



# OPEN CAST MINING EQUIPMENT

Optimal Solutions & Technologies

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## PRODUCTS AND SERVICES

### Mining Systems and Equipment

- Complete Mining Systems
- Bucket Wheel Excavators
- Bucket Chain Excavators
- Crushing Plants
- Apron Feeders
- Belt Conveyors
- Belt Feeders
- Belt Wagons
- Mobile Conveyor Bridges
- Spreaders
- Transport Crawlers
- Cable Reel Cars
- Shifting Heads

### Minerals Processing Equipment

- Roll Crushers
- Sizers
- High Pressure Grinding Rolls (HPGR)
- DELKOR Thickeners
- DELKOR Horizontal Vacuum Belt Filters
- DELKOR F.A.S.T. Filter Press
- DELKOR BQR Flotation Cells
- DELKOR Belt Linear Screens
- DELKOR Apic Jigs

### Bulk Material Handling Systems and Equipment

- Stockyard and Disposal Facilities
- Reclaimers
- Scrapers
- Stackers
- Combined Stacker/Reclaimers
- Wagon unloading
- Wagon/truck loading
- Belt Conveyors
- Tube/Pipe Conveyors
- Ship Loaders
- Ship Unloaders

### Services and Components

- Project Development Services
- Fabrication and Components
- Construction and Commissioning
- Technical Services and Spare Parts



TAKRAF, a Tenova company, is an integrated solutions provider to the global mining, bulk material handling, minerals processing and beneficiation industries, offering innovative technological solutions as well as process and commodity knowledge along the industry value chains. With the integration of the well-known DELKOR and Tenova Advanced Technologies (formerly Bateman Advanced Technologies) brand of products into TAKRAF as specialized product lines, our portfolio for the minerals processing and beneficiation sectors has been considerably enhanced.

TAKRAF is a key supplier of equipment and systems for open pit mining and bulk handling, having provided hundreds of complete systems, as well as individual machines, to clients all over the world. Based upon more than a century of experience and know-how, the product range stretches from overburden removal, raw material extraction, conveying, processing, comminution, homogenizing, blending and storage to onward transport or shipment.

TAKRAF provides the full range of services, from project studies, planning, engineering and design to fabrication, supply, erection and commissioning, technical assistance, service and after-sales service for plants, systems and equipment. Its equipment has proved robust and reliable in adverse geological conditions, in extreme climates with temperatures down to minus 45°C, in dust, wind or extreme humidity, as well as in seismic zones and altitudes of up to 5,000 m above sea level or in underground applications.

TAKRAF has committed to both environmental and social sustainability in their business interactions and has adopted a Zero harm approach to safety under the SAFETY FIRST promise of Tenova.



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## OPEN CAST MINING EQUIPMENT

TAKRAF is one of the world's leading suppliers in the fields of mining and handling of coal, ore and other minerals, as well as removal, transport and dumping of overburden.

Our machines and systems have proved to be reliable in mining hard minerals, even under extreme operating conditions.

The extensive know-how of our highly qualified engineers creates a solid foundation for the engineering and construction of such machinery.

Rapid delivery and constant high quality are guaranteed by TAKRAF's policy of close cooperation with the clients and decades of experience, engineering, design and fabrication of surface mining equipment and systems.





It was back in 1924 that TAKRAF supplied the first overburden conveyor bridge to the surface mine at Plessa in Germany.

The first bucket-wheel excavators developed and produced by TAKRAF were delivered to the Consolidated Diamond Mines in Namibia in 1926.

Nowadays, more than 50% of the world's lignite production is mined with TAKRAF equipment.

The combination of know-how and the large number of completed machines and systems coupled with constant orientation to state-of-the-art design assure that optimum technology and equipment can be offered for the different geological situations.



