TOPCON NEVS

Topcon's GLS-1000 scanner - from passion to technology!

Capture the perfect wave!



For many people it is a dream to combine their hobbies with their professional lives. The experts of Engineering Paddler Designs (EPD), from the UK, have made their dream reality. "We bring expert knowledge, creative passion and tested capabilities to whitewater and recreational water-sports projects. We specialize in engineering, consultancy, design, project management, survey and inspection", Andy Laird of EPD tells.



Offering accurate correction data continuously

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as passionate about their work as we are.

Ultimately, we as paddlers want to see a project run as smoothly and efficiently as possible, and generate the best facilities achievable for the funds available." He



Making waves

Where does Topcon fit in with all this? "To make the perfect wave you need to understand the interface between water and river bed.

> This means you need a good ground model, and some great modeling and hydraulics expertise to make this an effective procedure.

Proving real world hydraulics is notoriously difficult, but through Topcon's Capture Reality range it is now not only possible to comprehensively measure and model the existing but also to measure the resulting wave and river for-



continues. Where EPD excels is in watercourse design. "We are a team of engineers that really understands the needs of water users, because we are water users."

'his year's Olympics clearly

demonstrate the potential

of sites designed for water

users. EPD can help ensure that

sites are optimized to make their

use an easy procedure. This may

be anything from access steps

to complete new builds", Laird

n Day in, day out



adds with a laugh: "After all suc-

cessful projects make for great

paddling!"

Laird should know: "I have been kayaking and canoeing since the age of 14." It is this same passion he sees in all of his colleagues. "Our consultants are senior professionals within the UK construction industry and are not just interested in paddling; they are all active paddlers, day in day out.

The ability to exceed the expectations and demands of the users will ensure facilities achieve truly outstanding success. No consultancy can be



mations. Topcon provides the tools to prove the theory through Imaging", Laird closes enthusias-tically.

Field-to-finish

GMS-2 manages te value of our streets

Topcon wins world's largest total station tender

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NET – G3 Network GNSS receiver

Offering accurate correction data continuously

"We aim at 99.9 percent availability", Gerd Rosenthal of the Surveying Department of Berlin tells us with a proud smile. He points at nearby computers generating correction data for roving receivers. "If one of these computers fails, I automatically receive an SMS on my mobile phone to warn me. We also have a back-up to immediately take over the calculations. This way we assure customers can keep using the SAPOS Service, no matter what happens."

he Department is the core of the Satellite Positioning Service (SAPOS) of the German State Survey. Providing such as atmospheric delay offering correction data to surveyors assuring their data is as reliable as possible."



correction data for positioning and navigation sent out using radio, mobile networks, and the internet. "Our network solution allows us to minimize the effects of errors

1 250 reference stations

SAPOS consists of 250 continuously operating reference stations. All the data is gathered in Berlin. "Post processing is necessary for the highest accuracy requirements. Once checked and double checked, the data is transmitted to our users." Applications include surveying, cadastre, engineering, hydrography, weather services and security.

1 Calibrating the antenna

They are not taking any chances when it comes to accuracy. "That is why we invested in a robot based calibration of the reference station antenna. This robot keeps moving the antenna in a random pattern so that we avoid disturbances like multipath."

1 Dealing with multipath

"Multipath mitigation is a difficult process. To compensate for this



the receiver is constantly moving during calibration. Any multipath error will show up on our computers and we can compensate." The result is data which is certified to be accurate. But even this is checked: so the Department also has a constantly hooked up Topcon receiver supplied by GeoIT using the corrected data.



"We have built a software program to check the accuracy of our data. If the deviation is unacceptable we also get an automatic warning via SMS."

1 European cooperation

The Surveying Department is clearly at the heart of Germany's positioning demands; it also plays an important role in the rest of Europe. "We have initiated the EUPOS-IRC: an initiative to help former Eastern European countries get acquainted with satellite positioning techniques. The organization brings together experts in DGNSS and geoinformation with experts from the various fields of regional development. This way we can show the benefits of GNSS to all."

