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➤ Giving the project wings

Time is constantly of the essence on the large scale Waikato Expressway project. For HEB Construction, the need to survey large corridors of terrain regularly led them to utilise the services of Synergy Positioning Systems' aerial survey consultancy team.

With the infrastructure and manpower costs involved in surveying 16 linear kilometres of road on the ground, HEB Construction looked to the skies recently to solve a regular issue.

Originally ground survey teams were collecting large numbers of spot height data to generate a terrain model, which could in turn be used to calculate volume changes over different parts of the project on a month-by-month basis.

"Prior to implementing aerial surveys, the process was a lot slower," says HEB contractors representative Gary Budden. "Naturally with a ground survey team working in the field there is the potential for a heightened element of risk, meaning mobile plant would need to be inactive over a period of time."

"Then at the back-end, data accumulation was slow for the survey team. The introduction of aerial surveying really sped things up though, as well as taking staff out of the work zone; the unobtrusiveness of this process to the wider project can't be overstated."

HEB senior surveyor Nigel Neame contacted Synergy Positioning Systems' UAV (Unmanned Aerial Vehicle) survey consultancy with a view to increase working efficiency along the busy Tamahere to Cambridge section of the Waikato Expressway project, after seeing the benefits of aerial survey work first hand overseas.

"I'd had some prior experience with UAVs in the mines in Australia; mainly from a data delivery stand-point, but the operational efficiencies the technology allows for are fantastic too," says Gary.

"The Synergy team sets up in a paddock nearby, takes off and flies their passes and then lands again all at this remote location; we don't have to deviate from our day's plan anywhere along the work corridor at all."

Providing orthophotography and 1m grid TIN Digital Surface Model (DSM) data for HEB Construction to import into CAD, Synergy aims to capture the required data during two consecutive flights across the project area once a month.

Even with 16 linear kilometres of terrain to capture, with favourable weather the entire process is completed within a couple of hours, as opposed to the days a field survey team might take to cover the same distance.

"The speed with which we can then review captured data is crucial," continues Nigel.

"Because we can see the whole picture very quickly, the survey gives us a valuable snapshot of the project at a specific time. There's no discrepancy with the data and we can see volume change information over different parts of the project, which helps us with our billing processes among other things."

As with all such UAV mapping and survey projects, Synergy Positioning System's comprehensive service provides HEB Construction with an end-to-end service; assessing survey requirements, planning flight missions, operating the UAVs and obtaining and delivering required data and back-up support to the client quickly and efficiently.

Thus far Synergy's trained pilots, who boast significant flying and data collection experience, have completed three full surveys for the civil construction entity with ongoing flight missions planned for the months ahead.

While there are clear operational benefits to being up in the air, at the same time the technology allows costs to remain firmly grounded, with clear wins in terms of required staff resources and commercial costs between utilising the UAV service versus employing a team of five or six surveyors in the field.

"Synergy's fly-over work has other useful spin-offs for us too," adds Nigel. "Because we have accurate aerial imagery on hand, this allows us to illustrate facets of the wider project to a variety of stakeholders, some of whom might not be used to looking at technical interpretations."

"The orthophotography images the UAV takes help those stakeholders better understand landscape and project features at a glance, as well as illustrate overall project progress. This speeds up conversations and actions at a managerial level."

With constricted, multi-level deadlines necessitating every working hour on this vast site is utilised as efficiently as possible, taking to the air has certainly helped HEB Construction maintain their project goals on the ground.

Find out more about our UAV services, www.synergypositioning.co.nz/services/uav-services

✔ Paving the way forward

Higgins Contractors recently utilised Synergy Positioning Systems' consultancy service and fast, accurate grade control technology to achieve fantastic results on a busy Auckland arterial route.



While Higgins Contractors project manager Prameet Sharma had plenty of technology at his disposal during the recent Aranui Road resurfacing project in Auckland, one thing he didn't have a lot of, was time.

"Because of the nature of the roadway, it had to remain open to traffic throughout the entire resurfacing process," says Prameet.

"We had to keep a variety of stakeholders happy, which meant working within very restrictive timeframes. And naturally when you need to obtain the best result possible within a short space of time, there's no room for error."

In order to help ensure a great result, Higgins utilised Synergy Positioning Systems' asphalt paving consultancy service and Grade Control system on their asphalt paving plant.

The Synergy Grade Control system is fitted to the asphalt paver to control survey levels. As the paver travels along a run, the system automatically controls the hydraulics on the machine in

order to achieve the desired survey levels, ensuring consistency and accuracy.

The system – which can also be fitted to milling machines – even accounts for the effects of differential compaction, meaning critical design elevations are achieved for the smoothest possible surface results.