## OPEN CAST MINING EQUIPMENT - PRODUCT RANGE

TAKRAF supplies complete open cast mining systems

- Bucket wheel excavators
- Bucket chain excavators
- Mobile transfer conveyors
- Belt conveyors (curved, shiftable, inclined, etc.)
- Tripper cars
- Spreaders/Cross-pit spreaders
- Mobile Conveyor bridges
- Mobile and semi-mobile crushing stations
- Transport crawlers
- Heap-Leach Systems
- Auxiliary surface mining and reclamation equipment



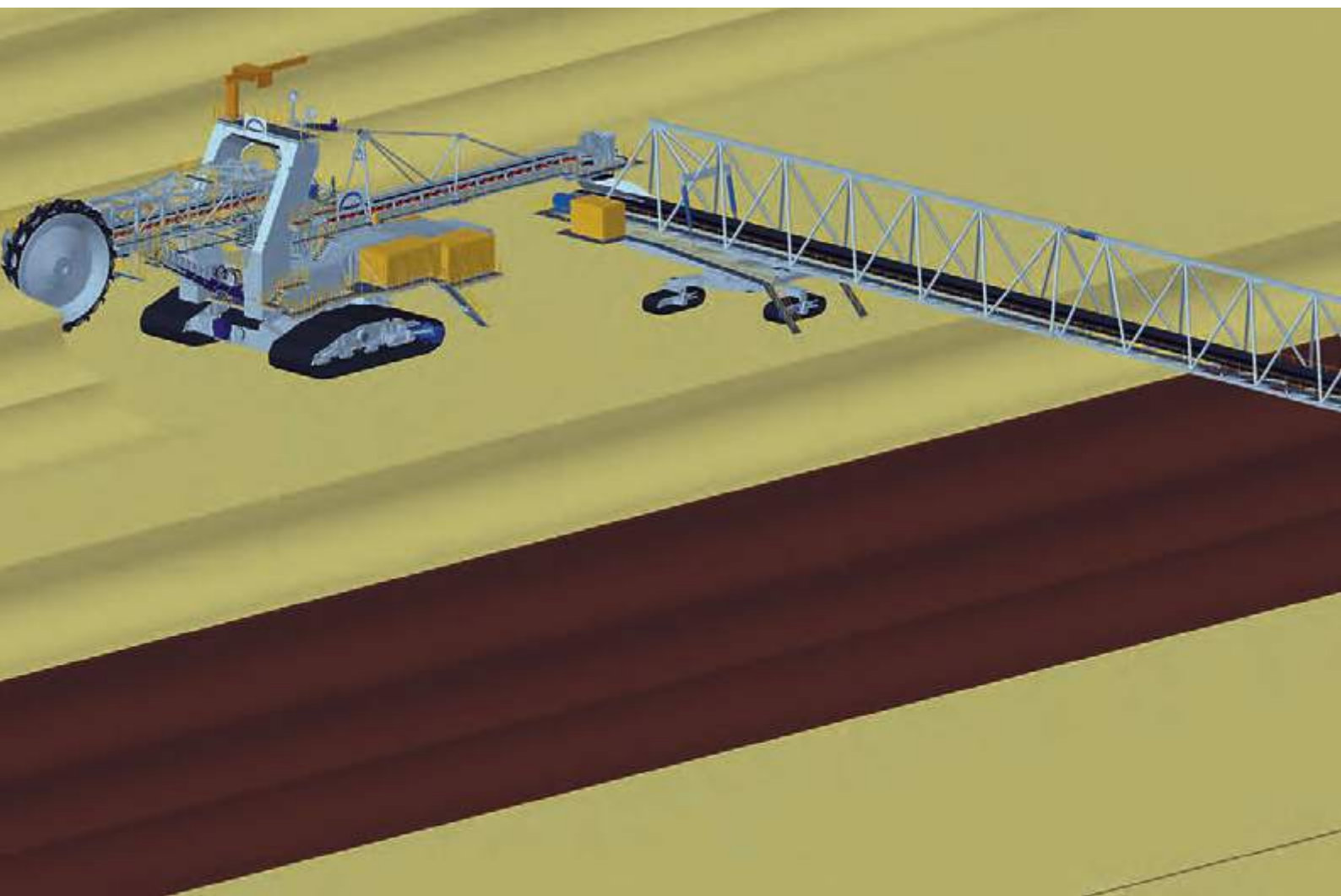


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## OPEN CAST MINING EQUIPMENT

Depending on their size, TAKRAF's newly developed compact bucket wheel excavators (BWEs) can achieve capacities of up to 75,000 m<sup>3</sup> per day.