From the Westerschelde to the Waddenzee

The first step in construction

As on many occasions, the survey-ship Geonaut is docked in one of the Dutch inner waterways; this time near Haarlem to carry out geotechnical and soil research. "Our work involves drilling at regular intervals and inserting a probe to collect data about the condition. The samples are sent by courier to a laboratory, and probe data goes to the customer via the internet."

tion on the depth at which this can

be done. We also look at clay and

sand formations that could hamper

the work and give important infor-

mation on the soil status. Once

plans are approved, we're often

the first step in the construction

process!"

e Ruiter Boringen en Bemalingen is a nation-wide operating company of the Royal BAM Group. Practices involve soil research for environmental and geotechnical purposes (on

Drilling and probing

Geyteman describes activities in the Geonaut's small cabin: "We work on inland water throughout the Netherlands, Belgium and Germany. We work in the Netherlands







land and water), sanitation, deep drilling for drinking water and hot and cold storage, horizontal drilling and drainage. from Westerschelde to Waddenzee; mainly carry out soil boring, with the extracted material going to a laboratory for geotechnical and environmental research.

We also specialize in probing. A probe is inserted into the ground and delivers information about soil condition and solidity. We can then generally determine whether the subsoil is sand, clay or peat."

Position on the water

This is essential data before any construction can commence. "If a tunnel is planned, we drill and probe to give appropriate informa-

Completely satisfied

On deck, Krijn points to a Topcon GPS-receiver placed on the drill head. "We use 06GPS correction to determine the drilling location. Sometimes it's difficult to do this on water; you have to account for different depths, wind, tides and



currents." Keeping the ship in one place to make a measurement is an art. "We need to know the ship's position to ensure the data is georeferenced.

In this way, we are responding to a question from Rijkswaterstaat who need to know, with centimeter accuracy, the 3D position of our drillings. We can now show our customers exactly where the drillings have taken place!"

2



GPT-9000A locates Bridge

Topcon bridges the Gap

A steel bridge, over 40m long was recently lifted into place in St Asaph in North Wales. To ensure millimetric accuracy, Topcon's GPT-9000A Robotic Total Station was used. Rhys Thomas of Bangor based Dawnus Construction introduces this delicate operation. "The tender for the new bridge was awarded in January 2007. The original bridge design was completely different, but we devised a better, cheaper, steel alternative." However, it required a 1000ton crane, and 360ton ballast, to lift it all into place!

ike other counties in Wales, Denbighshire is upgrading its cycle and footpaths network to accommodate increasing levels of tourists, specifically those visiting the North Wales coastline."

Four pieces

"Site-work started in March 2007. The bridge was designed and built off-site by a specialist company named Nu-Steel. The four sections of the entire 41.9m bridge were manufactured in their factory."



Assembly of the structure

"Areas were prepared on site for both the assembly of the four bridge sections and the crane that would be used to lift it into place. The crane's four outriggers exert around 16tons per square metre... that's a lot of pressure that needs to be distributed evenly!"

1000 ton crane

The project completion date was the end of September... one which Dawnus had no problem making. "The bridge arrived in four pieces and was assembled on site. There were also small tasks such as painting and touching up the bridge after assembly. "Having been slightly delayed (it had been in use at the London Olympics site) the



crane finally arrived here during the night of 19th September. The crane-base was driven into place and a smaller 200 ton crane was used in the assembly of the larger one, which was delivered on eight lorries! Having worked through the night, the 1000 ton crane was ready to go at 10.00am the following morning."

We would miss our slot

"The crane was ready, but we still had to wait for the council representatives to arrive. However we eventually decided to start the lift because the weather was starting to change. The wind was picking up and if we had to wait much longer we would miss our window for the lift. So we attached four straps to the designated places on the bridge and started lifting."

