CEEC
THE FUTURE

The Future of Comminution Workshop

Program

Presented By
CEEC International: Coalition for Minerals Efficiency

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About
CEEC International

CEEC International was established in 2011 by a group of mining industry leaders, who recognised the need to provide a platform for effective communication of the latest technical findings on efficient comminution practices. Extensive research and improved engineering design has established that a range of improved blasting, crushing and grinding techniques may lower project costs, and improve energy efficiency.

In 2022, CEEC International rebranded to demonstrate the growth in their purpose. CEEC International: Coalition for Minerals Efficiency, is not only focused on reducing energy consumption in comminution, but also water consumption, tailings management and GHG emissions.

Our Mission

To accelerate the adoption of eco-efficient minerals and metals production practices.

Our Vision

CEEC's vision is to support the global resources sector to provide the minerals and metals for society with the lowest impact, including water, emissions and wastes. We will do this through knowledge sharing, cross-sector collaboration, and advocacy of eco-efficient practices.

CEEC International is a unique global initiative, providing access to research findings, analytical tools, site information and innovations. CEEC exists to facilitate and accelerate information, knowledge, and technology transfer with the objective of reducing energy consumption, water consumption and other impacts associated with the mining, processing, and refining of minerals. CEEC is an independent not-for-profit registered charity led by our volunteer networks for the benefit of society.

CEEC aims to improve eco efficient practices through:

- acquiring and disseminating knowledge on practices and research;
- facilitating a reduction in carbon and other emissions, improve water efficiency and reduce tailings production;
- playing a leadership role in promoting positive changes in the resources sector internationally;
- Establishing forums for open and candid exchange of views and experiences.

Program
Overview

Summary

The Future of Comminution Workshop will bring together industry professionals, researchers, and technology innovators to explore emerging and existing comminution technologies. With a focus on energy efficiency, water conservation, and sustainable practices, the event aims to evaluate these technologies across three key horizons: Now (proven and operational), New (in testing or pilot phases), and Next (under active research and development). Attendees will engage in interactive sessions to rank technologies based on their potential impact and applicability, with the results forming a comprehensive roadmap to guide the future of comminution innovation.

- Energy Curves Tool
- Technology Mapping
- Ranking Exercise
- Prioritising Technologies

Keynote
Malcolm Powell

Emeritus Professor (FAusIMM, FSAIMM)
Sustainable Minerals Institute
University of Queensland

Emeritus Professor Malcolm Powell has dedicated over 40 years to advancing comminution research and its application in mine design and process improvement. His work has influenced more than 70 mining operations worldwide, spanning roles at Mintek, the Centre for Minerals Research at the University of Cape Town, and as Professor of Comminution at the University of Queensland.

Malcolm has supervised over 30 postgraduate students and led numerous collaborative research initiatives, including AMIRA P9, CSRP, and CRC ORE programs. He also founded the Anglo American Centre for Sustainable Comminution. A prolific contributor to the field, he has published over 240 papers and presented at conferences across the globe.

In 2012, Malcolm established the Global Comminution Collaborative, bringing together leading researchers across five continents to drive innovation in comminution. His research focuses on integrated process simulation, linking geology, mining, energy, size reduction, gangue rejection, and recovery to develop flexible and optimized processing solutions. Through his research companies, he applies advanced modeling techniques and fracture mechanics to develop highly energy-efficient, low-impact comminution technologies for the future.

Keynote Speakers

Professor,
University of British Columbia

Bern Klein has dedicated his career to advancing mineral processing technologies, with a focus on energy efficiency and sustainability in mining. From 1990 to 1998, he worked as a design engineer on approximately 300 metallurgical studies, developing processes for base metals, precious metals, and industrial minerals. His expertise spans comminution, gravity concentration, magnetic separation, flotation, leaching, solid-liquid separation, and effluent treatment. These studies supported a wide range of clients, from junior exploration companies to major international mining firms, on projects across the globe.

In November 1997, Bern joined the Department of Mining and Mineral Process Engineering at the University of British Columbia (UBC), where he taught courses in Comminution and Size Classification, Processing of Precious Metal Ores, Mineral Process Design, and Rheology of Mineral Suspensions. In 1999, he led the establishment of the Centre for Industrial Minerals Innovations with support from the Canada Foundation for Innovation. He served as Graduate Advisor for the Mining Department from 1999 to 2008 and later as Department Head from 2008 to 2014.

In 2013, Bern spearheaded a UBC proposal to create the Canadian International Resources and Development Institute (CIRDI) and served as Acting Executive Director to launch the institute from September 2013 to April 2014. His research focuses on technology and innovation to enhance energy efficiency and reduce the environmental footprint of mining operations. This work led to the creation of MineSense Technologies Ltd, a pioneering startup that has developed novel sensor-based sorting systems to optimize mineral processing in the mining industry.

Workshop
Schedule

Time	Program
9:00 AM	Welcome
9:10 AM	Energy Curves & Tool Introduction
10:10 AM	Mapping Set Up
10:25 AM	BREAK
10:40 AM	Technology Mapping: Now, New, Next
11:40 AM	Keynote Speaker and Q&A
12:10 PM	LUNCH
1:00 PM	Multi-Criteria Ranking Exercise
1:45 PM	Keynote Speaker and Q&A
2:15 PM	BREAK
2:30 PM	Group Discussion: Prioritising Technologies
3:15 PM	Closing Remarks

Contact Information

For any questions about the workshop, please reach out to:

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