



White Paper

Permanent Overband Magnet Selection Criteria

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Permanent Overband Magnets are commonplace in most mines and quarries, removing tramp ferrous metal and protecting crushers, screens and conveyors against damage. Overband Magnets are also widely used in recycling, recovering ferrous metals and protecting shredders against metal damage. However, there are many different designs of Permanent Overband Magnet, developed to suit specific applications. Understanding an installation is key to selecting the right Overband Magnet.



Bunting Permanent Overband Magnet in a recycling operation (Pictures: ©The Bunting Magnetics Co.)

The Overband Magnet Workhorse

Bunting designed and built the first Permanent Overband Magnets in the early 1980s and has since supplied thousands to companies operating across the

world. Although the basic technology has not changed, advances in magnet materials and manufacturing techniques have significantly enhanced the ferrous metal separation performance.

Overband Magnets lift and automatically remove tramp ferrous metal from conveyed mined or quarried rock, or recycled waste. The permanent design features a magnet block mounted in a frame, with two or four pulleys, and a revolving self-cleaning rubber belt.

In operation, material (such as quarried rock, recycled waste or any other bulk material) is conveyed underneath the Overband Magnet which attracts, lifts and then removes damaging tramp ferrous metal. The size and type of magnetic system (Permanent or Electro) is dictated by the conveyor width, depth of material on the conveyor and the nature of the tramp ferrous metal.

Permanent Overband Magnets are commonly found on mobile plant such as crushers, screens and shredders, and in lower volume installations.



Bunting Permanent Overband Magnet on a mobile crusher

Overband Magnet Models and Applications

Bunting's range of Permanent Overband Magnets includes four different models to suit different installations. The heavy-duty PCB model suits a wide range of applications, operating at suspension heights of up to 400mm on conveyors between 300mm and 2000mm wide.

The PCB-C compact and lightweight model suits mobile plant installations, such as crushers and screens, and operations where space is limited. The PCB-C operates at suspension heights up to 250mm, above 600mm to 1500mm wide conveyors.

For installations where the Overband Magnet is located in a difficult location for regular maintenance, Bunting designed the QBC quick-belt change model. As the

model implies, the self-cleaning belt is easy and quick to change, reducing downtime. This model operates at suspension heights up to 300mm on conveyors between 600mm and 1500mm.



Buntings QBC Permanent Overband Magnet

The Tri-Polar Overband Magnet produces a different shaped magnetic field with increased power. Although commonly heavier, the deeper magnetic field means that the suspension height of the Tri-Polar Magnet is higher, up to 400mm. The shape and depth of the magnetic field makes this model better suited for the separation of smaller or long and thin (e.g. nail-like) tramp ferrous metal.

Overband Magnet Selection

Selecting the correct Overband Magnet, in terms of permanent or electro and the specific model, is dictated by the application. Bunting's applications engineers assess the ferrous metal separation objective (i.e. the plant being protected); the nature of the tramp ferrous metal (i.e. shape, size, etc.); and the conveyed rock (i.e. size range, burden depth). These criteria assist the team in selecting the optimum Overband Magnet for any given application.

With decades of experience of designing and building Overband Magnet for mining and quarrying applications, Bunting continues to provide innovative and many bespoke magnetic separation solutions.