

Special Feature: GPS in 2002

The Year GPS Came of Age

An explosion in the use of GPS, is how Paul Bright, managing director of Ultimate Positioning, describes the rash of recent new projects either using GPS or in advanced stages of signing up.

After two years of digging deep to finance trials and giveaway rentals, Paul might be forgiven for being relieved that his faith in the technology—not to mention the hard work of Gary Essex, Alan Archbold and the rest of his team—is finally paying off.

Mike Forrest of ABC Lasers is also pretty happy, to put it mildly, at how things are working out with his strategy of concentrating on the mining industry.

For several reasons, most of the action is in Queensland. Three of the major players are headquartered in Brisbane: Trimble and their distributors, Ultimate Positioning, and Mike Forrest's ABC Lasers. So it's natural that these people have concentrated closer to home, where strong support has been easier to provide.

From Tasmania to Darwin

But GPS activity is now spreading right across the rest of the country.

As far south as Tasmania, a gas pipeline project is under way for Duke Energy. Survey control is entirely by GPS, one of the first such arrangements in Australia.

Welds of pipe joints are bar-coded and their precise location is fed by GPS rover into the as-constructed data base (together with the name of who performed each weld, who coated it, and who X-Rayed it!) to facilitate location and repair of any future failures.

The \$400m pipeline, consisting of 450km on-shore and 300km sub-sea across Bass Strait, is proceeding at up to 3km per day—a rate easily

supported by GPS equipment. The use of twelve Trimble RTK rovers (24 receivers) makes this currently the largest GPS project in the country.

In Victoria, ABC Lasers have successfully concluded a major trial with Roche Thies Linfox at the Yallourn coalfields. From this has flowed orders for GPS systems on a D8 and D11 dozer, with another four to be fitted to D11s as the dozers progressively arrive in the country.

A feature of this ABC installation is the sophisticated telemetry between machine and mine office, such that the dozers are not only being guided in their work, but are also reporting back in considerable detail on the results they've achieved.

Moving up to NSW, the major players tell us that extensive discussions have been held with consortia lining up for the Western Sydney Orbital, a 32km \$1.5 billion motorway project that promises to be amongst the most significant in the country when it gets under way.

Systems are also likely to be installed on the upcoming Karuah Extension to the Pacific Highway, north of Newcastle. In the very north of the state, on the Yelgun to Chinderah section of the same highway, Abigroup have extensively trialed Leica's Dozer 2000 GPS system on dozers and Trimble's BladePro 3D on a grader and a large trimmer.



Australia's largest GPS application at present involves twelve RTK rovers on a \$400 million gas pipeline connecting Tasmania with Victoria.



In Darwin, Henry Walker Eltin is using SiteVision on a D8 to push a breakwater out in to the harbour, an interesting example of the ability of GPS to solve problems. The harbour bottom is soft and is subjected to harsh currents. So it's impracticable—or at the least, very expensive—to keep

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installing conventional survey marks to guide the machine as it works its way out to sea.

The alternative would have been equally disagreeable—to have surveyors mixing it with machinery on the work platform itself.

GPS allows the dozer operator to guide the machine from the display in his cab, in both direction and depth of fill, eliminating the need for any external guidance at all.

Queensland is the Hot Spot

In Queensland, where most of the trials and early installations took place, it could fairly be said to have reached the stage that no significant earthmoving job is now being contemplated without the involvement of GPS survey and machine guidance systems.

The Port of Brisbane Motorway is the major road construction project in the Southeast at present. Ultimate Positioning have had SiteVision working on a dozer for Leightons, roughing out the sub-base, and are currently fitting up a grader for the next stage.

The big news is at the huge Comalco Refinery project in Gladstone, which is just getting started. Involving several million cubic metres of cut and fill, SiteVision has already been installed on one of Gary Salmon's dozers and on two compactors. In the next few weeks Gary Essex of Ultimate Positioning anticipates extending the system to two more dozers and a grader. We'll be doing an in-depth field report on this project in the near future.

In the far north, at Pasminco's Century Zinc Mine in the Gulf, ABC Lasers have installed a GPS system on an excavator—the world's first—and it has been successfully operating for almost a year. Another excavator system will be added shortly, but meantime ABC has installations at work on two face shovels and a dozer at this site.

In another mining application, the head contractor, in this case Thiess, has conducted extensive trials at



Jamie Wadwell is operating a SiteVision-equipped D6H for Leightons on the Port of Brisbane Motorway project, and says "It only took about a week to get up to speed".

Burton Downs in the Bowen Basin. SiteVision is now guiding operations, and a substantial expansion of its use is planned.

The Challenge for Subcontractors

We talk to many contractors who don't currently have a job that is suitable for GPS, or whose jobs don't justify the outlay.

As others have done, Lund Constructions recently rented a GPS system for use on a road alignment contract for the Gold Coast City Council. "We were looking to gain experience, both for ourselves and our operators, in the hands-on application of this technology," says Derek Lund.

The learning process extended to Lund's surveyor, Joanne Harding. "The issue for me was to get up to speed on Autocad, rather than the software I normally use—Geocomp. Conversions can be made from one type of file to the other, but the process is not without complications. For surveyors preparing designs, it's really necessary to use the appropriate software in the first place—and the design software differs, depending on who supplied the GPS system."

Familiarity with GPS is becoming an issue with subcontractors seeking

regular work with the majors.

At least one prominent lead contractor is acquiring GPS systems to hold in stock, so to speak, for allocation to major projects they win in the future, following their similar practice with a few key earthmoving machines.

It's reasonable to conclude that these majors will not be too keen to acquire new machines, just so they can use their GPS technology. The subbie whose gear is 'kitted up' to accept GPS, and whose operators can demonstrate familiarity, will clearly hold an advantage when he tenders.

Gary Salmon agrees with this. "On the Comalco Refinery project, our involvement had been finalised before GPS became an issue. One of our dozers was therefore included in the installation. But if it had been the other way round, I can see that we might have been at a disadvantage."

An answer for smaller contractors is the relatively modest outlay in getting some of their machines 'kitted up', without going to the expense of buying the system itself. Caterpillar have foreseen this scenario in their joint venture with Trimble, which involves new production machines being pre-configured straight out of the factory.

Food for thought!

