HATCH

PROJECT DELIVERY GROUP

BULK MATERIALS HANDLING

The materials handling systems (8,800 tph) designed and construction managed by Hatch for the Escondida Norte & E3 project in Chile included a new primary crusher station, overland and distribution conveyors and surge and distribution silos

Industrial operations that rely heavily on bulk materials handling equipment place high demands on its reliability, performance and productivity. Engineering behind successful bulk materials handling systems is driven primarily by technological advances and innovative, functional, and purpose-built design.

Hatch has the advantage of being able to draw on a range of complementary engineering disciplines from mechanical, electrical and structural engineering to process, civil and piping engineering specialists. Combined with knowledge of resource operations and expertise in the flow of bulk solids, our service offerings extend to the design of productive, relatively low-risk materials handling facilities. Safety, robustness, simplicity of operation, and functional design using proven technology are key principles.

We understand the crucial link between handling, processing, storage systems and transport design to maximize efficiency and productivity. Hatch's experience includes comminution; conveying; stockpiling and stacking; loading and unloading; and sampling systems.

COMMINUTION

Hatch provides a complete process design capability including comminution optimization and mineral processing, which forms an integral part of mining and pre-preparation of ore. Our experience includes the design of:

- Primary, secondary and tertiary crushing systems; fixed, mobile and semi-mobile, in-pit, pit rim and in-plant
- Material sizing and screening systems, wet and dry, open and closed circuit
- Material separation systems, such as jigs, magnetic separators, tables, flotation
- Milling, scrubbing and cyclone separation.

CONVEYING

Conveying systems are the mainstay of bulk materials handling. Hatch designs conveying systems with emphasis on safety, environment, operability, maintainability and cost effectiveness. We have designed and installed single conveyor systems with capacities up to 12,500 tph, multiple conveyor systems above 20,000 tph, 2,000-kW single and 4,800-kW multi-drive heads, horizontal curves and bi-directional transport. Our studies have involved single conveyors up to 12 MW and 15 km long, and systems that integrate conveyors, road, rail and shipping for extended transport of bulk materials. We undertake assessments of conveying versus other methods of transport such as road, rail, and/or barge, and with different conveying systems.

CONTACT

Peter Saxby

Tel: +61 7 3166 7447

psaxby@hatch.com.au

HATCH

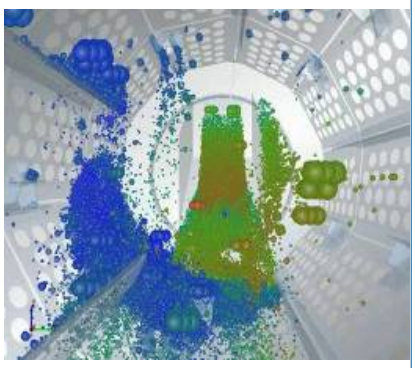
PROJECT DELIVERY GROUP

BULK MATERIALS HANDLING CONTINUED

STOCKPILING AND STACKING

A knowledge of blending and homogenization of low-grade ores with high-grade ores is critical to achieve the most economical feed for plants or to balance stockpile grades for outloading to ships. Our design experience includes stacking and reclaiming techniques; designing and construction of complex storage, blending and homogenization facilities; and open and covered mining and industrial operations.

We design stockpile systems, featuring inventory control, control of material degradation, yard drainage and sediment separation. Dust control systems are tailored to the materials and methods of materials handling. Hatch understands the importance of size and configuration of stockpile withdrawal systems, and works with organizations such as TUNRA and Jenike & Johanson to assess materials and model the systems using computers and scale models.

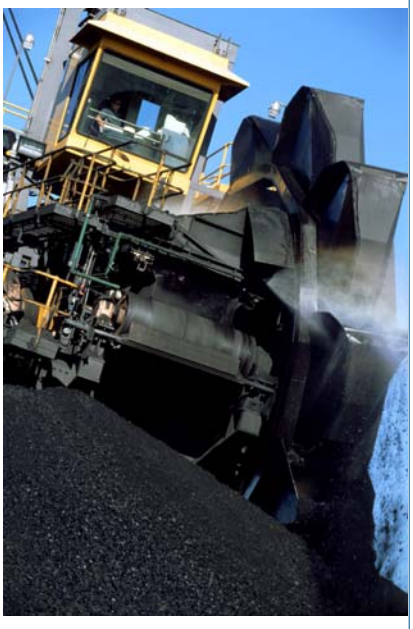


A screenshot from the discrete element modeling (DEM) software of the rotary breaker for BHP Billiton's West Cliff Colliery in Australia, to assess breaker capacity through simulation and visualization

LOADING AND UNLOADING

Knowledge of rail loading and unloading, truck filling and dumping stations, and the interaction between all the individual components are essential to minimize problems such as spillage and sequence overlaps. Hatch undertakes projects that require knowledge of effective utilization and implementation, combined with design skills of continuous rail loading and unloading systems and wagon trimming devices. This includes rail tippers and bottom dump rail unloading systems. Our experience also includes the loading and unloading of road vehicles and road trains for transport of bulk product, and specialized container shipments of difficult materials.

Hatch's leadership position in shiploading and unloading is underpinned by a knowledge of the operations, bulk materials and supply chain capacity, loading points, planning and scheduling, and capacity constraints. Our experience includes both the design of new systems and the refurbishment and upgrade of existing systems. Hatch's close involvement in the expansion of the Australian coal industry has led to valuable experience in shiploading facilities. Hatch, together with joint-venture partners, has been involved in every major coal export terminal development on the eastern seaboard of Australia.



Stockpile capacity and layout are key to determine capital cost and component capacities. For the Dalrymple Bay Coal Terminal 7X in Australia, Hatch used simulation tools to optimize the stacker reclaimers

SAMPLING SYSTEMS

Hatch's experience includes the integration of sampling, weighing and proportioning systems into the material/product handling process. Our team understand the issues associated with obtaining accurate and repeatable weight indication for process and stockpile control.