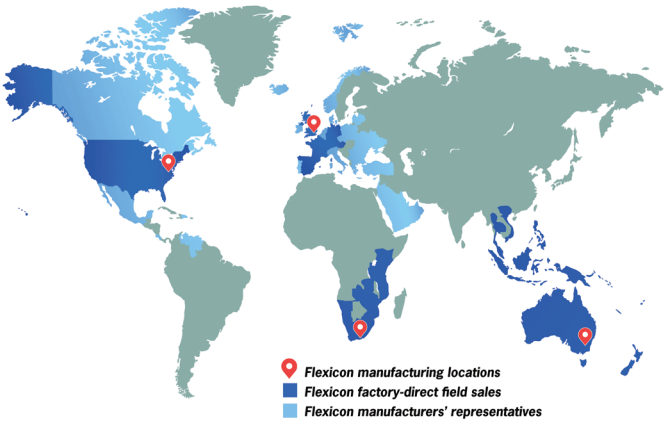
JOHNEX Manufactures Mining Explosives Safely Using Flexible Screw Conveyors

CC-0748



USA
FLEXICON CORPORATION
Tel: +1 610 814 2400
E-mail: sales@flexicon.com
Web: www.flexicon.com

UK
FLEXICON (EUROPE) LTD
Tel: +44 1227 374710
E-mail: sales@flexicon.co.uk
Web: www.flexicon.co.uk

AUSTRALIA
FLEXICON CORPORATION
(AUSTRALIA) PTY LTD
Tel: +61 7 3879 4180
E-mail: sales@flexicon.com.au
Web: www.flexicon.com.au

SOUTH AFRICA
FLEXICON AFRICA (PTY) LTD
Tel: +27 41 453 1871
E-mail: sales@flexicon.co.za
Web: www.flexicon.co.za

SPAIN
FLEXICON EUROPE SPAIN
Tel: +34 930 020 509
E-mail: ventas@flexicon.es
Web: www.flexicon.es

FRANCE
FLEXICON EUROPE SAS
Tel: +33 7 61 36 56 12
E-mail: ventes@flexicon.fr
Web: www.flexicon.fr

GERMANY
FLEXICON EUROPE GmbH
Tel: +49 173 900 78 76
E-mail: vertrieb@flexiconeurope.de
Web: www.flexicondeutschland.de

SINGAPORE
FLEXICON SINGAPORE PTE LTD
Tel: +65 6778 9225
E-mail: sales@flexicon.com.sg
Web: www.flexicon.com.sg

INDONESIA
FLEXICON SINGAPORE PTE LTD
Tel: +62 81 1103 2400
E-mail: sales@flexicon.co.id
Web: www.flexicon.co.id

JOHNEX Manufactures Mining Explosives Safely Using Flexible Screw Conveyors

PERTH, AUSTRALIA — Beginning in 1966 as a distributor of dynamite and blasting accessories, JOHNEX Explosives has become recognized as Australia's leading innovator in safe and effective high-tech explosives technology. The company's signature product, Econotrim Buttbuster® is world renowned for perimeter control in mining. The product reduces overbreak, creates smooth walls and a safer environment for portals, shafts and tunnels.

"Normal explosives blasting is an economical method of breaking rock, but can result in damage to the perimeter of the opening," explains former JOHNEX Project Engineer David Tait. "The damage can be controlled by a more precisely measured explosive and a bit more science." JOHNEX Econotrim Buttbuster explosives accomplish this with a one-piece, custom-length, semi-rigid, coiled yellow tube that is 1 in. (25.4 mm) in diameter and contains a precisely measured quantity of specially formulated explosive.

JOHNEX manufactures the explosive using a custom designed 30 ft (9 m) high carousel in which 12 tubes are filled with one of two grades of Buttbuster explosive. Delivering each grade of powder from a ribbon blender to two dosing bowls at the top of the carousel are two Flexicon flexible screw conveyors, each 36 ft (11 m) long.