Check and double check

Many checks and re-checks were done before the actual lift, first with the Hiper GNSS and also the GPT-9000A Total Station before the bridge was even off the ground. "The bridge had to be put on four abutments. So we also did as-built surveys on the structure work. The GPT-9000 re-checked all the survey work which was originally done with the Hiper."

Swing it into place

Finally it was time to swing the bridge into place. "First of all, it had to be lifted up and then rotated. However, before this, it still needed to pick up some more ballast. The structure weighs 54 tons, so you need some counter weight on the other side. Finally, the structure was laid down gently between the two banks and placed on the holding-down bolts. It all fell into position without any problems. There was plenty of tolerance on the boltsbut we did not need itatall. The bridge went in straight on."

Confident in the accuracy

Rhys Thomas closes: "That is the advantage of using precision equipment. You can be confident in the accuracy of your instrument and data. In total, the setting down on all the abutments only took 45 minutes."

London: Topcon's total station at work

Monitoring the Savoy Hotel

The Savoy hotel in London is in the middle of a renovation and restoration project which will last until 2009. The 263 room hotel will be returned to its former glory and in the process add more open spaces internally.

Paul Searle of the Chanton Group has been using Topcon's innovative Imaging Station to monitor the façade of the grand old building. In 1910 the hotel decided to enclose the external balconies overlooking the Thames in order to add bathrooms to each room. "The owners put a façade over the balconies to add more floor space. The whole façade hangs from the top floor down this





and bottom two floors are the only ones connected. We are currently using the Topcon Imaging Station to monitor critical movement of the façade during the renovation.

Gaining floor space

On the inside of the Savoy the old details will be reinstated and modern touches added. Searle

states: "The biggest challenge is removing the concrete foundations and replacing them with smaller iron ones." This will gain the hotel



valuable floor space. "With all this action, on the inside, we make sure the façade stays in place and is not moving dangerously. We use TopSURV on board the IS to automatically measure 39 points on the façade every day and see how they compare to their original position."

The façade can safely swing up to 10 millimeters, so keeping a close eye on it is no easy task. "Soon the whole building will be lifted onto the new iron footings. At that moment we will constantly monitor the façade, in real time. As soon as it moves out of tolerance we will have to evacuate the site just to be sure."

The WOW factor

For the surveyors of the Chanton group the choice for Topcon was an obvious one. "The Topcon Imaging Station just had the "wow-factor" for us. When the GPT-7000i came out we already knew that Topcon was on the right track to offering something completely new to the market at a realistic price. But the fully motorized Topcon Imaging Station really has it all, we had to have one! "

Industry's most powerful field controller

You want a fast, rugged, waterproof field controller but you need a full keyboard? How about a sunlight-readable color touch-screen? Built-in wireless connectivity for cable free operation via Bluetooth and WiFi? Five mega pixel camera and bar code scanner? Not a problem. Introducing Topcon's FC-2500: the most powerful alphanumeric field controller on the market today.

he FC-2500 is the ultimate controller. Its robust IP 67 housing, fast processor, built in 5Mp Camera and 2GB of system memory raises the standard for site controllers. When in the field, you need reliability and performance, but you never know when you will need to take high-resolution geo-referenced photos.

Best performance

The FC-2500 has a built-in quality, auto-focus camera. With 2 Gb of memory as standard – the largest by farin the industry, you'll never be short on space. The integrated bar code scanner widens the applications for this tough unit.



