Diagnostic & Corrective Advice Software for Minerals Processing Plants

MetSMART includes:

- **grindsmart**
  Grinding & Crushing Modules

- **floatsmart**
  Flotation & Regrind Modules

- **balsmart**
  Mass Balancing Calculator
MetSMART is powerful simulation software from Minerality that quickly and accurately simulates the behaviour of any ore body within grinding & flotation processing plants. Use MetSMART to test and optimize decisions before making changes on the plant.

MetSMART is unlike any other grinding & flotation simulation software. It allows users to easily draw, mass balance, and simulate the effects of changes to variables on their plant. Simulating the effects of changes to plant variables with MetSMART is easy. MetSMART actively diagnoses inefficiencies and warns users if problems are likely - highlighting potential trouble spots. It even provides advice and suggestions on changing variables in order to solve problems. Users can perform complex calculations at the click of a button.

Essentially, MetSMART provides a really useful guide to making correct processing decisions. MetSMART can be bought either as a standard package, or with your plant's flowsheet fully pre-programmed and customized to your requests.

Crushing, Grinding & Flotation in **ONE PACKAGE**

- Improve throughput
- Improve recoveries
- Save time
- Predict potential problems
- Mass Balance
- Calibrate
- Simulate
- Reduce costs
- Increase profitability

Drag & drop flowsheet. Construct any size plant. We can also provide software with models pre-calibrated to your plant.
Understand your plant’s process: Improve your bottom line

GET ANSWERS with MetSMART

- Is your feed size optimum for the grinding plant? Do the calculation daily!
- Is your AG or SAG mill slurry pooling? Fix the problem immediately…do the calculation yourself!
- Getting a build-up of pebbles in your SAG mill? Use MetSMART to identify and correct.
- Are your cyclones performing optimally? Eliminate roping and quickly calculate solutions with MetSMART
- Are your recirculating loads too high/low? Get the answer at the click of a button

Practical advice, tips, rules of thumb, and things to look out for. from leading industry experts. Operate SMART and get results.

Use MetSMART for both, OPTIMIZATION & DESIGN

OPTIMIZATION

1. Choose optimal operational plant settings for current ore conditions:
   • Improve throughput
   • Improve energy efficiency
   • Improve recovery
   • Prevent costly mistakes & plant shutdowns.
2. MetSMART Automatically searches for inefficiencies in your results and highlights problems immediately, making MetSmart fast & easy to work with.
3. Predict plant behaviour for processing future sections of the ore body. Simulate the effect of changing feed ore characteristics, and get advice on adapting plant variables to optimize performance.

PLANT AND EQUIPMENT DESIGN

- Design studies - faster and easier.
- Draw any flowsheet configuration.
- Test the performance of equipment at different operational settings.
- Pinpoint potential problems instantly.
- Automatic reporting.

FEATURES

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1. Plant Survey  
2. Data Analysis  
3. Report with Solutions
## Features of MetSMART

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<th>Whole Plant Simulation</th>
<th>Crushing, grinding, classification, physical and magnetic separation, dewatering, regrind and flotation.</th>
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| **Crushing / Grinding Simulation** | Quickly see the effects of changes in (for example):  
- New feed conditions  
- Different operating variables  
- Ore hardness  
- F80 changes on the feed belt  
- Increased / Decreased feed rates  
- SAG Mill ball size, ball load and speed  
- Mill discharge panels  
- Cyclone Vortex, Spigot and number operating  
- Ball mill ball top size and ball load  
- Crusher, open side setting / closed side setting  
- HPGR speed  
- Different circuit configurations |
| **Flotation Simulation** | Easily simulate items such as:  
- New feed rates  
- Varying grind sizes  
- Changing grades  
- Increasing water to recleaners  
- Flotation circuit configuration: recycling concentrate from second stage of cleaning  
- Increasing capacity in re-cleaners  
- Adding a cell at the head of the scavenger circuit  
- Feed-size distribution  
- The impact of installing flash on cyclone underflow  
- Immediately access historical ore data trends: MetSMART has a flotation kinetics calculator. The results can be exported to a kinetics database. |
| **Results** |  
- Immediately see where equipment limits are breached  
- Automatic highlighting of problem areas and inefficiencies  
- Expert suggestions and advice to solve issues (eg what you should do to fix high recirculating loads)  
- Expert reporting of slurry properties and equipment outputs, including interactive graphs, tables and charts.  
- Overall grades, flows and recoveries  
- Individual cell grades, flows and recoveries  
- Interaction between gangue and valuables  
- Automatically see in which cells the gangue is floating faster than valuables  
- Cumulative recovery and grade vs recovery curves  
- Exportable to PDF and Excel |

