Metallurgical Balance System for Codelco Teniente

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Codelco, Chile

Sigmafine Users Conference
San Francisco, April 26, 2010
THE CODELCO TENIENTE MINING DEPOSIT IS LOCATED IN CHILE’S SIXTH REGION, 40 KM. OF RANCAGUA CITY, AT 2,900 msnm OF MEDIUM ALTITUDE

ITS MAIN PRODUCTION LINES ARE BASED IN:

SULFUR LINE
• Copper Concentrate.
• Molybdenum Concentrate
Architecture and Localization of the PI System as of October 2009

750 Users
In all Divisions and Subsidiaries

APPLICATIONS (950)
Production data used for:
- Reports
- Balances (SIGMAFINE)
- Project Evaluation
- Maintenance
- SAP-PM
- Loss Analysis
- Environmental Monitoring
- Alarms Management
- Performance Support
- Training
- Advance and Expert Control
- RT Portal and Web

250,000 Tag’s

Historians (28)
Metallurgical Balances (3)
- C.Norte
- Andina
- Teniente (Visiant Pimsoft)

SAP PM. (2)
- C.Norte
- Andina

MINERA GABY

API-NODE (42)

INTERFACES (16)
Metallurgical Balance System for Codelco Teniente
Production Balance and Data Reconciliation

Application to create Metallurgical Production Balances to be used in Metallurgical Accounting and in which the data used in the balance is analyzed against historical reconciled values.

Which is the correct tonnage?

555 tpd Cu
435 tpd Cu

More Data ==> Statistical Reconciliation

Additional (redundant) data
0.95 % Cu  0.75 % Cu
5.8 tpd Mo  5.8 tpd Mo
0.01 % Mo  0.01 % Mo
58,000 tpd  58,000 tpd
What is a Metallurgical Balance and what is its purpose?

The Metallurgical Balance is a management tool used by financial accounting, mining, metallurgical and operational department personnel. This balance allows determination in consolidated form of:

✓ Official production numbers.
✓ Quantity, availability and value of material in inventories.
✓ Production and environmental strategies.
✓ Management analysis.

Can a Metallurgical Balance increase profit?

Yes, by making successive corrections to the problem areas by reduction in losses, improvement in efficiency, and real quantification of material in stock.

All this is translated into “effective metallurgical and operational management”
What do we hope to have in a Balance System?

A System…

• THAT IS AUDITABLE

• THAT ALWAYS USES THE SAME CONCEPTS

• THAT IS BASED ONLY ON INFORMATION

• THAT CAN NOT BE MANIPULATED

• THAT ITS PROCEDURES ARE ALIGNED WITH METALLURGICAL PRACTICES
What Was Implemented

IMPLEMENTED STRUCTURE AND INFORMATION FLOW

LABORATORY ANALYSIS

PROM 24 WORKSHEET

GOALS

TOLERANCES

MODELING FACTORS

SIGMAFINE

REPORTS

TXTs y DBFs Reports

App Routine

SIC_USPP

App Information

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Original in Spanish "Factores Moldeo"
Assumed it was a typo and the correct version is "Factores Modelo", which translate to "Modeling Factor"
Ereguera, 4/12/2010
Project Abstract

STANDARD PLATFORM

REPORTING

MODEL

DATA COLLECTION

DATA ENTRY
SIMILAR OPERATION TO ACTUAL SYSTEM
SAME ACTUAL REPORTS
COMPATABILITY WITH OTHER SYSTEMS IN THE DIVISION
Analysis and Evaluation

Metric Tons of Grinded Mineral for Nov-08 Feb-09
“Official Balance“

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%Cu in Grinded Mineral for Nov-08 Feb-09
“Official Balance“
Analysis and Evaluation

RG. Plants Recovery
“Official Balance“

Recovery

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Thank you