Key Benefits

- 1 WiFi and Bluetooth connectivity as standard
- Powerful 624Mhz processor
- 1 Simple data transfer via USB
- Optional Topcon 2.4 GHz Spread spectrum radio
- Full keyboard and daylight readable touch-screen
- Windows Mobile operating system
- Runs ALL Topcon controller software

Topcon's IS on Kragerø Island

Scanning for a minimal impact installation

Every day Topcon's instruments are used to survey and set out construction sites of various sizes and uses. Patrick Johannessen at Blinken AS tested the new Topcon Imaging Station for an architect who had an interesting challenge. "His client wanted a swimming pool built in the side of a cliff, with a helicopter landing area and several small cabins and equipment rooms, both under and over the swimming pool. The architect wanted to build the pool to be sympathetic to the existing environment and create minimum visual impact."

he project started in March of 2008 when a land surveyor approached one of Blinken's customers, Oskar Johnsrud, with a request for a total station", Johannessen remembers.

"The land surveyor had accepted a job that he couldn't complete with GPS equipment, so he asked for Johnsrud's help."

Oskar accepted the challenge and, following Blinken's expert advice, brought with him an even better instrument to solve it, the Topcon Imaging Station.



Scanning in one day "The power of the IS is awesome, the fact that it is a productive and versatile robotic total station with Imaging and scanning ensured that when we went to the island in April, all the work was completed in one









day so we did not need to travel back to continue later. Which was good, because it took 3-4 hours just to get there", he adds with a laugh. "We were there again in June. This time we did the photogrammetric work and some extra scans.

We wanted to scan developments that had been done since the previous time. We also did some robotic work. Oskar used the IS as a robotic total station for setting out points for the construction workers. "

Immediate, effective data visualization

The architect did not know that the technology Topcon brought

in, could be used this way and was very impressed by the result. Johannessen continues: "The whole area was scanned using two Topcon Imaging Stations, and pictures were taken with a digital camera so we could use these for photogrammetry. When we came back with the result, the architect was extremely happy.

The information we gave him, enabled changes to his drawings directly in the data we delivered and he could quickly visualize where his drawings required changing. "In the end 300000 points were monitored by two Topcon Imaging Stations and used with 250 pictures to make a 3D model of the site.

Presidential Refit

Presidential Yacht scanned with Imaging Station

Daniele Bartolucci, Imaging Specialist with Geotop explains how Topcon's Imaging Station helped in the survey of two yachts: "The first project was for the Department of Applied Sciences at the Parthenope University of Naples. It was a survey of the hull of the Argo, the official boat of the President of the Italian Republic, our brief was to obtain a reliable 3D-model and compare this with the original design. The second project examined the measurement of two cabins of a large fiberglass yacht for retro-fitting."

B artolucci continues: "For the hull measurements, we scanned from six stations with a sample spacing of 2x2 cm. On return to the office, the use of standard survey procedures ensured the point cloud data came out perfectly geo-referenced in



This would have been impossible unless we had the advantage of working with compact, standalone equipment."

Rendered environment

Once processed, the point cloud is imported and managed using Au-



toCAD and 3DStudio. The result is



job schedule for the panel making machines; a seamless and highly automated process.

1 High quality

the ImageMaster software. Over 288000 points were available for the hull alone. This is less than a laser scanner would generate, but with images as well, sufficient for a



correct and complete description of the surfaces of even very complex hulls. With the IS, less is more."

4

l Design and build

The Geotop team then moved on to do a survey of two cabins. "These surveys were for the design and build of new internal furniture for the boat.

The survey of indoor spaces and of small dimensions often presents considerable difficulties, especially

at the scanning stage. But the IS proved to be up to the situation by acquiring data from a minimum distance of one meter."

1 Small dimensions

The second test was the 'field-ofview'. "Again the IS was outstanding. We measured each cabin using just one occupation point. an accurate as-built of the existing cabin space. "The furniture, complete with all details, is designed on this new internal space.



The customer can be shown a rendered picture of his cabin and then decide on possible changes." In the Bartolucci Arredamenti joiner's workshop this data becomes the Bartolucci closes: "The Topcon IS allowed us to provide high quality data and proved to be perfect for an already highly automated production process. The IS is a useful tool with important advantages such as ease of work, great data quality and perfect quantity;



it gives significant time savings and user friendliness for all surveyors."



