CASE STUDY

Braking systems for coal terminal conveyors, iron ore mine and port conveyors

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Svendborg Brakes®
Altra Industrial Motion

Braking systems for coal terminal conveyors, iron ore mine and port conveyors

Svendborg BSFI 200 Series and BSFI 3000 Series brakes have been chosen for use by WICET and the Roy Hill iron ore mine, both in Australia.

Wiggins Island Coal Export Terminal (WICET) in Queensland, Australia.

WICET CASE STUDY

Svendborg Brakes was selected to provide conveyor braking solutions for use throughout the Wiggins Island Coal Export Terminal (WICET) in Queensland, Australia. The $2.6 billion, state-of-the-art facility will initially provide 27 million tonnes of coal per year for export.

The first stage of the massive complex includes a 920 m (1,006 yds.) long x 240 m (262 yds.) wide stockyard that can accommodate twelve 18m (19.5 yds.) high stockpiles for total on-ground storage of 1.85 mt. Four reclaim conveyors, with 2,000 mm (78 in.) belts running at 5.9 m/s, each move 6,900 tph. An overhead gantry stacker is also utilized.

The port area features a jetty conveyor that transports coal 2 km (1.24 miles) from shore to the shiploading wharf. Another conveyor moves the coal along the length of the wharf to feed the shiploader that has a maximum loading capacity of 8,500 tph. All elevated conveyors and overwater conveyors are covered with a wall on the windward side and a floor for dust control.

BSFI 200 Series and 3000 Series spring-applied, hydraulic ally released brakes. were used at WICET.

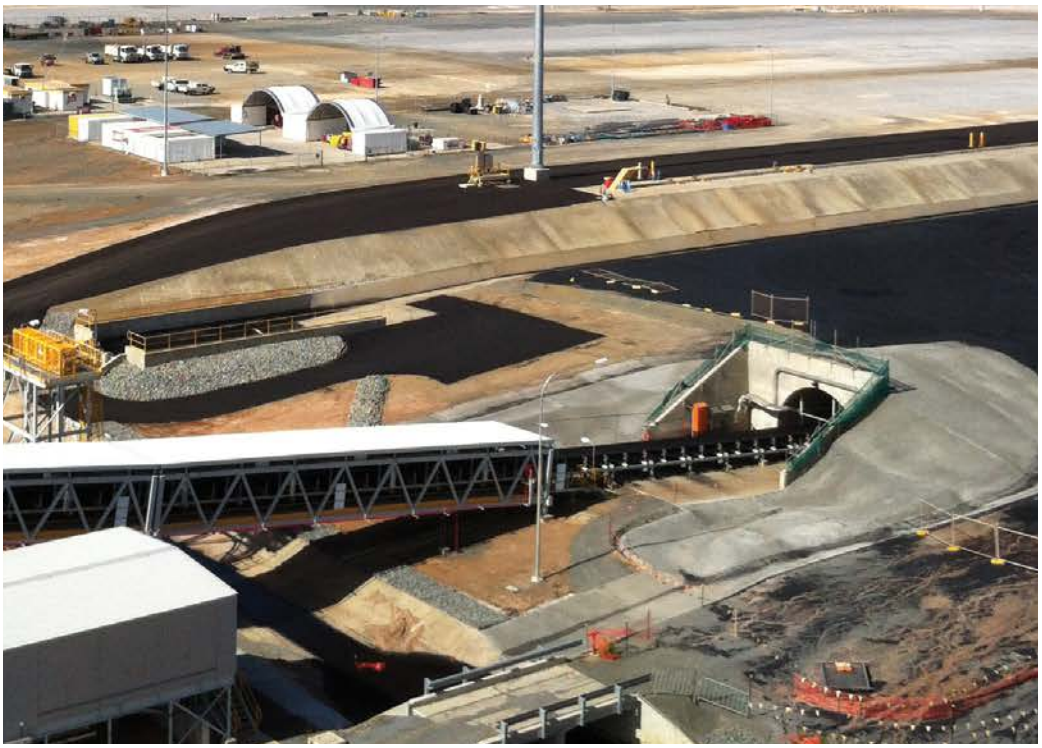
The large shiploader utilizes a series of cable winches that raise and lower the boom, extend and retract the shuttle along the boom, and raise and lower the operator's cabin.

Svendborg Brakes was chosen as the predominant braking system provider for the facility based on their quality, reliability and proven history of successful coal terminal installations throughout New South Wales and Queensland.

BSFI 200 Series and 3000 Series spring-applied, hydraulically-released brakes provide parking and emergency stopping functionality in case of power failure. The brake spring packs are sized to suit the individual specific braking torque requirements of the specific application. The brakes feature indicators that detect and monitor brake pad wear, brake on/off status and brake lining temperature.

Manufactured in-house, Svendborg Brakes' specialized hydraulic power units are engineered to perform in tough mining applications. The units are equipped to monitor oil level and temperature, motor and pump function, and operational pressure.

Svendborg Brakes technologies were incorporated on the following WICET applications (2-stage power units were supplied with all braking systems listed):



WICET reclaimer tunnel.

Shiploader (offshore brake specification)

Luff & Shuttle Winches: BSFI 3120 brakes are installed directly on the winch drums to hold the position of the boom and the shuttle on the boom during coal loading onto a ship. The boom can be raised and lowered and the shuttle can be retracted or extended depending on the type of ship being loaded.

Luff Winch & Shuttle Winch Drives: BSFI 212 brakes hold the luff winch drive in position when not moving the boom. BSFI 205 brakes hold the shuttle winch drive in position when not extending or retracting the shuttle on the boom.