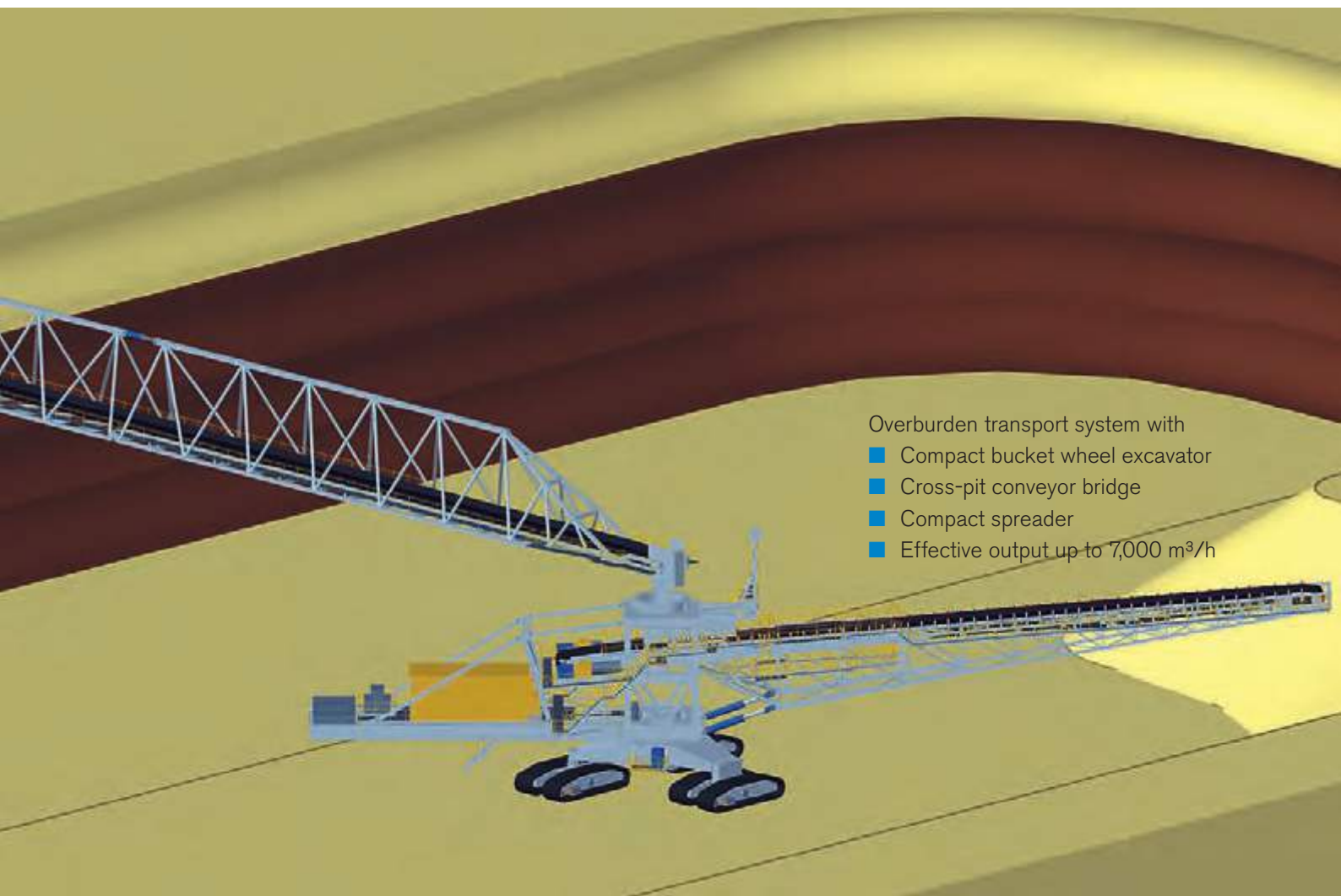
Our line-up of models in the large and giant BWE class offers daily capacities of up to 240,000 bank m<sup>3</sup>.





