Triple Point Technology, Inc.

Designing, Using, Monitoring and Retrofitting Metal Accounting Systems
A short course proposal for the 48th Annual Canadian Mineral Processors Operators Conference

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Designing, Using, Monitoring and Retrofitting Metal Accounting Systems

Title

Designing, Using, Monitoring and Retrofitting Metal Accounting Systems

Course Language

English

Instructors

Name	Role (Both instructors are involved hands-on with their respective sections)
Luc Lachance luc.lachance@tpt.com (lead instructor)	• Measurement chain in metal accounting • Metal balancing (data reconciliation) • Data collection and management • More case studies: Tracking in-process inventories
Donald Leroux donald.leroux@tpt.com	• Introduction • Managing the metal accounting full lifecycle • Wrap-up and conclusions

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Qualifications and demonstrable expertise

Name	Qualifications and demonstrable expertise
Luc Lachance Principal Researcher luc.lachance@tpt.com (lead instructor)	Since he joined Triple Point Technology (formerly Algosys) in 2007, Luc has been involved with the design, development and testing of innovative algorithms and features implemented in Algosys Bilmat and Algosys Metallurgical Accountant. Moreover, he has been proactive in evangelizing how such tools can sustain best practices in metal accounting through the publication of over 20 technical papers both in mineral processing journals and conferences over the last ten years. Luc obtained a Ph.D. degree from Laval University in 2007 for his research work on data reconciliation.
Donald Leroux Business Head – Metal Accounting donald.leroux@tpt.com	

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Course Length

This proposal is for a full-day (8 hours) course.

Objectives

- Gain a holistic perspective about metal accounting through its three main components:
    - People
    - Hardware
    - Software
- Learn the best practices of metal accounting applicable both when designing a brand new plant or when considering upgrading an actual plant
- Benchmark your current metal accounting practices against best practices

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Description

This short course emphasises the systematic design/monitoring/retrofit of metal accounting systems based on state of the art practices. This allows compliance with applicable legislations while providing a framework where business risks can be managed thereby avoiding disastrous financial losses (related with metal accounting poor practices) that has been reported in the past. A distinctive holistic approach is adopted herein where the three main components of metal accounting are covered: people, hardware and software thereby making explicit all features that must be managed. The hardware root causes behind measurement errors are unraveled through the review of various measurement equipment. This enables reviewing strategies for avoiding/minimising measurement and software biases as well as for variance control. The importance of software redundancy and measurement error modeling is stressed through the use of statistical data reconciliation. Several common pitfalls related with data reconciliation are examined as well as necessary conditions for the approval of metal accounts. The integration of metal accounting results including the sensitivity analysis with other business processes is also covered to show how measurement errors, far from vanishing into the depths of data processing, are rather transmuted into business risks. Several case studies are included in order to illustrate good, bad and poor practices occurring either in the mineral processing or smelting of different base and precious metals.

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Outline

- **Introduction**   **(30 minutes)**
    - Tasks included in metallurgical accounting
    - Evolution of metallurgical accounting
    - Relations with other business processes (production planning, trading, etc.)
    - What should be expected from a state of the art metallurgical accounting system?

- **Measurement chain in metal accounting**   **(120 minutes)**
    - Mass measurement
    - Sampling
    - Sample management
    - Sample analysis
    - Several case studies

- **Data collection and management**   **(30 minutes)**
    - Issues with common spreadsheets (Needs for a relational database based system)
    - Provisory data versus approved/official numbers

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- **Metal balancing (data reconciliation)**   **(120 minutes)**
    - Critical review of non state of the art approaches (n-product formula, etc.)
    - Importance of estimability and redundancy analysis
    - How to assess and bring redundancy
    - Criteria (and pitfalls) for report approval
    - Statistical data reconciliation
    - Sensitivity analysis (variables and KPIs)
    - Examples and cases studies

- **More case studies: Tracking in-process inventories**   **(60 minutes)**
    - Review of different inventories: tanks, bins, stockpiles, heap, etc.
    - Review of three different estimation methods
    - Best practices for in-process inventories accounting

- **Managing the metal accounting full lifecycle**   **(60 minutes)**
    - Issues to be considered when designing
    - Issues to be considered when using
    - Issues to be considered when monitoring
    - Issues to be considered when retrofitting

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- **Wrap-up and conclusions**   **(30 minutes)**
  - Synthesis of main issues and their practical solutions
  - Synthesis exercices
  - What's next

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Course Products/Course Materials

Hardcopy of slides along with pens will be provided for taking notes.
We will do the production/reproduction.

Audio-Visual

We need audio-visual equipment to display our slides.
We will provide our own computer.

Cost Estimate

Item	Value
Course material	200 $
Course preparation	1800 $
Total	2000 $

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Special Needs

A white board (or a flipchart) will also be required for capturing questions and comments, and providing detailed explanations on request.