



# OUTOTEC BACKFILL SOLUTIONS

**Mine backfill – using mine tailings, waste rock, or other materials mixed with water and cement to fill mined areas – combines sustainable tailings management with effective, safe mining processing. It provides passive support and allows extraction of a greater proportion of the mine resource. Our cooperative approach provides you with the best possible solution and service support in terms of technology and system design, with leading equipment tailored to your needs.**

## BENEFITS

- Sustainable, environmental friendly tailings management
- Increased operational safety
- Possibility to extract more ore
- Customized plant solutions focused on Opex and Capex optimization
- System design with process guarantee



## BACKFILL SOLUTIONS

### Customer value

Backfill increases extraction

- Well-designed backfill maximizes and facilitates ore extraction and mine production

Backfill is an environmental friendly solution for tailings

- Underground tailing storage means no big footprint on land
- Increased direct-water recovery compared with conventional disposal
- Minimized groundwater contamination due to binder addition
- Reduced oxidation rates for pyritic tailings

Backfill increases safety

- Increased mine stability due to confining pillars
- Prevents roof falls from blasting
- Improved ventilation circuit in the mine

### Defining the objective of backfill

- Identify all risks and technically feasible solutions
- Identify the most cost-effective, technically feasible solution based on mining method and mine life cycle

### Solution design factors

- Mass balance and source material availability
- Production rate and mining process strategy
- Strength requirement:
  - Bond strength
  - Bearing capacity
  - Confined compressive stiffness
- Capex and Opex factors

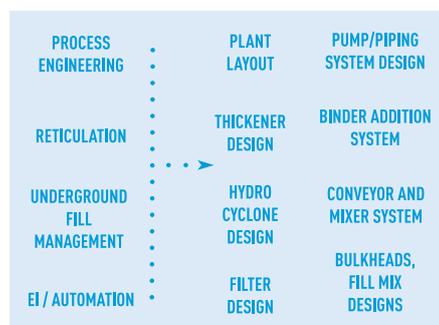
### Life-cycle solutions from scoping studies to plant operation and maintenance

- Solutions to your processing challenges developed at our own laboratories; on-site testing when required
- Engineering capability in all disciplines to support a complete system design
- Full project implementation, from equipment delivery and construction to commissioning and start-up
- Strong track record in provision of operations and maintenance support

#### TEST WORK AND ANALYSIS



#### SYSTEM DESIGN



#### PROJECT IMPLEMENTATION





## OPTIMIZED BACKFILL SOLUTIONS

- Full suite of testing facilities and laboratory resources
- Conceptual and feasibility study capability
- EP and EPC or turnkey implementation
- Service solutions for operation and maintenance

Our mission is to take a holistic approach to every project with a top-down design philosophy. We focus on creating the best-value design for each individual customer using the latest technology and our experience from previous successful projects.

Outotec is the world leader in backfill system design and operation, and we use this experience and our innovative approach to provide our customers with world-class backfill systems.

### Primary equipment

- Thickener dewatering
- Filter dewatering
- Binder addition
- Mixer
- Pump system
- Pipe system

## APPLICATIONS AND SERVICES

### Applications

The Outotec backfill solution combines best process and layout practices for mine backfill applications. Our goal is to deliver the most cost effective solution for the entire mine life cycle. Our plant solutions are suitable for almost any application, including:

- Iron ores
- Copper
- Nickel
- Gold
- Zinc
- Coal

### Services

Testing and laboratory service

- Our industry-leading testing and laboratory capabilities play a vital role in ensuring the best-value solution for each individual customer.

Engineering service

- We have all the necessary engineering capabilities to deliver everything from large-scale EPC projects to smaller-scale plant-optimization services.

Operation and maintenance service

- Our services cover everything from spare parts and inspections to a complete operations and maintenance service.

### Sustainability

- Underground tailings storage reduces surface storage footprint
- Backfill maximizes ore production
- Backfill improves mine support to maximize safety

# Outotec

Outotec provides leading technologies and services for the sustainable use of Earth's natural resources. As the global leader in minerals and metals processing technology, we have developed many breakthrough technologies over the decades for our customers in metals and mining industry. We also provide innovative solutions for industrial water treatment, the utilization of alternative energy sources and the chemical industry. Outotec shares are listed on NASDAQ OMX Helsinki. [www.outotec.com](http://www.outotec.com)