

Advanced Copper Smelting Technologies to Triple China Copper Production in a Decade

By Johnny Zhang

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China is forecasted to triple its copper production in one decade and to become the largest copper producer in the world by. China is also a museum with all kinds of copper smelting technology installations.

This short course will highlight the technical principles and operations updates of advanced copper smelting technologies. It will also cover recent innovations applied in many operational units such as ore preparation, smelting, converting, pyro-refining, electrolysis, SO₂ off-gas treatment, acid preparation, waste heat utilization, dust treatment and precious metals recovery.

The course is divided in three sections:

1. Flashing smelting technology;
2. Top Submerged Lance (TSL) technology; and
3. Oxygen bottom blowing smelting technology

and will describe by slides, videos and supplemental references:

- Development history, process fundamental, furnace design, installations and commercial operation cases.
- Major process performances: metal recovery, fuel-free autogenous operation, high sulfur capture and cost effective solution.
- Flowsheets, major unit operations, equipment, EPCM design, commissioning, maintenance, safety and EHS.
- Preliminary economic features, benefits, future developments.
- A comparison of all major technologies on performance, cost and environmental aspects.

The goal of this workshop is to help attendees to develop skills to manage copper smelting on all major aspects from plant design, operation, maintenance and environmental protection.

Course Contents-Subject of Topics

- Introduction to All Major Smelting Technologies
- Fundamental Studies, M&H Balances, Simulations
- Unit Operations, Equipment & Automation
- Engineering Design
- Operation & Maintenance
- Preliminary Economic Analysis
- EHS Evaluations
- Installations and Application Cases
- Preliminary Comparison of All Major Technologies
- Future Developments

Who Should Attend:

- Professionals with demanding schedules, but who are still interested in life-time learning opportunity about a modern smelting technology in a one-day course.
- Individuals with creative minds who evaluate and appreciate innovations.
- Executives who are looking for modern technologies to improve their existing smelters operations with better economic and environmental performances or new installations on greenfield,
- Managers who seek knowledge on advanced technology to improve their projects,
- Engineers who require comprehensive technology skills to complete their projects,
- Sales representatives who need the basic understanding of engineering technology to promote the sales of their products such as refractory bricks, air guns and subsequent customer service.
- Inventors who try to create new clean eco-friendly metallurgical technologies with innovative methodology,
- Academics (professors and graduate students) who conduct advanced scientific research,
- Attorneys in the fields of intellectual properties, patents, etc.

The Participant will also receive:

- CD with course material in pdf
- Certificate of completion
- Lunch and refreshments

Course Instructor Johnny Zhang, Ph.D. of Metallurgy



Dr. J. Zhang is a registered metallurgical professional engineer in Canada. In the last 20 years he has been senior process engineer at Rio Tinto, principal engineer at Teck Cominco and project leader at Sherritt Intl. As a process leader, he supervised some capital projects with contractors like AMEC, HATCH, and Worley Parsons etc. He has been a technical instructor of NI43-101 report (TSX) for Silvercorp Metals Inc., a metallurgical engineering instructor at the Central South University and University of Alberta. Previously, until 1990 he taught full-time at Central South University (CSU) and now he is a guest professor at the same university as well as a technical marketing manager for SKS technology transfer.

Dr. Zhang has been a member of TMS, IPMI, CIM and APEGGA. His research, operation and engineering design activities covered base metals, rare metals and precious metals in hydro, pyro and electrometallurgical aspects. He has authored and co-authored a number of technical and professional articles and presented lectures and reports at numerous seminars and conferences in China, Canada and U.S.

Dr. Zhang earned B.Sc. (1983), M.Sc. (1986) and Ph.D. (1992) degrees in Metallurgical Engineering from Central South University. He also conducted postdoctoral studies for the European Union projects at the University of Lisbon and University of Toronto.

REGISTRATION: <http://www.flogen.org/sips2016>