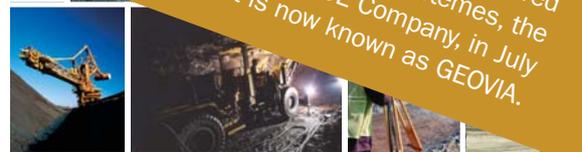


GEMCOM* CUSTOMER CASE STUDY

*Gemcom Software was acquired by Dassault Systèmes, the 3DEXPERIENCE Company, in July 2012. It is now known as GEOVIA.



Etruscan lowers mining costs, increases gold reserves and derives efficiencies using synergistic Gemcom solution



Mining staff saves 2,500 hours annually in grade control management and reporting

Countries:

Burkina Faso, Côte d'Ivoire, Ghana, Mali, Namibia, Niger

Objective:

Establish an effective grade control system to obtain maximum value from mine development projects.

Approach:

Leverage Gemcom Surpac™, Gemcom Whittle™, and Gemcom MineSched™ software for better mining performance and lower operational costs.

IT Improvements:

- Automation of manual steps and grade control management, saving nearly 2,500 labour hours per year.
- Tools for accurate resource estimations, data validation, and National Instrument 43-101 compliance.
- Integrated, consolidated data.
- Streamlined data flows.

Business Benefits:

- Reduced mining department costs by 3 percent over the past year.
- Increased ore reserves by 1.2 million tonnes in six months.
- Saves \$30,000 in consulting fees for 1-2 pit optimisations.
- Enables maximum ore recovery in line with projected costs.
- Frees up time and personnel for other tasks.
- Mitigates double the number of staff needed for data management.

“Through the synergies, functionality, and seamless integration of MineSched, Whittle, and Surpac, we are reducing unit costs as our gold output multiplies. Our mining department costs were 3 percent lower over the past year.”

— Samuel Takyi, Senior Mine Planning Engineer, Etruscan Resources Inc.



CIL process plant.

A prolific gold and diamond explorer

Nova Scotia, Canada-based Etruscan Resources Inc. (TSX: EET) has explored for gold and diamonds in Africa for more than 13 years. The junior mining company (www.etruscan.com) holds one of the largest strategic land positions in West Africa covering in excess of 13,000 square kilometres of several prolific gold belts.

When Etruscan started feasibility studies at Youga, one of its principal mine development projects in Burkina, Faso management evaluated software to assist their geology, planning and surveying departments. Feasibility studies revealed that the remote, mid-sized operation comprised weathered and oxidised zones with a sulfide zone beneath them. All of the pits contain hard-rock (ore and waste) material, and mineral-free digging areas exist. The zones necessitate various blasting processes, material separation for optimal recovery and stringent grade control. With an initial 6.6-year mine life, the Youga Gold Mine also requires maximum pit optimisation and strict cost containment. The pits are set to render certain gold prices. Faced with fluctuating prices that advance amid economic uncertainty or retreat during lower demand, Etruscan must mine the most profitable pit at the right time.

“There is much designing and planning work in comparing the benches and determining the ore amount and quality,” admits Samuel Takyi, Senior Mine Planning Engineer for Etruscan. “After extensive evaluation, we concluded Surpac was a more comprehensive system to achieve these goals than Datamine. I actually prefer Surpac over Datamine because it’s more user-friendly and offers me more flexible, clearer functionality.”

A market-leading position

Etruscan assessed Gemcom’s software, Datamine, Micromine and several other providers. Etruscan engineers investigated Gemcom because it enjoys a large, engaged user base, and leadership position in Ghana. To ensure the software would meet their requirements, a company representative visited Gemcom’s office in Ghana to witness Surpac in actual production environments. He saw that Surpac would provide compelling features compared to other competitors. Satisfied with the results, Etruscan hired Gemcom to install the software, customise the grade control module, and train the staff.

“Gemcom provided excellent training so that everyone was able to learn Surpac quickly,” Takyi says. “For new users training onsite, the help documents are detailed, self-explanatory and easily answer their questions. Therefore, our users enjoy using the package.”

Etruscan takes a proactive approach to technology usage by periodically requesting an onsite audit from Gemcom to gauge whether they are applying the software properly and to the fullest extent. These audits enhance the staff’s efficiency. Gemcom also responds to Etruscan’s inquiries and provides technical support regularly. “We contact Gemcom anytime it is necessary. They have helped us tremendously,” Takyi says.

Verifiable data boosts efficiency

Commercial production at the Youga Gold Mine extends to the southwest into Ghana along the Bole-Bolgatanga gold belt. Mining occurs in five open pits with ore processing through a conventional carbon-in-leach (CIL) gravity plant with a design capacity of 1 million tonnes per annum. Etruscan’s geologists develop geological and grade control models for these pits, the engineers plan and design them, and the surveyors conduct their estimations—all in



Burkina close-up.