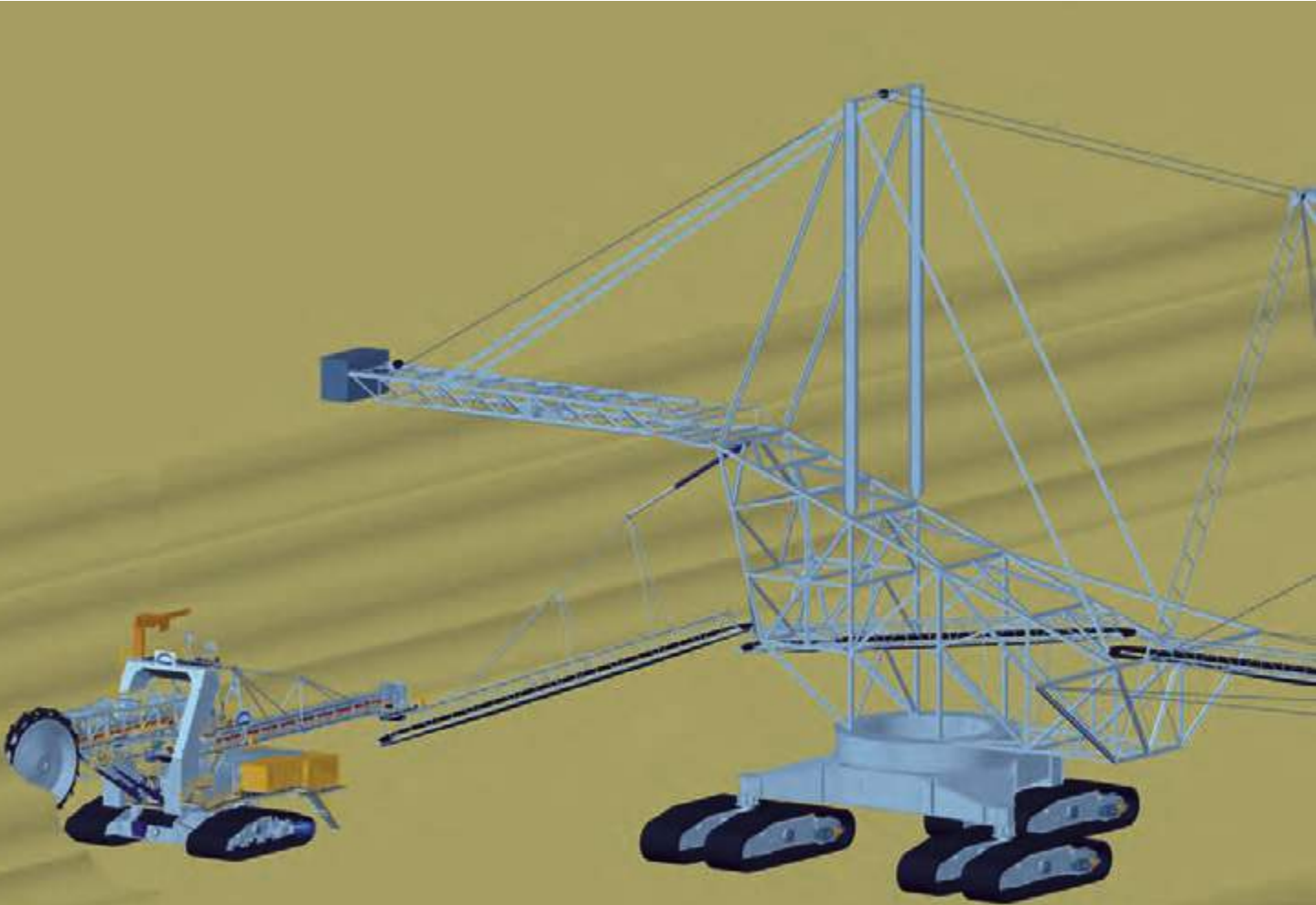
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A large variety of possible combinations of these machines with individually matched spreaders and belt conveyor systems, as well as cross-pit spreaders, ensures efficient, cost-saving operations.



- Overburden transport system with
- Compact bucket wheel excavator
  - Cross-pit conveyor bridge
  - Compact spreader
  - Effective output up to 7,000 m<sup>3</sup>/h