Operator's Cabin: A BSFI 3120 brake is installed directly on the winch to hold the cabin in position during operation. The cabin can be raised and lowered for optimal viewing.

Wharf & Jetty (offshore brake specification)

Wharf & Jetty Conveyor: BSFI 3100 brakes are installed directly on the tail pulleys to dynamically stop both conveyors during an emergency or power failure and function as parking brakes when the conveyors are not in use. A 1200 mm (47.2 in.) x 30 mm (1.18 in.) disc & hub assembly was supplied for each braking system.

Stockyard

Yard, Reclaim 1 and Reclaim 2 Conveyors: BSFI 3110 brakes are installed directly on the tail pulleys to dynamically stop all three conveyors during an emergency or power failure and function as parking brakes when the conveyors are not in use. A 1200 mm (47.2 in.) x 30 mm (1.18 in.) disc & hub assembly was supplied for each braking system.

Overland Conveyor

Overland Conveyor: BSFI 3120 brakes are installed directly on the tail pulley to dynamically stop the conveyor during an emergency or power failure and function as a parking brake when the conveyor is not in use. A 1200 mm (47.2 in.) x 30 mm (1.18 in.) disc & hub assembly was also supplied.

Roy Hill iron ore mine, rail and port facility in Pilbara, West Australia.

ROY HILL CASE STUDY

Svendborg Brakes was chosen to supply braking solutions for conveyors at the Roy Hill iron ore mining, rail, and port project in the Pilbara, West Australia. When fully operational, the massive facility will provide 55 million tonnes of ore per year for export.

Braking systems, provided by Svendborg Brakes, were installed on a variety of conveyors throughout the facility. An overland conveyor transports the ore from primary and secondary sizers to a radial stacker that positions the material in a large stockpile area. A series of five parallel incline conveyors feed ore from the stockpile into five scrubbers, slowly rotating drums where the

BSFI series braking systems with SOBO® iQ for the Roy Hill iron ore mine and port conveyors.

ore is mixed with water to remove undesirable impurities. A long infeed incline conveyor and a series of three parallel incline conveyors feed ore up into three tertiary cone crushers.

Svendborg Brakes was initially contacted by the mine's engineering consultant based on previous successful collaborations spanning many years. The Svendborg Brakes team, working closely with the consultant's engineers, designed braking systems to meet each of the specific conveyor application requirements. Each conveyor braking system consisted of spring-applied, hydraulically-released BSFI Series caliper disc brakes, a SOBO iQ control, a SOBO hydraulic power unit and a disc.

BSFI Series brakes provide parking and emergency stopping functionality in case of power failure. The brake spring packs are sized to suit the individual specific braking torque requirements of the specific application. The brakes feature indicators that detect and monitor brake pad wear and brake on/off status.

Svendborg Brakes' industry-leading SOBO iQ (soft-braking) controller combines cutting-edge technologies to provide significant flexibility, safety and durability on mine conveyors. The controller features three-state digital modulation and a revolutionary dual-loop PI control (pressure/speed).

Manufactured in-house, Svendborg Brakes' specialized hydraulic power units are engineered to perform in tough mining applications. The units are equipped to monitor oil level and temperature, motor and pump function, and operational pressure.

BSFI 200 brakes were installed on the high-speed side of the head drive shaft, between the electric drive motor and the gearbox.

Svendborg Brakes technologies were incorporated on a variety of Roy Hill conveyor applications including those listed below. Two-stage power units were supplied with all braking systems.

Overland Conveyor (radial stacker feeder)
BSFI 3000 brakes were installed on the head drive shaft to dynamically stop the conveyor during an emergency or power failure and function as a parking brake when the conveyor is not in use. A 1400 mm (55.1 in.) x 30 mm (1.18 in.) disc & hub assembly was also supplied.

Five Scrubber Conveyors (inclined)
BSFI 200 brakes were installed on the high-speed side of the head drive shaft, between the electric drive motor and the gearbox. They dynamically stop the conveyor during an emergency or power failure and function as a parking brake when the conveyor is not in use. A 1400 mm (55.1 in.) x 30 mm (1.18 in.) disc & hub assembly was also supplied. These drivetrains were frame-mounted and shipped ready-to-install.

Four Tertiary Crusher Conveyors (inclined)
BSFI 300 brakes were installed on the head drive shaft, between the drive motor and the gearbox on these frame-mounted drivetrains. They dynamically stop the conveyor during an emergency or power failure and function as a parking brake when the conveyor is not in use. A 1200 mm (47.2 in.) x 30 mm (1.18 in.) disc & hub assembly was supplied for each braking system.

About Altra Motion

Altra is a leading global designer and producer of a wide range of electromechanical power transmission and motion control components and systems. Providing the essential control of equipment speed, torque, positioning, and other functions, Altra products can be used in nearly any machine, process or application involving motion. From speed reducers on food processing and packaging lines to precision motors embedded in medical robots to brakes used on offshore wind turbines, Altra has been serving customers around the world for decades.

Altra's leading brands include Ameridrives, Bauer Gear Motor, Bibby Turboflex, Boston Gear, Delevan, Delroyd Worm Gear, Formsprag Clutch, Guardian Couplings, Huco, Kilian, Kollmorgen, Lamiflex Couplings, Marland Clutch, Matrix, Nuttall Gear, Portescap, Stieber, Stromag, Svendborg Brakes, TB Wood's, Thomson, Twiflex, Warner Electric, and Wichita Clutch.

Svendborg Brakes®
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