ALTA

Short Courses
course outline

Copper SX/EW Basic Principles and Detailed Plant Design

This practically oriented course has been crafted over many years by Alan Taylor, Metallurgical Consultant and Managing Director, ALTA Metallurgical Services. This course is presented as both a valuable introduction for newcomers and a useful refresher for old hands. ALTA courses are updated annually.

Participation Options

- Classroom style at ALTA conferences
- Video On-Demand, includes email interaction with course presenter
- Dedicated interactive online sessions for your team

Course Overview

- Basic Process
- Key SX functions
- Reasons for Growth
- Alternative Processes
- Organic Liquids in SX
- Typical Flowsheets
- SX Contractors
- SX Ancillary Facilities
- EW Cells
- EW Materials Handling
- EW Ancillary Facilities
- Plant Arrangement and Layout
- SX Fire Protection
- Materials of Construction
- Testwork
- Scale-Up and Design Criteria
- Plant Operation
- Performance and Risk
- Industry Trends
- Example Plant Design

Duration

The course is presented over 7.5 hours, including breaks. For CPD recording purposes, please refer to your own regulator's requirements as recognition of CPD hours may vary.

Course Materials

In-person attendees receive the hardcopy manual at registration and an electronic copy after the course. Online participants receive the electronic course manual prior to the course. The manual is valued at A$300.

Fees (Australian dollars including GST)

Classroom style at ALTA Conferences	
Delegate	$850
Discount Delegate early bird, 3+ delegates, exhibitor, sponsor	$800
Young Professional and Academic	$600
Self-Funded Delegate	$500
Student	$250

Video On-Demand	
Attendee	$595
Discount Attendee Self-funded, young professional, academic	$450
Student	$150

Course Presenter

Alan Taylor
Metallurgical Consultant and Managing Director

Detailed experience

ALTA was established by metallurgical consultant Alan Taylor in 1985 to serve the worldwide mining, minerals and metallurgical industries. Alan has 40+ years' experience in the metallurgical, mineral and chemical processing industries in Australasia, New Zealand, North and South America, Africa, Asia and Europe.

Alan draws from his extensive first-hand experience with major engineering firms and as an independent consultant. He has worked on a wide variety of projects from the late 1960s through to the present time - a period which has seen the introduction of many new technical developments.

Course Schedule	
Welcome and introduction	
Key SX functions	Simplified flowsheet Simplistic chemistry & implications Applications History
Reasons for growth	
Alternative processes	Precipitation of cement copper with scrap iron Direct electrowinning Copper powder production Copper oxide production Cuprous chloride precipitation Precipitation of copper sulphide with H2S or sodium sulphide Replacement of SX by ion exchange (IX) Replacement of EW by copper sulphate production
Organic liquids in SX	Extractants Modifiers Diluents Organic stability Organic selectivity
Break	
Typical flowsheets	SX EW Ancillary facilities: – Crud treatment – Solutions holding tank – Reagent facilities Variations in SX circuits: – Series-parallel – Split circuit
SX contractors	Mixer-Settlers: – Types used for commercial copper SX – Types used for commercial non-copper SX – Types piloted for copper SX Column contactors Centrifugal contactors
SX ancillary facilities	SX crud Clay treatment of organic Electrolyte clean-up Loaded organic clean-up Raffinate clean-up
Break	
EW cells	Principle of operation Alternative designs Anodes and cathodes
EW materials handling	Harvesting Washing and stripping Sampling, weighing, and banding

Course Schedule continued…	
EW ancillary facilities	Rectiformers Acid mist control Iron control
Plant arrangement and layout	Key considerations Various SX arrangements Various EW arrangements
SX fire protection	Industry experience Causes Fire prevention measures Fire protection systems Fire containment and risk reduction system
Materials of construction	SX area EW area
Break	
Testwork	Overall test program strategy Leach solution samples SX test procedures
Scale-up and design criteria	Recommended guidelines for scale-up Typical design criteria
Plant operation	Operating characteristics Personnel Instrumentation/controls Sampling/analytical
Performance and risk	
Industry trends	
Example plant design review (course notes only)	Plant design criteria Basic process design calculations Mixer-settler design EW cell design Tank and pond design Other equipment design Plant arrangement Engineering notes Equipment list Design sketches