

# GEMCOM CUSTOMER CASE STUDY



## PT Petrosea lowers costs, minimises risks, boosts efficiency, and enhances productivity with Gemcom MineSched™



Leading contract mining enterprise saves millions of dollars across their contracts with improved open pit mine scheduling capabilities

**Country:** Indonesia

### **Objective:**

Quickly create and refine rolling schedules to ensure the most efficient, economical mining operations.

### **Approach:**

Use MineSched software to determine the best way to mine, taking into account water management, efficient equipment utilisation, quality requirements, contingency planning, haul distances, dump optimisation, and many other factors to continuously drive the best results out of the rolling schedule.

### **IT Improvements:**

- Ability to avoid errors that occur with manual scheduling.
- High-quality visualisation for improved project accuracy and efficiency.
- Quick, automatic output of Gantt charts, tables, and graphs.
- Modern, easy-to-learn, and user-friendly interfaces.

### **Business Benefits:**

- Better planning and more efficient utilisation of expensive mining fleets.
- Flexibility to create contingency plans to manage unexpected events and mitigate costs.
- Creation of backup plans that can save on unused equipment costs.
- Approximately one-third fewer staff required compared to manual scheduling.
- Optimisation of hauling distances and overburden management.
- Ability to visualise pit designs to ensure accurate estimation of mining projects.

*“In this business, you have the potential to lose millions of dollars if you’re not managing your operations right. To do this we need a good scheduling package. We can’t do without MineSched, that’s for sure.”*

*— Adrian Stewart, Technical Services Manager for Mining and Mine Services, PT Petrosea Tbk*



Mine operations at GBP Coal, East Kalimantan, Indonesia.

## Contract mining expertise

*Jakarta, Indonesia-based PT Petrosea Tbk ([www.petrosea.com](http://www.petrosea.com)) is a multidisciplinary engineering, construction, and mining company with a track record of achievement since 1972. As one of Indonesia's leading engineering and construction contractors, the company has been listed on the Jakarta and Surabaya Stock Exchanges (now the Indonesian Stock Exchange) since 1990 and was the first publicly listed engineering and construction company in Indonesia.*

The state of East Kalimantan in Indonesia gets around three metres of rain every year. When torrential downpours fill the coal mining pits, excavators and trucks can often stand idle—but not when powerful scheduling software like MineSched has been employed to create viable contingency plans.

For PT Petrosea Tbk, whose core business is contract mining, contingency planning is one of the most important benefits that MineSched delivers. “We have three contract mining projects in East Kalimantan (Sanga Sanga Mine, GBP Coal, Santan Batubara), and they're all open pit coal mines,” says Adrian Stewart, Technical Services Manager for Mining and Mine Services at Petrosea. “We can't afford to lose any time. Having the equipment on standby for even one day would cost us thousands of dollars. We've always got to be thinking ahead, and a good scheduling package like MineSched minimises our risk significantly because we can schedule various mining sequences, validate their economic viability, and easily reallocate equipment to another area or project.”

With MineSched, Stewart and his team can also ensure that another area is available for mining if needed, allowing the company to take advantage of equipment already on hand. Having a backup plan in case a working area becomes unavailable can save on unused equipment costs.

## Boosting efficiency

Petrosea uses MineSched for much more than contingency planning. Currently, most mine owners are looking to boost efficiency by cutting back their strip ratios; this, in turn, involves modifying their final pit walls. Every time the pit shell is adjusted, Petrosea must reschedule mining operations—and this always brings up new issues, such as how to optimise haul distances, where to put the sumps during the wettest months, dump management, and the best way to ensure that coal quality meets all specifications. Petrosea can count on MineSched to help resolve complex issues in a timely manner.

Under the terms of its standard contracts, Petrosea receives a 12-month pit shell from each of its clients, including the topography, pit dimensions, the top and floor of the coal, and the optimal strip ratio based on the client's financial analysis. The data is imported into MineSched from the client's geological modelling software, along with equipment and quality requirements, water management factors, productivity goals, and specific production targets. MineSched then calculates the most efficient sequence for mining the coal, complete with 3D graphical displays and all necessary charts and graphs. Petrosea personnel can continuously adjust and refine the parameters in MineSched to achieve the best possible plan.

“Using MineSched, we can run different options quickly and work out how to save money,” says Stewart. “In today's economic environment we are constantly revising factors such as where we mine, what quality we mine, and how deep the pit is going to be, in order to ensure an acceptable balance between cost and profit. In this business, you have the potential to lose millions of dollars on a contract if you're not managing your operations right. To do this we need a good scheduling package. We can't do without MineSched, that's for sure.”



Mine operations at Sanga Sanga mine in Indonesia.



Surveyor at Sanga Sanga mine.



Truck and shovel at Sanga Sanga mine.

