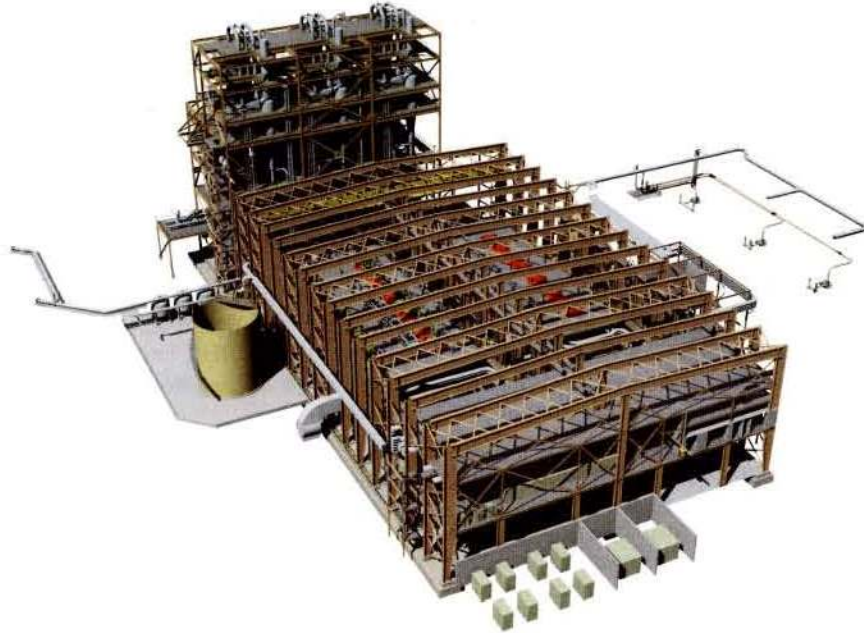


Integrated 3D Models Enable Compact and Safe Plant Design

Executing gold extraction and processing plant design on schedule enabled project owners to take advantage of high gold prices



Nearly nine years after a state-run company ceased operations at the Pueblo Viejo mine in the Dominican Republic, Barrick Gold Corp. is developing a \$2.7 billion mining project that will generate more than 1,000 jobs over the gold mine's 25-year lifetime. The new facility will process gold ore at a throughput rate of 24,000 tons per day to produce almost 1 million ounces of gold per year during the first five years of operation.

Representing the largest foreign investment in this small Caribbean nation, the project has the potential to become an engine of economic growth and development. The World Bank reports that currently almost one-third of young people ages 15 to 24 in the Dominican Republic are unemployed and 45 percent of the population in rural areas lives in poverty.

When operations begin at Pueblo Viejo in 2012, the mine will tap into reserves estimated at 20 million ounces of gold,

424 million pounds of copper, and 117 million ounces of silver. If the current trend toward high gold prices continues, the Dominican Republic will benefit from substantial additional revenues and local companies will benefit from becoming suppliers to the mining operations.

Located 100 kilometers northwest of Santo Domingo, the project is being developed in joint partnership by Barrick Gold (60 percent) and Goldcorp Inc. (40 percent), both Canada-based gold producers with worldwide operations. The jointly owned company, Pueblo Viejo Dominican Corporation, is also working in partnership with the government of the Dominican Republic to manage the \$100-million clean-up of environmental damage from the previous mining operations. A comprehensive environmental management plan will ensure future operations are in accord with high environmental standards.

Hatch, a global engineering and project-management company, was retained to provide process and engineering design for the facility that performs the first step in the extraction of the gold. The available space was tight due to the rugged mountain terrain so the challenge was to design the most compact plant layout possible while providing maintenance access and safe operation.

"The Bentley suite of products provided a user-friendly means of delivering a complex 3D project," said Glenn Sakaki, Hatch's managing director of project execution. "The 3D environment allowed us to produce integrated models for design reviews, presentations to clients, and clash detection. Without these capabilities, such a complex project would take longer to execute and require more staff for coordination, checking, and supervision."