Buttbuster explosives also manufactured by Nordex in Canada

JOHNEX recently licensed its Buttbuster technology to Nordex Explosives Ltd. of Kirkland Lake, Ontario, located in the heart of Canada's gold and silver mining territory. From its new manufacturing facility, Nordex supplies Buttbuster explosives to gold and silver mines in northern Quebec and Ontario and is initiating trials in a number of locations.

The Nordex plant produces the same two grades of explosive powder with the same carousel system as the JOHNEX plant in Australia. Both grades are proprietary formulations, and the raw materials for the Nordex plant are sourced through JOHNEX.

In an enclosed room, the raw materials are precisely weighed, poured into the ribbon blender, and mixed to a homogeneous blend that has a bulk density of approximately 59 lb/ft3 (950 kg/m3) and a particle size distribution of 1/25-1/4 in. (1-6 mm) in diameter. The blender discharges the material into one of two 3.85 ft3 (110 liter) capacity floor hoppers, each connected to a flexible screw conveyor that transfers one of the explosive powder grades without separating the blended materials.

The outlet of each hopper is connected through a charging adapter to the inlet of the flexible screw conveyor. The conveyors pass through openings in the wall to the adjacent area where they rise to the top of the carousel.

Explosive powder is transported from the ribbon blender and hopper by two flexible screw conveyors that are routed through the wall and rise 36 ft. (11 m) to a carousel that fills the Buttbuster tubes.

The flexible screw conveyors pass through the wall and then up 36 ft (11 m) to the carousel that fills the Buttbuster tubes.

Conveyors move material to dosing bowls

Each conveyor consists of a heavy-duty spiral rotating inside a 4.5 in (114 mm) diameter polymer tube. As the screw propels the material through the tube, it self-centers, providing sufficient clearance between the screw and tube wall to assure gentle, safe handling of particles. The spiral, which is the single moving component of the conveyor, is connected to an explosion proof electric motor located above the conveyor's discharge. This design eliminates contact of the sensitive powder being conveyed with any bearings or seals.

The material exits each conveyor through a 3 ft (0.9 m) long downspout into one of the dosing bowls. Each bowl, under PLC control, releases a predetermined amount of powder into the Buttbuster tubes rotating and indexing under it. At the bottom of the carousel, the tubes oscillate up and down to properly fill and compact the powder.

The filled tubes are then hand removed from the carousel, capped, coiled and placed into boxes for shipping.

From the time ingredients are added into the blender until the filled tubes are removed from the carousel and capped (both done manually) the entire process is automated by a PLC. The flexible screw conveyors start and stop on reaching a pre-set bowl volume detected by a level sensor and transmitted to the PLC. "The carousel can produce a 16.4 ft (5 m) length of explosive in 7 seconds," says Jim Taylor, Nordex president and CEO.

Nordex system modified to Canadian standards

Although the Nordex production line meets the same safety standards as the JOHNEX system in Australia, it needed to be engineered to Canadian Standards. "Walkways and access platforms, for example, needed to be reconfigured," says Taylor. "Also, while Australian electrical systems are designed for 50Hz, 415V operations, Canadian systems operate at 60Hz, 600V."

Application Engineers from Flexicon Australia assisted with the layout of the hoppers on JOHNEX drawings and supplied an explosion proof 60Hz, 600V motor from North America to be brought into Australia for testing before being shipped to Canada.

For both Australia and Canada, the Buttbuster production system has been designed to meet the strict specifications required to operate in an environment that contains potentially explosive materials.

JOHNEX plans to manufacture and supply Buttbuster explosives in other countries by forming partnerships similar to the one with Nordex in Canada.

The rotating carousel (foreground) fills 12 Buttbuster tubes at a time, producing a 16.4 ft (5 m) length of explosive in seven seconds. The two flexible screw conveyors and hoppers feeding the carousel are visible in the rear.

Buttbuster explosives deliver a safer, controlled blast and create smooth walls.

One-piece, custom-length Buttbuster tube creates a controlled blast by a precisely measured quantity of specially formulated explosive.

Specially formulated Buttbuster explosive is precisely filled into 1 in. (25.4mm) diameter custom-length tubes.

USA
FLEXICON CORPORATION
Tel: +1 610 814 2400
E-mail: sales@flexicon.com
Web: www.flexicon.com