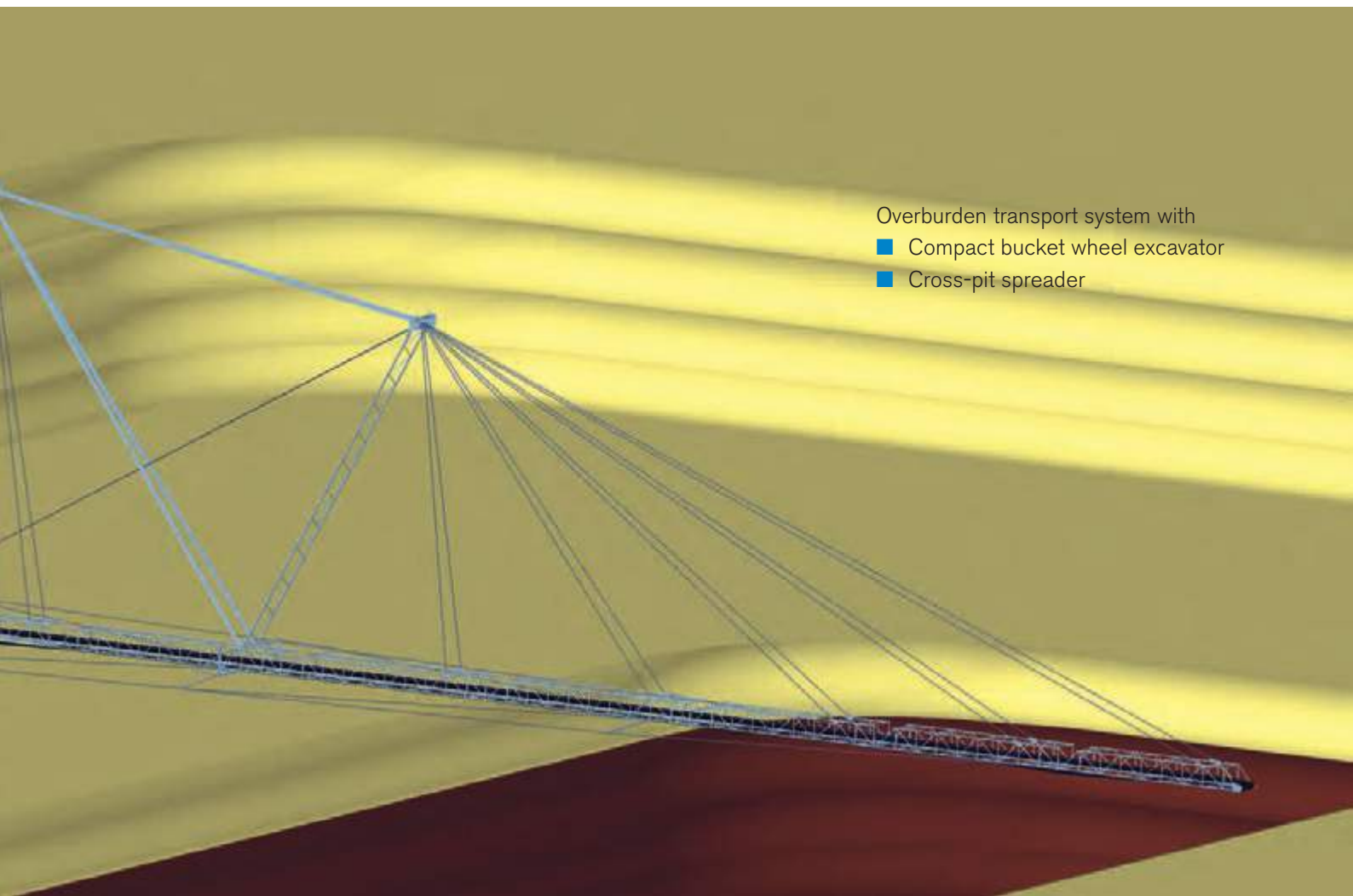
Up to 240,000 bank m<sup>3</sup> of overburden per day can be shifted in cross-pit operation using various combinations of our machines.



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Furthermore, TAKRAF machinery has proved to be highly reliable under toughest geological and climatic conditions and working environments.

All units, systems and plants can be supplied for use in low-temperature areas down to  $-45^{\circ}\text{C}$  minimum.