Crushed ore stockpile.



Feed conveyor to grinding mill.

“By using Gemcom’s Surpac, Whittle, and MineSched software, we can mine selectively and efficiently.”

— Samuel Takyi, Senior Mine Planning Engineer, Etruscan Resources Inc.



Grinding mill.

Surpac. The software helps them maintain, establish and interpret their results accurately. In fact, the various mining processes and activities within and across departments are efficient and well coordinated because of consistent, verifiable data in Surpac and its pragmatic features.

For example, 3D tools express accurate results and allow Etruscan geologists to build representative models of the orebodies. “We must have good geological models and know exactly where to mine. Surpac gives us a clear picture of our reserves and a high degree of certainty for our decisions,” says Takyi.

Grade control automation scripts save time

Using Surpac’s scripting capabilities that automate mining tasks, Gemcom tailored grade control functions to the needs of the Youga operations. The software’s automation features allow the staff to update their resource models daily, import/export data, lay out drillholes and their colours, extract the sampling database and benches for reports of each mining block, and create models for interpretation.



Gold pour.

“Surpac’s TCL script automation feature is adaptable, which makes it easy for me to write various scripts to automate almost all my planning functions. It drastically cuts down on time spent on office tasks to follow up on other jobs in the field,” Takyi explains. “Grade control scripts in Surpac adapt with our mining sequences and work perfectly. To create drillholes and import data manually would take a huge amount of time, but with the automated scripts, we can run models and drill patterns in five minutes—depending on the drill patterns and schedules. Without Surpac’s automated features, the same tasks and reports would take 48 hours a week.”

Consequently, the software enables a small Etruscan staff to manage an escalating amount of data for grade control. Without Surpac—with its data storage provision and ability to interface with many common formats for importing and exporting grade control data—more personnel would be required. “We only need three people because of Surpac. If we were managing the database manually or with different software, it would more than double the number of people on staff,” Takyi maintains.

He also notes that Etruscan teams have improved Youga’s mining parameters by leveraging the software’s flexibility and functionality. The software runs various scenarios and presents data in various file formats that are useful in reserve comparisons, excavating, and improving grades. “We are constantly changing our parameters to optimise our gold. Surpac provides good results.”

Determining mine strategies to increase profits

Two additional Gemcom software systems used with Surpac afford an all-encompassing solution that boosts profitability and delivers economies of scale. Whittle is extending Youga’s life-of-mine horizon, allowing the staff to examine various pit shapes and limits, build operating cost histories, and determine mining strategies.



Gold table.

GEMCOM CUSTOMER CASE STUDY



“Whittle helped us extend our bench across the orebody and come up with new cash flows. We have increased our ore reserves by more than 1.2 million tonnes in six months, and we expect extra years of production from the Youga mine,” Takyi says.

Moreover, merging actual numbers and operational parameters from Surpac block models into Whittle pit optimisations onsite mitigates the need to hire additional consultants. “Creating one or two pit shapes and the associated reports would cost about \$30,000 in consulting fees, but we execute those onsite in Whittle,” he confirms.

Uniquely synergistic solution helps reduce mining costs

Etruscan considers MineSched one of the most powerful scheduling tools in the industry. Company personnel use the software’s polygon scheduling function for short-term planning, and they develop projected cash flow reports using MineSched.

Takyi acknowledges that scheduling multiple mining benches and developing life-of-mine (LOM) plans are easy to accomplish. A LOM plan can be completed in eight hours versus 40 hours manually. The software’s interface enables reports based on cash flow, grade attributes, work shifts, locations, and resources.

“We can design our reports based on what we need and thus protect our production in terms of size. The reporting features, interfaces with other programs, and ability to run different scenarios in 3D to get better cash flow options, are major advantages of MineSched compared to other scheduling programs like Mine2-4D,” he says.

In summary, the functional qualities and seamless integration of MineSched, Whittle, and Surpac are working together in an exemplary fashion to help transform Etruscan’s bottom line. The company notes that this synergistic Gemcom solution is helping its personnel lower unit costs as gold output multiplies. In fact, the Youga mine reached design throughput exceeding 7,000 ounces per month within five months of startup. The average forecast monthly gold production over the life of mine was 6,700 ounces per month.

“We cannot accomplish planning or selective mining without these Gemcom programs. Thanks to Gemcom software, the Youga operation is getting better and gaining production efficiency. From bench to bench, we are improving our ounces,” Takyi concludes.

Etruscan Resources Inc. Solutions at a Glance

Primary Application:

- Gemcom Surpac
- Gemcom Whittle
- Gemcom MineSched

Gemcom Services:

- Software implementation
- Automation services
- Training
- Technical support

For more information email
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www.gemcomsoftware.com.

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