

## On GPS for Queensland Mines, Thies Gives the Nod to APS and Topcon

**T**wo major agreements this month have created a strategic linkage between Australian mining giant Thies Pty. Ltd., Brisbane-based APS (Automated Positioning Systems), and Topcon Positioning Systems of California.

Under the first agreement, APS becomes preferred supplier to Thies's Queensland Mining Division for GPS machine guidance systems. Or, more to the point, GPS plus Glonass systems, since a critical element of the Thies specifications hinges on the ability of APS to deliver data from both American GPS and Russian Glonass satellites.

Thies will contribute its 'Dozer Productivity Monitoring Software', developed in-house by software developer Brendon Holley, to provide sophisticated production analysis of dozer-push operations for mining. The application has also been supported through the collaborative efforts of Thies mine managers at Collinsville Coal Mine, under operations manager Brian Spencer.

### Topcon to Support Software Development

In the second agreement negotiated by APS with Topcon, Topcon has committed resources to support the further development of the Thies system acquired by APS. At the same time, APS has been appointed Topcon dealer to the mining industry in North America.

"APS met very stringent requirements to deliver an effective dozer-system for our mining operations," says Del Rains, Manager Survey Services for Thies and team leader for the project, "after demonstrating a capacity at Yallourn to deliver data of high reliability to drive analysis software."

Del is referring to the world's first APS system successfully introduced by Roche Thies Linfox at the Yallourn

open cut coal mine, Australia's largest single energy resource.

APS went on to install similar systems at Triton's Buckskin mine in Wyoming, 9th largest U.S. coal mine, and the long-established Usibelli Coal Mine in Alaska.

This technology takes a big step beyond the guidance available to a machine operator by reference to a site design shown on a screen in his cab, which is now commonplace.

With the advanced APS system, a stream of signals from each machine constantly flows to a database, allowing production to be analysed.

New designs can be uplifted into the on-board computer without



**Chris Seymour (left), partner with Mike Forrest in APS, shakes hands with Del Rains, Manager Survey Services for Thies, on the deal that makes APS preferred supplier of GPS systems.**



interrupting a machine's work. Messages can be sent to and from the machine, and mechanical aspects such as oil pressure, temperature, fuel status and any number of similar elements can be overseen. By using Internet protocol, APS allows the entire ongoing operation to be monitored and analysed from halfway around the world, if necessary.

### **Flow-on to Civil Construction Industry**

The new arrangements negotiated by APS have far-reaching implications, not only for the mining industry, but also for civil construction (see Topcon's vision, at right).

While the Thies/APS relationship is currently concerned with open cut coal mining in Queensland, Topcon will distribute through its existing worldwide dealer network a flow-on range of products adapted to the needs of the civil industry.

### **Russian Investment Pays Off**

Topcon (majority shareholder, Toshiba of Japan) has once again vindicated its strategy of integrating Glonass into the GPS equation.

In open cut mining, where the horizon is usually impeded by the depth of the pit, Thies has concluded after lengthy evaluations that Glonass contributes to the number of hours per day that receivers maintain reliable 'lock' on the satellites. This is paramount when productivity data is being collated for extensive analysis.

Now employing 150 engineers in Moscow, Topcon has mastered the extraordinarily difficult integration of Glonass with GPS, each of which is based upon a different model of the earth's surface.

Referring to full duplex Internet Protocol data systems, for the distribution of data across the whole

work site, Chris Seymour touches on wireless LAN communications:

"From a leading position, we are pressing further ahead with the refinement of a high-speed communications network linking mine managers with machines," says Chris, partner with Mike Forrest in APS. "Skilled machine operators are invariably interested in statistics showing how their performance compares with others working in the same pit and project objectives. The analysis of this comparative data is a powerful competitive advantage in the hands of the mining contractor."

### **Thies Confident of Greater Efficiencies**

In today's competitive contracting market, Thies is working across the whole equation of its mining operations to maximise productivity and the bottom line.

"Thies have generally been at the forefront of dozer-push operations," says Del Rains, "and we believe that the evaluation of operational data derived from GPS+Glonass will further contribute to our competitive edge."

Ray O'Connor, president of Topcon in the U.S., expresses confidence in the direction being taken by Mike Forrest and Chris Seymour with this technology. "Our relationship with Mike has been long and fruitful. We're pleased to be participating with APS in the development of this next generation of tools for the mining and construction industries." 

## **Ray O'Connor's Vision**

*Ray O'Connor, the President of Topcon Positioning Systems in California, has a vision of the future.*

*It's romanticising his words, but Ray sees a dimly lit room at the headquarters of Thies (for instance), where walls of screens surround the Director of Operations. At the flick of a switch, he can view operations at any one of his job sites around the country, in real time.*

*Toggleing data summaries, he can review the amount of material moved on any of these projects in the past ten minutes; the past hour; the most recent shift. He can activate an analysis of the efficiency of one site versus another, or of one dozer compared with the machine working next to it. He can accurately forecast completion dates for phases of each project based on actual production data, figure when different machines will need to be brought on site, and calculate expenditure versus budget.*

*Sitting next to him, the plant manager can review fuel status, check critical operating systems on each unit of plant, monitor mechanical problems before a failure occurs, and decide when a machine should be pulled out of production for routine service.*

*Using the Internet protocol, changes to job designs can be uplifted directly into machines. Comparative analysis will show whether a dozer working through a cut will achieve more productivity and accelerate the work by pushing 400mm in 3rd gear rather than 600mm in 2nd gear. Instructions can be sent to supervisors and machine operators, and responses rapidly acted upon.*


*"Civil construction worldwide is valued at \$5.7 trillion per year," says Ray. "We are all involved in the largest industry on earth. But at the same time it's the least automated industry. The potential for harnessing advanced technology is immense."*

*Ray draws a parallel between the use of positioning equipment and measurement instrumentation in earthworks to the advances made in, say, the automotive industry.*

*"The instrumentation came first, and was then applied to the robotic milling of such things as cylinder heads. The same principles will be used to improve construction techniques in the civil industry. We are, after all, manufacturers of products that happen to be roads, bridges, airports and railways. The application of new technology will revolutionise efficiency."*

*The President of Topcon leaves one in no doubt that Topcon sees Mike Forrest and Chris Seymour of APS as pioneers who will contribute strongly to the next step along the way.*

*"Their work in the mining sector is absolutely relevant," says Ray. "Mines are very controlled job sites, very 'cost driven'. Fractions of a cent saved on moving a cubic metre are significant. Mining contractors will quickly embrace this GPS+Glonass data transfer technology, because productivity is more critical."*

*"In contrast, most civil construction sites differ from each other — they are custom job sites. The uptake will be slower. But the new generation of managers will rapidly learn that harnessing these techniques makes all the difference to the bottom line." *