As with other similar projects, Synergy provided end-to-end support for Higgins on the Aranui Road project, with Synergy personnel providing preliminary depth design prior to the job, as well as on-site assistance with Synergy Grade Control hardware set-up, operation and data dissemination.

As part of the Synergy asphalt paving consultancy service, Synergy also ensured a concluding survey of the roadway was completed, providing Higgins with full conformity reporting.

Beyond the Synergy Grade Control system itself, Synergy Positioning Systems' comprehensive asphalt paving consultancy service extends to engineering survey work, survey profilograph

and design consultation, line marking surveys for roadway rehabilitation and in-house CAD design services.

"We were exceptionally pleased with the results," says Prameet. "The road was surveyed prior to resurfacing and had a NAASRA in excess of 60 counts. After we'd utilised the grade control system, and with Synergy's expertise, the finished NAASRA averaged out at 36, which is brilliant.

"What's more, the speed with which this result was achieved was impressive too; from the time we contacted Synergy initially to packing up and moving out was only about four days.

"To be able to get into a busy environment such as an arterial roadway and achieve such smooth results with minimal impact to stakeholders is fantastic."

For more information on Synergy Grade Control and paving services contact Synergy Positioning Systems on 0800 867 266 or www.synergypositioning.co.nz

FARO in safe hands with Synergy



Synergy Positioning Systems Managing Director Mike Milne is pleased to announce FARO has once again chosen Synergy Positioning Systems as its sole distributor for the New Zealand market.

With over 15,000 customers worldwide, including a rapidly growing client base in New Zealand, FARO remains a leading global developer and supplier

of 3D computer-aided measurement technology, imaging devices and support software.

"Synergy's continuing relationship with FARO is a firm reflection of both our company's growing expertise with the brand, as well as growth in the utilisation of these technologies that we're seeing in the New Zealand market," says Mike.

"We're also extremely pleased to see the FARO product line expanding. We've recently seen the

arrival of a new addition to FARO's Focus3D line-up, the high speed X 330 scanner. This is ideal for a number of survey applications and boasts an impressively long scanning range of up to 330m, even in direct sunlight."

Mike says that Synergy's commitment to the FARO brand in New Zealand ensures clients requiring mass-point measurement hardware and software can call on comprehensive, immediate technical support.

"Our continued confidence in FARO technology is a reflection of both the company's constantly evolving research and development programmes, as well as the feedback we receive from high level customers utilising FARO hardware and software in the field every day."

For more information go to www.synergypositioning.co.nz/products/scanning

✔ Machine Control - the new 'must have' technology for contractors



Not only is advanced 3D machine control technology such as that provided by Topcon ensuring faster, safer and more accurate work for contractors, it's saving companies working a variety of projects money too.

Utilising satellite positioning and digital 3D modelling to ensure dozer, grader and excavator operators can see where they are on any site in real-time, Topcon's machine control technology effectively ensures every project is a stakeless project.

The resultant cut/fill information appearing on the system's in-cab screen instantaneously and consistently means that every operator has all the information they need right at their fingertips, and without the need for stakes.

Speeding up processes in this way leads to calculable savings in both project costs and task time, as Cameron Civil Ltd owner/manager Tony Wilson has discovered.

"The technology has definitely improved our productivity," says Tony. "In some instances I would say we're working five times faster with the Topcon

machine control technology than we would be with manual pegs and string-lines. But there's more to it than that."

"Our labour costs have dropped too because we're giving our guys on the ground the tools to do their jobs faster. It also means better utilisation of our plant; we use our D7H bulldozer to trim up to 50mm, simply because Topcon machine control gear can get tolerances up that far before we need to hand over to the grader to complete the final trimming work."

Tony says he sees Topcon's 3D-MC² GPS machine control system as a way of giving his company an innovative edge across the board.

With Cameron Civil Ltd having a variety of projects on the go – including residential subdivision work, roading projects for Councils, school playing fields, Housing New Zealand development work, drainage projects and bulk earthworks – and different plant required to complete these projects; Tony says Topcon's machine control systems provide comprehensive software to suit anything he can throw at it.

"It's all about innovating and finding smarter ways of doing things. Topcon machine control really does give you the ability to think outside the square."

Chad Slater, Machine Control Manager for Topcon dealer Synergy Positioning Systems, says that machine control technology is so accurate, many contractors overseas are using dozers running machine control systems to complete the sort of finishing work a motor grader might usually be tasked with.

"Topcon's 3D-MC² sensor tracks and predicts blade movement in every direction, making cut adjustments much faster than any other GPS-based system," says Chad, who heads up Synergy Positioning Systems' Christchurch office.

"With dirt works the tolerances are precise; we're talking 10 to 15mm tolerances, and a system like 3D-MC² machine control allows a dozer to achieve that."

"These systems don't reinvent the wheel, but they certainly make sure those wheels turn more productively. The speed and accuracy a system like Topcon's 3D-MC² machine control gives the operator really has to be seen to be believed."