- Avoid slurry pooling inside mill  
- Choose the optimum Feed Size  
- Calculate & Optimize recirculating loads  
- Prevent bad decisions with MetSMART  
- Respond to Ore Changes  
- Improve Recovery

MetSMART... helping engineers get it RIGHT
BalSmart: Mass Balancing with MetSMART

CALCULATE VALUABLES IN EACH STREAM OF YOUR PLANT
PINPOINT PROBLEMS
PROVIDE ACCURATE AND TIMELY INFORMATION TO MANAGEMENT
LIBERATE YOUR ENGINEERS FROM MUNDANE TASKS

MetSMART includes a powerful mass balancing module for your plant’s data.

- It allows you to keep track of your valuables.
- It provides you with crucial information:
  - Know exactly what is happening with your valuables;
  - Use this information to make important decisions;
  - Pinpoint problems accurately;
- It provides automatic reports – saving valuable engineering hours.

While samples can be taken around the plant to measure assay and sizing information, calculating missing stream properties can be difficult. This is especially the case in recycle circuits.

Moreover, it is not always possible to sample every stream in the plant. BalSmart’s powerful mathematical modeling capabilities calculate this information for you quickly and easily.
How is BalSmart used?

1. **Enter Flows | Assays**
   (Inputs measurable from your plant)
   Enter data manually or electronically

2. BalSmart calculates information for every stream
   - Flows: m3/hr
   - Densities: % solids
   - Particle Size Distribution
   - Head Grades
   - Assays: (g/t, ppm)

3. BalSmart Calculates:
   - Recirculating Loads
   - Recoveries
   - Product Grades
   - Tailing Grades
   - Mass Pull

4. **Reporting**
   - Graphs
   - Tables
   - PDF Report
   - Export to Excel or other platforms

### Immediately Pinpoint Problem Areas – Automatic Warnings:
- BalSmart will warn you in advance if stream data exceeds specified limits (e.g., particle size, flows, densities, etc.).
- If the grades or recoveries are outside required bounds, it will also warn you.

### The Benchmark in Mass Balancing Software:
- Investigate opportunities for plant improvement.
- Stop tracking your valuables using unreliable spreadsheets.
- The only mass balancing tool for the full processing plant together in one package.
- Super fast data entry – copy & paste assay results direct from Microsoft Excel (and other systems).
- No more tricky data smoothing calculations – BalSmart automatically identifies and removes bad data from your data set.
- No more time wasted doing mass balancing reports. Reports in PDF in your company’s format. Reports include tables & graphs; Excel compatible.
How will MetSMART help me get more from my **EXPERT CONTROL SYSTEM**?

**1. METSMART IS CAPABLE OF A BROADER RANGE OF TASKS THAN THE EXPERT SYSTEM**

MetSMART guides the human engineering decisions on the plant – the decisions that an Expert System cannot make.

**2. METSMART CAN IMPROVE PROCESSING DECISIONS BY ANALYZING IMPORTANT FACTORS, WHICH THE EXPERT SYSTEM DOES NOT TAKE INTO ACCOUNT**

Expert systems do not take into account factors they cannot measure. Some factors, critical to the plant’s performance, can only be modelled, but not accurately measured – for example, slurry pooling in the SAG mill and recirculating loads around cyclones. MetSMART models these factors, while the expert system cannot.

**3. MASS BALANCING CAPABILITIES**

While samples can be taken around the plant to measure assay and sizing information, it is not always possible to measure every stream. Calculating missing stream properties can be difficult – especially in recycle circuits. MetSmart’s Mass Balancing module, BalSMART calculates this information quickly and easily. Expert systems are not capable of Mass balancing, while MetSmart is.

**4. MORE COMPREHENSIVE OPERATOR TRAINING SYSTEM (“OTS”) CAPABILITIES**

MetSMART has excellent application as a teaching tool - clearly demonstrating to your team the downstream effects of changes they make in plant variables - from feed ore through to grinding ball size, cyclone characteristics through to flotation reagents and residence times.

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**CONTACT US**

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