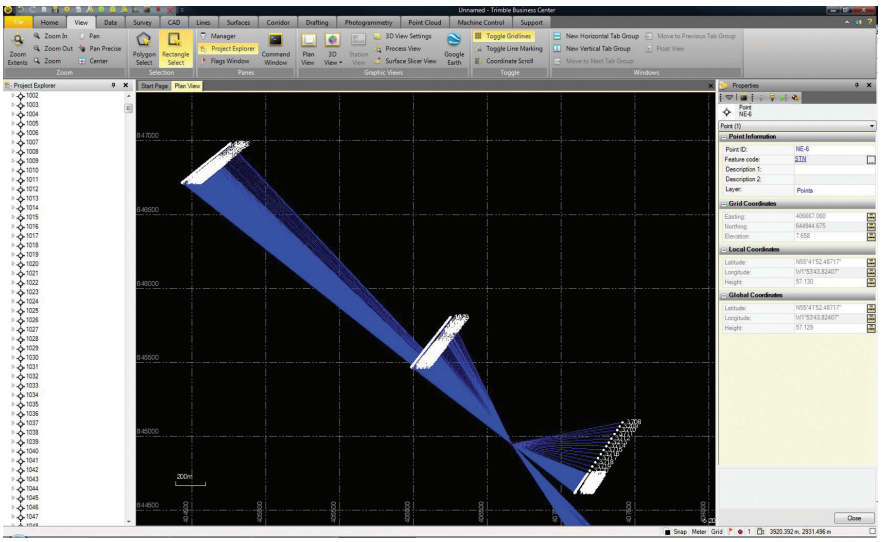
Mark cites the speed of the instruments as being particularly noteworthy. "The slight speed increase noted in the spec sheet of the S6 is noticeably appreciated out in the field, especially when taking rounds of angles! Additionally, the on board electric fine bubble makes setting up a whole lot easier and quicker and eliminates any juggling around with the TSC3 whilst trying to level it up. The coaxial camera on the S6 is proving to be useful as well, not just to re-find the target, but also to take panoramas and pictures so that the client can be provided with extra information as well as the survey data. Many clients appreciate that extra step for quantitative information and find it very useful if they have not visited the site itself."

> "...productive instruments that are easy to use and ridiculously future proof!"
>
> **Mark Anderson**
> **Academy Geomatics**

▲ The R10 at Holy Island

...GNSS next

With the Academy Geomatics team familiar with the new Trimble robotic technology and TSC3 loggers, Mark concentrated his efforts on updating the GPS fleet. Although the team was familiar with another manufacturer's instruments, Mark had seen the Trimble R10 featured in a survey magazine and demonstrated at a KOREC event. Having decided they were ready to upgrade, a further demonstration was arranged at Academy's offices. "A demo at our office from the KOREC sales consultant really helped to show how good the R10 was at tracking satellites and maintaining lock in difficult locations. With the kit being lighter and easier to use than previous equipment, it was easy to be won over," continues Mark. "Although we did look at other options that would have integrated better with our old GPS kit, the Trimble GNSS looked far more rugged and also offered up some useful new features. The eBubble* is great for QC, the quick release mount means you don't have to worry about the surveyor plate spinning the antenna onto the pole, the antenna is small with the SIM card high up and the whole thing is reassuringly rugged!"



▲ Section profiles at Gosswick Sands (near Holy Island) shown in TBC

Delivering on site – Coastal Monitoring

Academy Geomatics is a multi-disciplinary practice that offers a wide range of expertise in all aspects of spatial measurement including coastal monitoring. Since 2002 the company has been working in coastal regions on the Cell 1 monitoring programme. The programme is managed on behalf of the North East Coastal Group and is funded by the Environment Agency, working in partnership with the maritime Local Authorities and other relevant bodies. The latest framework agreement runs from 2012-2016 and covers the coastline from the Scottish Border to Flamborough Head on the Yorkshire coast. The programme monitoring schedule includes a partial measure in the spring and a full measure in the autumn which demands beach profile surveys, beach topographic surveys, clifftop lines and clifftop points. The partial measure includes a selection of these. In addition, ad hoc and post-storm surveys are undertaken by Academy when required.

Academy aims to collect the most survey data possible in each tidal window to provide a comprehensive 'snapshot' of the beach state for the client. The team has extensive local knowledge of the area and knows that certain beaches can change state on a daily basis. For Academy it is therefore vital that their utilisation of both manpower and equipment is geared towards maximum data capture.

In particular the new Trimble GNSS technology has lent itself to the beach survey work. Beach topographic surveys and profiles are undertaken with a quad bike and with a series of two person teams using the new Trimble R10 GNSS (along with two older GPS rovers from another manufacturer) either with Trimble's VRS Now service for real-time RTK corrections or with the Trimble R6 used as a base if mobile coverage is poor.

With only a small window to work in, usually two hours either side of the posted low tide time, Mark has been delighted with the R10's performance. "The Trimble base / rover set up has been really great and the team love its reliability. With the amount of satellites the R10 can track, you just know that you are going to be able to measure the difficult areas such as those close to cliffs where traditionally we would have had to set up a total station. The xFill* feature has also been fantastic when surveying near cliffs or sea walls, it just seems to kick in seamlessly without the surveyor noticing making the whole process so much quicker. We only find out later in Trimble Business Center when we're processing the data. On a more basic side, the size and weight of the R10's have been particularly useful, especially at low tide when extensive areas of bare rock and slippery seaweed pose a hazzard."

Once captured, all the survey data is downloaded, stored, backed up and checked on a daily basis. Beach profiles are fully drawn and overlaid on previous Cell 1 data to check for any issues or major changes. Topographic surveys are also overlaid on previous surveys and checked for errors or major shifts in topography. A report is then drawn up containing information related to control used, weather, sea conditions and any comments from the surveyor.

Back in the office Mark reports that the Trimble Business Center processing software has been straightforward to use as has the Trimble Access software running on the TSC3 data loggers for both the GNSS and robotic instruments. "Both the instruments and the software have been easy to switch to and intuitive to use. Just a quick run over with the instructions and then the survey teams are out there working. The process of moving to Trimble from another manufacturer's instruments has been easy thanks to KOREC's support in the form of demos, open days and consultancy. For us the end result is productive instruments that are easy to use and ridiculously future proof!"

About Academy Geomatics

In 2001 Academy Surveys became Academy Geomatics Ltd to reflect the growth of the company and the change in focus within the industry from traditional surveying to modern techniques of data capture. Based in the north east, the company offers a wide range of expertise in all aspects of spatial measurement.

* The Trimble R10 includes an electronic bubble that appears on the controller display so that all measurement information is displayed in one place.

* Trimble xFill works seamlessly to 'fill in' for gaps in the RTK or VRS correction stream by leveraging a worldwide network of Trimble GNSS reference stations and satellite data links.

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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