Chad believes companies have the potential to save up to 15 or 20 percent on bottom line costs across a project; an estimate he considers conservative.

"There's an investment cost, naturally, but one decent job will pay for the technology and then there is also a positive spin-off from becoming known as a company that utilises machine control technology which helps companies secure more work."

More information on Topcon's range of specialised 3D machine control systems can be found at www.synergypositioning.co.nz

Synergy reminds it's great to calibrate ✔

Synergy Positioning Systems service manager John Morrison says that, with ever stricter ISO regulations in place on construction sites, the need for contractors and sub-contractors to ensure their equipment carries a valid calibration certificate is greater than ever.

"Whether it's a rotating laser, a theodolite, or a full robotic total station, every piece of equipment onsite needs to adhere to ISO regulations as part of the quality assurance process."

"By ensuring equipment is annually calibrated by a trained technician, contractors can work with confidence, knowing their equipment meets set requirements."

John says that Synergy Positioning recalibrate every Topcon instrument and issue an updated calibration certificate as a standard part of every service.

"We put our name behind the Topcon brand here in New Zealand, so it's important to us to know that our clients can trust in their equipment and be assured they are performing to the stringent standards set by the manufacturer."

"We're distributing true world class technology, so we want to ensure our loyal clients get the absolute best out of their investment."

To book your next instrument service, or to speak to a Synergy Positioning Systems technician regarding equipment calibration, phone 0800 867 266.



✔ The Topcon difference

As far as Synergy Positioning Systems managing director Mike Milne is concerned, the Topcon difference comes down to the robustness of the product – in both physical and technological terms – and the company's comprehensive in-house research and design methodologies.

"Topcon is continually pushing the boundaries; the confidence in its abilities to successfully refine and revolutionise comes from experience and a history of innovating stretching back over 80 years."

Topcon's in-house R&D teams focus on providing innovative solutions for the geospatial, construction, agricultural, and mapping industries using GPS, optical, scanning, and machine control technologies.

Mike says that a key design strategy for Topcon is creating equipment that is very versatile, yet not overly complicated to use in the field.

The continual refining of their model lines and technologies ensures the company boasts a large number of patents on a variety of innovations.

"The really exciting component of the Topcon brand is what they have planned for the future though," Mike continues.

"In the next five years, Topcon will double the products they have on the market today.

"The amount of resource the company has invested in developing technologies and equipment that ensures every job site runs as efficiently as possible, with the most accurate data possible at hand means Topcon will continue to offer solutions that change the way we work."



Synergy Support contact information ✔

Support is a hugely important part of the Synergy product and service offer and one that we take very seriously. In this era of high technology equipment, it's important to know that you've got back up and support from your solution provider when you need it.

If you need support or assistance with product provided by Synergy Positioning Systems, make sure you contact the Synergy Support team by phone on

0800 867 266

or by email at

support@synergypositioning.co.nz

Trade in, Trade up!

Synergy Positioning Systems are offering two unbeatable **\$10,000** trade in deals on Topcon PS Series Robotic Total Stations and the Topcon GR-5 GPS System. Like it? We thought you might...

✔ Trade up deal 1 Robotic Total Station

Trade in your old working total station and receive a **\$10,000** credit towards the purchase of a new Topcon PS Series robotic Total Station*

Topcon PS Series Robotic Total Station

- ✔ Professional grade robotic total station
- ✔ Rugged, waterproof and dustproof design
- ✔ PowerTrac™ Tracking technology
- ✔ TSshield™ Advanced Security and Maintenance system
- ✔ Hybrid Positioning capable
- ✔ Easy to use and Topcon built tough
- ✔ Finance options available



✔ Trade up deal 2 RTK GPS System

Trade in your old working GPS receiver and receive a **\$10,000** credit towards the purchase of a new Topcon GR-5 RTK GNSS system*

Topcon GR-5 RTK GPS System

- ✔ 226-Channel Vanguard Technology™ with Universal Tracking Channels
- ✔ Tracking capabilities include: GPS, GLONASS, Galileo, Beidou (BDS) and QZSS
- ✔ Advanced Fence Antenna™ Technology - Unsurpassed tracking and performance
- ✔ Sophisticated, High Accuracy RTK technology with position updates up to 100Hz
- ✔ Integrated Dual Communication System with multiple Radio and Cellular combinations
- ✔ Finance options available



TOPCON

* Terms and conditions. Trade in equipment must be in good working condition. Offer only available in New Zealand, for a limited time and whilst stocks last. \$10,000 trade in applies to Recommended Retail Pricing (RRP) on Topcon PS Series Robotic Total Stations and Topcon GR-5 GPS with base and Rover kit only. Offer not to be used in conjunction with any other special offers. Finance available to approved purchasers.



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