Topcon withstands the cold



Topcon employees visit the far corners of the world to give their best under extreme conditions. Stuart Proctor, Regional Support Manager UK & Ireland, went south to Antarctica where he surveyed areas of blue ice... and discovered that Topcon's GMS-2 is handy for not getting lost in a snowstorm.

"In May 2007 I received a phone call from Jonathan Walton of WSE detailing a need to carry out a topographic survey to determine an area of blue ice in Antarctica. This ice can be used as a runway for large planes. This would require at least



three kilometres of ice conforming to specified lateral and longitudinal gradients to ensure safe landing conditions. There is also a requirement for the surrounding hills and mountains to not be too close or high relative to the runway."

Arriving on 'Site'

On 4th December, we landed on the ice at Patriot Hills base camp. "Whilst waiting for a free plane, we carried out another small survey for an American scientific organisation, six kilometres from base camp. We were given Skidoos and coordinates of the site. Trouble is, in the white desert-like wastes of



"That same evening we were flown out to the survey site, 50 miles from base. We awoke the next day ready to start the survey. A number of rock stations were established so they could be used as base stations and points to be



vations to intersect the positions and heights of the surrounding hills and mountain tops. Our survey continued for the next four days,



Topcon Tierra[™] manages your margins

Manage your jobsite

In construction job site management, the key to increasing productivity, effectively managing assets and improving profit is communication-between people, between machines. Mastering the art and science of communication is paramount to success. In the construction community, the new buzz is telematics: sending and receiving information via telecommunications.

elematics opens up an entirely new world of communication, from machines to office or even from machine to machine. Fiori said, "Topcon Tierra is a complete Internet application. The beauty of the Topcon Tierra system is that "it literally puts you in

Topcon's emergence as a global player in the telematics business is the result of a joint venture with Divitech S.p.A., a telematics solution provider based in Turin, Italy.

Established in 1997, Divitech is an experienced software development and management company with a global footprint providing analysis, design, realization and installation of fleet management systems, as well as value-added, web-based solutions.

Gianluca Fiori, founder of Divitech and a pioneer in web applications for job site management, said, "Telematics will become the decisive factor in job site management in the future. Telematics will bring complete monitoring and control of all phases of every job.

Adopting and utilizing the best technology for a business will help every operator increase productivity and profitability like never before."



the passenger seat of every single machine on virtually every job site, anywhere in the world."

Topcon Tierra is a "return-oninvestment-based solution, guaranteeing each customer measurable time savings in machinery upkeep and repair, in manhours expended and in increased productivity. The payback is in months, not years."







Antarctica, it's very easy to stray off line and get lost. It became clear that the best way to get to site was using the GMS-2. With coordinates typed into Topsurv, we used stakeout mode to guide us to within 3 metres of a previously staked pole. Not bad considering the GMS-2 was only working in Autonomous mode." returned to in future campaigns." Then the blue ice survey began. "The GR-3s were attached to the two Skidoos. Topsurv was used on the FC-200s and we set ourselves up on a 200m x 200m grid system using Topsurv's Grid Setup feature."

"The GPT-9000A was used to carry out a series of angular obser-

with an incredible 12,000 points. At the end of each day, the data was downloaded and processed using TopconTools, and by the third day, all the data we had was put together and it looked like we would need only the next day to complete the survey and then fly back out to base camp.

The next day, we awoke to terrible weather, but managed to get back down to the ice and finish the final days work ready to fly back home in time for Christmas!"



DC3 Monitoring for all applications

Monitoring system adds Imaging

Topcon has formed a partnership with the specialist monitoring software provider Dr Bertges from Germany and the precise inclination sensor manufacturer Wyler from Switzerland. This cooperation brings together the technology and expertise from all three companies to offer the best, most versatile monitoring system available. It is the first monitoring system to incorporate Topcon's innovative Imaging technology. The system can be used in all types of monitoring projects, earth/structure stability, during construction and even the long term monitoring of dams, bridges or rock faces.

y joining Topcon's Imaging Total Station and GNSS Technology with Wyler's precision inclination sensors all controlled by Dr Bertges DC3 monitoring system we have developed a solution which is truly pioneering.