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TAKRAF systems guarantee the following benefits to the client:

- optimum adaptation to the geological and technical requirements of earthworks and surface mining operations with our in-house R & D capacities
- optimum investment costs
- use of proven and standardized structural components
- high availability
- simple maintenance
- low operating costs



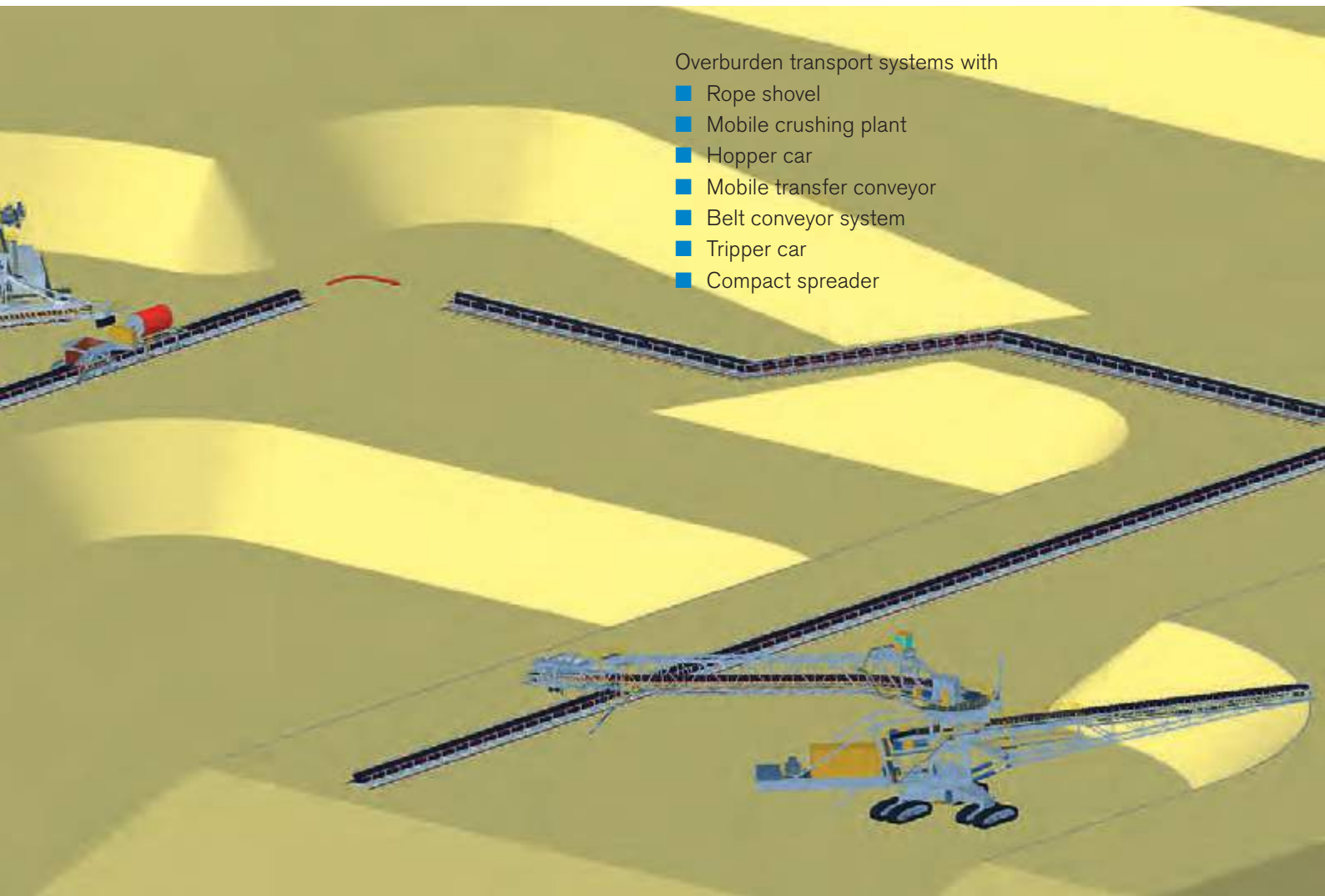
We offer project studies on:

- complete new surface mining operations
- expansion and modernisation of existing surface mines
- refurbishment of surface mining installations
- conversion and transfer of mining systems

Optimum combinations of machinery for surface mines with:

- cross-pit operation
- belt conveyor operation
- conveyor bridge operation

The design focus on low maintenance and operational expenses for our plant and machine systems, our comprehensive service and the short delivery times of spare parts assure that TAKRAF equipment is economical and can work efficiently and reliably year after year.



Overburden transport systems with

- Rope shovel
- Mobile crushing plant
- Hopper car
- Mobile transfer conveyor
- Belt conveyor system
- Tripper car
- Compact spreader





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