Visualizing a compact design

The chemical process used to extract gold from refractory sulphide ores liberates submicron-sized gold by oxidizing the sulphides with high-purity oxygen at a temperature of 230 degrees Celsius and a pressure of 40 atmospheres. The process takes place in four massive pressure vessels called autoclaves, each with a capacity of more than 600 m and a gross operating weight of 2,300 tons. The vessels are protected by a lead membrane and an acid-resistant brick lining. Gas dispersion is done by seven agitators per vessel. Each vessel processes approximately 6,000 tons per day of ore feed, extracting 200,000 to 250,000 ounces of gold per annum. When constructed, these vessels will be the largest refractory-lined autoclaves in the world.

The use of PlantSpace and other Bentley products allowed all disciplines — civil, structural, mechanical, piping, electrical, and controls — to work simultaneously while

sharing design information on a real-time basis. The design team included more than 55 engineers, designers, and specialists; five CAD systems and IT support personnel; and up to 50 members in management, project controls, procurement, and construction supervision. Central data storage enabled fast, accurate, and up-to-date information transfer between disciplines.

Continuous redesign as information became available was undertaken with

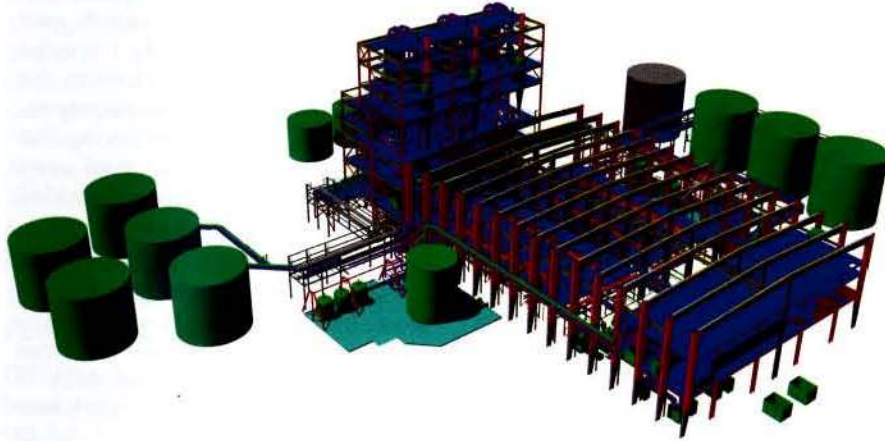
to develop a compact layout, general arrangements, and isometric drawings by extraction; import terrain maps, structural steel, and concrete models; and produce integrated models for design reviews, presentations, and clash detection that saved 2 percent of construction costs in field rework.

Executing the plant design on schedule will enable the project owner to adhere to a timeline intended to take advantage of current high gold prices. Gold often rises in times of economic

according to Barrick's second quarter report released July 31, 2008 — when spot gold was priced at US\$916 an ounce. Barrick estimated it will cost about \$3 billion to bring the Pueblo Viejo mine to full production, with initial cash costs at the mine likely to be in the range of \$275 to \$300 an ounce, up from the previous estimate of \$250 an ounce.

Since Barrick is committed to bringing long-term sustainable benefits to the communities where it operates, the economic, social, and environmental benefits of this large-scale project will come about as a result of Barrick's commitment to operating in a socially responsible manner in the Dominican Republic.

Barrick's socially responsible mining approach includes local, regional, and national initiatives to improve education and infrastructure in the countries in which it operates. During the three-and-a-half year construction period, the Pueblo Viejo project is expected to create 3,500 jobs. Area bridges, highways, and overpasses will receive more than \$20 million in upgrades as a result of the project. □



ingenuity and a collaborative approach by the entire project team. The 3D environment allowed the team

turmoil or when the U.S. dollar falls. Higher gold prices have outpaced the rising costs of gold production,

Merit

we engineer solutions to bulk material handling

Products

- ✦ RAPID LOADING SYSTEM FOR WAGONS AND TRUCK
- ✦ TELESCOPIC LOADING SPOUTS
- ✦ GATES & VALVES
- ✦ ELECTRONIC WEIGHING & AUTOMATION
- ✦ HYDRAULIC POWER PACKS & SAMPLING SYSTEM

Merit Technologies India Ltd.

No. 152, Defence Colony, Ekkattuthangal, Chennai - 600 097.

Phone : +91-44-22334099, 22318697/98/99 Fax : +91-44-42647382

E-mail : sales@meritech.co.in Website : www.meritech.co.in