Fully automated

The DC3 system is at the hub of this pioneering solution. Developed by Dr. Bertges it offers a fully automated surveying system for terrain or structure movements. It offers measuring, analysis and if required alarming.



The system focuses on monitoring buildings, potentially unstable slopes and earth movements using Topcon's precise positioning



Real-time online

The communications and data acquisition system allows the link of DC3 software to different kinds of



sensors and communication channels: for instance a Total Station and GNSS sensors, inclination measurers, meteo and geosensors and even a webcam.

DC3 consists of a central data processing unit and several exter-

with the DC3 Software can also run online as well as offline.

Stable inclination measurement

Besides Topcon's Imaging Station; the Swiss company Wyler will offer its Zerotronic line of inclination sensors to complete the picture.



The Zerotronic family allows very accurate long term monitoring of civil engineering objects like dams, buildings, tunnels, railroads or bridges. The two-dimensional inclination measuring sensors Zeromatic 2/1 and 2/2 are suitable perfectly for the monitoring of smallest changes of the angle of inclination during longer periods.

The digital sensors Zerotronic are characterized by the fact that meas-

Modifying the A60 near Mainz-Hechtsheim

mmGPS improves productivity

Bundesautobahn 60 is a busy German highway. Together with the A643 and A671 it is part of the Mainzer Ring. Traffic jams here are an every day nuisance! "The road will be renovated, lowered and partly turned into a 300 meter long tunnel. Currently the Autobahn is still on a higher level, but once a new lower road is complete, this will be renovated and lowered to the same level", Christian Kessler, Strack project leader explains.

he existing road is protected from the works by a steel framed wooden dam. "High natural walls either side of the road will minimize highway noise and pollution from nearby Mainz. 900,000 cubic meters of earth will be moved on either side of the road over the three year project duration due to end 2009/10."

Two extra lanes

Christian Kessler surveys and identifies parts of the jobsite whilst discussing the advantages of Topcon's Machine Control solutions, "we are building two extra lanes to the A60 near Mainz and also renovating the older road. Also included is a new exit to Mainz and part of the road will be covered by a 300 meter tunnel."



ground very accurately. Topcon's mmGPS and LPS-900 systems are





technology and Wyler's sensors. It detects and models, movement, subsidence and tilt. Data transmission is done by radio-telemetry or GSM. nal sensor control units. The acquisition of the sensor data by GNSS and Total-Stations may take place in a real-time, near-online and in offline mode. The data-exchange ured values are transferred lossfree over large distances thanks to the digital bus system. DC3 offers the perfect solution to your monitoring needs.

Avoiding traffic jams

"The work is being done in phases to avoid traffic jams." This is a really busy road so we can not simply close it off. "Once the two new lanes are constructed, traffic will be diverted through them, allowing us to lower the old road to the same level. This will result in a four lane highway and a much better connection (with less traffic jams) to Mainz."

Keep on working

Kessler introduces one of his dozers and its operator, Andreas Breitwieser. "The Caterpillar D5G is a small dozer which can level the being used to ensure we can keep on working uninterrupted next to these high walls". With high obstacles such as wooden walls next to the jobsite it is easy to loose satellite reception. "This is why we also installed the LPS-900 Total Station. Simple switching a cable in the radio modem and we can keep on working! If the sky view improves we just switch back to mmGPS. We've been using mmGPS on the dozer for two years now. With only one cable swap we can go from GPS to LPS... it really is plug-andplay! Having used the LPS-900 for 6 weeks now, we are moving 2.5 tons of earth everyday!"

