

PRESS INFORMATION

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Bunting Electro Overband Magnet Protects Gold Mine

The largest Electro Overband Magnet ever built at the Bunting manufacturing plant in Redditch, UK is destined for installation in a gold mine in Northern Finland. Over a twelve-month operating period, the Overband Magnet will lift and separate damaging tramp metal from approximately 2.7 million tonnes of conveyed ore, protecting crushers, screens and other up-stream process plant.



Figure 1 – the finished model 205 OCW50 Crossbelt Electro Overband Magnet





[Bunting](#) is one of the world's leading designers and manufacturers of magnetic separators for the recycling and waste industries. The Bunting European manufacturing facilities are in Redditch, just outside Birmingham, and Berkhamsted, both in the United Kingdom.

The [Electro Overband Magnet](#) uses high-strength magnetic forces to lift and then automatically discard tramp ferrous metal present in conveyed ore. In operation, the large Electro Overband Magnet is suspended in a crossbelt orientation across the non-magnetic head pulley of a conveyor transporting mined ore. Any tramp ferrous metal entering the deep and strong magnetic field is attracted to the face of the electro magnet and lifted up and onto the surface of a continuously-moving self-cleaning rubber belt. Reinforced and heavy-duty rubber wipers on the belt catch the captured metal, transferring it to the side and away from the conveyed ore. As the wipers move the ferrous metal out of the Overband Magnet's magnetic field, it drops under gravity into a collection area.



Figure 2 – the finished model 205 OCW50 Crossbelt Electro Overband Magnet

This latest Electro Overband Magnet is part of a major plant expansion and upgrade at the Kittila Gold Mine in Northern Finland. When initially contacted, Bunting engineers worked closely with the mine operator to design a bespoke Overband Magnet for the difficult





application. Design considerations included the width of the conveyor, the volume of conveyed ore, and the size and shape of the tramp ferrous metal. With these details, the Bunting design team calculated the minimum magnetic field and force density for optimum separation using an in-house developed [Electro Overband Magnet Selection Programme](#). These criteria provided the basis for the design of the electromagnetic coil by the Bunting-Redditch engineering team.

The final design is a model 205 OCW50 Crossbelt Electro Overband Magnet. The 17 kW electromagnetic coil, generating the strong magnetic field, is cooled using recirculated oil. Efficient cooling of the electromagnet is critical as the magnetic force decreases proportionally to the rising temperature of the coil. The Overband Magnet is 4.2m long, 3m wide and 2.2m high, weighing just over 13 tonnes, and was built at Bunting's UK magnetic separator manufacturing facility in Redditch.

The Electro Overband Magnet is designed for positioning in a crossbelt orientation over the non-magnetic head pulley of a 1600mm wide conveyor, inclined at 12° and travelling at 0.75m/sec. The conveyed ore has a particle size range of between 70 and 400mm, varying in conveyed capacity between 450 and 765 tonnes per hour (equating to 2.7 million tonnes per year).

The tramp iron ranges widely in size and nature and includes steel rebar (2400 x 20mm dia.), cable bolts (600 x 15mm dia.), steel mesh, and broken drill bits. With a maximum working gap of 600mm (distance between the magnet face and the bottom of the ore conveyor), the Electro Overband Magnet is designed to lift and separate the tramp metal through a splayed burden of up to 500mm. This requires a substantially deep and strong magnetic field and related force density.

“Large mining projects, such as this, often require bespoke solutions,” explained Adrian Coleman, the General Manager of Bunting's Redditch facility. “Over 40 years we have gained considerable experience in designing and building large Electro Overband Magnets.





However, this was the largest we have ever manufactured at Redditch, presenting many challenges, which were overcome. And the design and manufacturing process all took place during the Covid-19 crisis.”

Bunting-Redditch has a history of designing and building large Electro Overband Magnets for the mining industry. This latest project relied on the vast experience of both the engineering and production team to produce the largest ever manufactured at the Redditch facility.

Bunting-Redditch website – www.mastermagnets.com

High resolution JPGs of all the images provided with this press release are available from the Bunting Press Officer, Paul Fears. Also, for additional information on this recent installation or any other issue mentioned in this article please contact Paul on +44(0)7909 103789 or press@buntingeurope.com or visit our websites:

- *Bunting-Redditch - www.mastermagnets.com*

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