

# ADVANCED PROCESS CONTROL

## MET EXPERT TECHNOLOGY

Many producers share the problem of inefficient capture and use of information and knowledge in their decision making. The Advanced Systems group at SGS can help you take advantage of the proven benefits of advanced control technology to improve productivity. Backed by eleven years of demonstrated results, the MET (Minerals Expert Technology) can provide you with the decision making tools to streamline your production in real time.

The Advanced Systems group at SGS offers advanced process control solutions through the implementation of expert systems. An expert system consists of a knowledge base and an inference (reasoning) engine. An expert system is able to mimic the human thought process and make quantified, intelligent decisions by combining the knowledge base and inference engine.

## WHAT IS AN EXPERT SYSTEM?

The two components of an expert system are the software package and the integration of the solution within your operation. The greatest impact on the success of an implementation is the integration within the plant and the culture of the operation. No matter how powerful the expert system package is, if the integration is ineffective, the expert system will fail. Our approach to expert system integration ensures that all members of your team recognize the benefits of the system and are confident that the expert system is improving the performance of the operation. The software provides the foundation and the tools for constructing an effective, robust and reliable expert system. It directly impacts development time and maintenance.

## OUR EXPERIENCE

We have provided solutions for a wide range of unit operations including crushing, grinding, beneficiation, flotation, dewatering, induration and drying. MET advanced systems have addressed complex logistical problems to assist with issues such as ore scheduling and shipping logistics.

Designing and implementing advanced systems requires in-depth understanding of unit operations, integration techniques, instrumentation and software compatibility. Our integration team consists of more than 25 mineral processing professionals and control experts. With over 90 proven systems around the world, our engineers leverage extensive "benchmark knowledge" to deliver a robust, successful solution.

## APPLICATIONS

Below are a few examples where expert systems can be applied to perform intelligent tasks.

- Increase throughput
- Increase recovery
- Maintain quality
- Filter alarms
- Pollution / environmental control
- Shutdown and safety
- Energy savings
- Scheduling
- Root cause analysis
- Start-up procedure / batch processing
- Experimental design

These applications and more can be controlled or improved using MET. MET is also able to perform complex statistical analysis, create dynamic models and efficiently perform time-consuming expert tasks in real time. The MET platform can perform these decision-making processes by interfacing with any control system e.g. PLC/SCADA or DCS, Information Management System or third party



software. Whether it is capturing the best operating practices from experts or using third party software as part of a control strategy, the MET platform is an extremely robust inference engine.

## THE MET SOLUTION

SGS' mineral processing experience means that our expert systems provide you with a proven methodology and a well respected team of mineral processing consultants to aid in the development of your control strategy.

Our methodology is progressive and inclusive. A system can only succeed if your entire team "owns" it. Everyone in your organization must be included in your system's development and maintenance if it is to remain useful, healthy and vibrant. In-depth interviews and on-site commissioning ensure that your entire team drives the development and tuning of the expert system. The result is a product that encompasses your operating philosophy and reinforces the operators' confidence and beliefs. When we leave your site the team will be familiar and comfortable with the system and your operators will anticipate the changes invoked by the expert system. Full acceptance and utilization translates into improved performance for your circuit.

Our approach to advanced process control is based on our strengths:

- **MET**hodology  
An operations-centric approach that focuses on building "ownership" amongst the users of the system.
- **MET**allurgical Expertise  
All members of our integration team have spent time on the plant floor in operational and metallurgical roles – their experience is augmented with a project team including our most senior technical staff.
- **MET**allurgical Benchmarking  
We have more installed, operating expert systems than any other company in the world. We are also continually involved in the design and operation of the circuits that we control. We use our experience and data from past projects to identify best practices.
- **MET** Toolkit  
Industry leading maintenance and evaluation tools are added to the expert system foundation software to facilitate performance, maintenance and future growth.

## THE MET TOOLKIT

To increase the level of use and acceptance of your expert system, a user-friendly product is needed that minimizes the learning time required to provide a powerful, open and extensible platform for the site administrators. The product must provide tools to the site administrators for developing, maintaining and rapidly integrating expert systems. The product we have developed is known as the MET Toolkit. It combines numerous features that enable maintenance and development.

The MET Toolkit consists of a set of "specialty modules" designed with the end-user in mind. The MET Toolkit provides powerful functionality for the site administrator, but ultimately provides significant value to our coders as well.

These features:

- Accelerate the development and troubleshooting of new logic
- Facilitate the gathering of specific user-defined information to assess the performance of process unit operations
- Streamline the application to make the best use of the computer's resources

Our expert systems are always on duty, optimizing your output on every shift. They provide a best practice repository that stays with the system, even when the staff and management change. MET explains the control decisions, helping operators gain a deeper understanding of the process while on the job, empowering the operations group to critique the system while providing a powerful training and reinforcement tool for the less experienced team members.

## CONTACT INFORMATION

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