6



Topcon and RIB

Automating Processes for the Construction Industry

The perfect added value partnership. That is what you get when you combine jobsite process knowledge with positioning technology. The partnership of RIB Software AG and Topcon Europe Positioning B.V. promises to take the best of both worlds. Through the interplay of RIB's software solutions with the communication and positioning components of Topcon, new methods for automating processes in the construction industry can be achieved.

magine you are at your desk in the office, you log on to a website, through the power of communication and positioning you can check what the progress and status is of all your current construction sites, the performance of all your machines on them and the results of all your people. Sounds like a dream? It is exactly what RIB and Topcon are achieving with their pioneering integral solution.

1 Centralized server

Topcon's SiteLink, the job site management system utilizes remote communications to provide centralized information on every aspect of a job site.

Letting you monitor all data from across different construction sites, locations and machines.



RIB are developing an end-to-end system for all project phases. From design to construction to billing.

1 Smooth cooperation

RIB's STRATIS[®] is a software suite for road construction and civil engineering. It is very powerful in the range and depth of its funcSTRATIS[®] offers various interfaces for convenient import of data from other systems.

1 Two-way communications

Topcon provides advanced GPS+ and telematic technology, in the form of a two-way, web-based communications system with un-



1 Tracking progress

To achieve this we use telematics: the sending and receiving of tions offering all of the standard data and program interfaces to ensure smooth cooperation with

limited commercial, core-to-client applications.

Deformation monitoring in water projects

DC3 system protects the Rhine

DC3dam makes it easy to guard deformations of dams, water defenses or channels with a high degree of security and flexibility. By adapting to the special requirements and needs of the hydro technical world DC3dam successfully automates all relevant measurement data in a cost-efficient manner. DC3dam gathers, analyses and archives data from Topcon Total Stations, GPS devices, water level gauges, plumb line installations, geotechnical data and building physics. The captured and tested (for integrity) data can be sent by variable communication channels to a central desk for evaluation.

Project:

floodgates Feudenheim The floodgate group Feudenheim is the entry sluice from the Rhine to Neckar. The complex was built



between 1924 and 1927, and extended in the 1970s. Due to the age difference in the structure, the Water and shipping office Heidelberg (WSA Heidelberg) decided to install automatic, permanent monitoring of the floodgate towers by a modern deformation monitoring and analysis system.

Measuring procedure

Six permanently installed, highly precise two axis inclination sen-



Visualization / alerting

The Web interface of DC3 presents an on-line state and configuration of the supervised construction. In-built alarming steps notifies selected parties to protects the structure.



The extensive plans and data with geographical information can be quickly consulted in case of an emergency.



information through telecommunications. With this information you track the current progress of job sites in real time. Topcon and project partners. You can start using the system in any phase of a civil engineering project, reacting to circumstances as they arise.





Topcon takes information available from any piece of machinery - regardless age, make or model, analog or digital - and transmits data about the tracking or operation of the vehicle. It is a tool to increase productivity and reduce costs, allowing users to access a 'window' into machine operations from anywhere in the world. Topcon and RIB offer a complete Internet application, linking together remote devices in a centralized service.

sors (Zeromatic, Wyler AG) measure the inclination of the six sluice towers at defined intervals. The sensors conduct fully automatic measurements of any change.

Measuring errors, for example due to temperature changes, are thereby eliminated, which contributes to an increase in the accuracy.

7



Survey Master Bridges the Gap

Field-to-finish

Topcon's new Survey Master software is a complete survey software solution to manage job site and surveying data efficiently. Survey Engineers, it provides users with Survey adjustment, construction computations and CAD drafting tools in one product.

urveyMaster is contained on a single USB (Universal Serial Bus) key for easy transport from computer to com-



puter. The Survey Master packaging is pioneering for this type of application as the program runs on the USB key The data can be saved on the key so it can be moved from computer to computer without the hassle of time-consuming installations and registrations.