“Having the equipment on standby for even one day would cost us thousands of dollars. We’ve always got to be thinking ahead, and a good scheduling package like MineSched minimises our risk significantly because we can schedule various mining sequences, validate their economic viability, and easily reallocate equipment to another area or project.”

— Adrian Stewart, Technical Services Manager for Mining and Mine Services, PT Petrosea Tbk



Dump trucks at Sanga Sanga mine.



View overlooking the GBP Coal mine.



PT Petrosea staff at GBP Coal mine in Indonesia.

### Lower cost, lower risk

MineSched also helps Petrosea save money by enhancing staff productivity. According to Stewart, it would probably take three times as many people to accomplish the same work manually in Microsoft® Excel®. In addition, MineSched decreases the risk of costly formatting and formula errors. The visualisation and calculation capabilities of the software—combined with the automatic output of Gantt charts, graphs, tables, and the like—reduce risk even further.

“We’re currently estimating a project, and the client provided us a pit shell that involved mining down to 150 metres,” says Stewart. “We put the data into MineSched, ran the scenario, and discovered that due to mine sequencing the client had not given us enough area to dump the overburden. If we had run that scenario in Excel, the plan would probably have looked feasible, and we could have submitted our price based on that presumption. Over a seven-year job on a mining project, that’s a lot of money—millions of dollars that we saved thanks to MineSched.” The ability to visualise the pit design in MineSched enabled Stewart and his team to spot the problem immediately and avoid submitting a seriously flawed bid on the project.

Mining jobs are all different, but they have one thing in common: the unexpected is sure to happen. In East Kalimantan, this often takes the form of failures, breakdowns, land compensation issues, and deviations due to excessive groundwater. When such an event occurs, Stewart and his team must develop new schedules and plans quickly. With MineSched, the task can usually be accomplished in about a day—which is much faster than it would be using other methods. Says Stewart: “If we didn’t have a product that could cope with those unforeseen occurrences quickly, we could lose money. MineSched helps us manage the unexpected.”

### Partners in success

Along with supplying proven technology, Gemcom is an active partner in ensuring Petrosea’s continued success. For example, Petrosea needed to calculate haul distances from dig location to dump destination. This capability is particularly critical for accurate project estimating, as contract miners must know how much material they are moving, how far they’re moving it, and the related costs. Gemcom added this critical feature to MineSched quickly to meet Petrosea’s need. “Now the haul distances can drop straight out of the schedule,” says Stewart.

In addition, Gemcom continually enhances the MineSched interface. It integrates seamlessly with Gemcom Surpac™ software, which Petrosea uses for estimating, surveying, and mine planning. Importantly, MineSched and Surpac work in unison; for example, the staff imports Surpac data directly into MineSched, which saves time and minimises data rekeying and potential errors.

Stewart is particularly pleased with the latest version of the MineSched product. “The software is very user-friendly and logical, with good icons and powerful visualisation,” he says. “It’s also quite easy to set up the schedules. We have a team of good, competent mining engineers at Petrosea—probably some of the best mining engineers in Indonesia—and they like using

# GEMCOM CUSTOMER CASE STUDY



MineSched. With MineSched, we're giving them a powerful tool that they need to do their jobs."

MineSched already is used for blending to ensure the correct sulfur and energy content of the coal coming out of the Santan Batubara mine in East Kalimantan; the software is also employed for backfilling pits. In the near future, Stewart plans to add drill and blast to the scheduling tasks handled by MineSched, moving two more essential functions out of their Excel environment. "Once we start using MineSched for drill and blast, we expect to see even more effective utilisation of equipment," he explains. "For example, we have drills that are frequently moved around to different work locations. We'll be putting fewer hours on the drills by planning their activities more effectively using MineSched."

According to Stewart, MineSched is critical to the success of Petrosea's contract mining business. "It's a tool that gives us solutions quickly," he concludes. "MineSched creates efficiency, predictability, and replicability across our operation. It also keeps our clients happy, because we can tailor the schedules to their needs. Especially in today's economy, clients need to make sure they're getting the coal out on time—when we say they will get it and with the right quality. If we keep the clients happy, then they're going to give us more work. MineSched is a pivotal element in this scenario and in our success."

## PT Petrosea Tbk Solutions at a Glance

### Primary Application:

- Gemcom MineSched
- Gemcom Surpac

### Gemcom Services:

- Technical support

For more information email  
[info@gemcomsoftware.com](mailto:info@gemcomsoftware.com) or visit  
[www.gemcomsoftware.com](http://www.gemcomsoftware.com).

#### Disclaimer and copyrights

This document gives only a general description of products and services and except where expressly provided otherwise shall not form part of any contract. Changes may be made in products or services at any time without notice. Copyright 2011, Gemcom Software International Inc. Gemcom, the Gemcom logo, combinations thereof, MineSched and Surpac are trademarks of Gemcom Software International Inc. All other names are trademarks, registered trademarks, or service marks of their respective owners.