Survey Master offers users many options for office configurations. It can handle critical data efficiently



Survey Master is CAD-based software that can be synchronized with TopSURV 7 field controller software, making data upload and download truly seamless. Ultimately what matters is the deliverable, and Survey Master makes export, printing and plotting very easy. Whether the job is a simple project or a complicated multi-surface construction jobsite with roads, utilities and buildings, Survey Master provides a single, easy-to-use solution.



Features include:

- 1 Transportable USB-key with password capability
- 1 Synchronization with **TopSURV7**
- 1 3D viewer for 3D surface modeling
- 1 Finish grade printing
- 1 Land survey/code library functions
- 1 Raw data editing
- 1 Contouring and surface file editing
- 1 Construction setting out tools and

1 Volume analysis

IBT uses Topcon solutions

GMS-2 manages the value of our streets

Next time you drive down a street in a busy town, have a look around at all the objects with which you share your road. Besides the traffic lights and the white lines, you will find many signs, trees, maybe even a special lane for cyclists, lights and boundaries to divide the street. Engineering agency Hans Tovar and Partners from Osnabrück, Germany, have made a special service of mapping and checking the value of these many objects.

"Mapping the street cadastre is an important theme in many cities. Besides the technical documentation of the infrastructural stock, guarding the monetary value of the objects is also an important goal for manyoftheinstitutesinvolvedwith the costs of maintenance", Hans Tovar of the German engineering agency Tovar explains.

Simple system

Already at an early point in time Hans Tovar & Partner made a simple modular system to register and assess the 'value' of a street. On the basis of the data we can maintain the lasting value of the infrastructural capital, playing an important role in the maintenance."

Required accuracy

"For registering and adding the objects we use Topcon's GMS-2



With the internal digital camera it is easy to document all the objects and for instance make a picture of damage to the road."





Mobile and practical

The eTopPlus software in combination with ArcPAD supports the user and offers the possibility to capture objects.

The ease and handiness of this innovative technique ensures the success of our projects. The management of street furniture value and providing tools for street management are our primary goal.

Over 800 state-of-the-art instruments supplied to Polish schools

Topcon wins world's largest total station tender

Topcon wins the world's largest total station tender. With more than 800 instruments to be delivered to the Polish Ministry of Education (MEN) by Topcon's exclusive Polish partner TPI, Topcon has set a record for the largest tender ever with its state-of-the-art technology.

total of 860 instruments supplied in one single agreement. Without doubt the largest educational tender in recent history.

TPI - exclusive dealer of Topcon positioning products for Poland





Baden Wurttemberg's forest agency received 54 GMS-2



have supplied the Polish Ministry of Education (MEN). The equipment will be used for educational purposes in all Polish secondary technical schools that require surveying instruments in their educational processes.

Ewout Korpershoek, Managing Director of Topcon Europe Positioning commented: "We are very proud of this success for our Polish partner TPI. For the last ten years they have been a great and trusted partner for Topcon and this tender proves they are on their way to an even more successful future.

The Ministry of Education has made a wise long-term investment in Poland's future, by making sure that the surveyors of tomorrow get acquainted with state-of-theart technology in an early phase of their lives."

He continues: "The GPT-3100N Total Station uses multiple pulsed laser beams emitted at a constant frequency, to measure distance.

This way the total station offers increased measurement performance with a pin-point measurement beam, extended range, improved accuracy and lower power consumption.

By investing in this new technology and having the back up of a solid service and support organization the MEN can look to the future with confidence."

The central IT department of Baden Wurttemberg's state administration (IZLBW) called for a tender of 40 Submeter GPS devices for their national forest department.

Topcon won the contract, against the competition with it's GMS-2 handheld device.

V. Kratzenberg (Topcon), H. Arnold (IZLBW), D. Berner (IZLBW), W. Veit (Ministerium) W. Hanselmann (Topcon), G. Waldbauer (IZLBW), M. Lamprecht (Topcon,

With 54 delivered units the 35 forest districts will use them for easier and faster field mapping and checking

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