Magnetic Separator Safety Tips

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Industrial strength magnetic separation equipment has been used in manufacturing facilities for decades. These magnetic separators remove unwanted ferrous metals from bulk products to improve product purity, protect sensitive processing equipment from damage, and prevent fires or explosions. While these separators have been widely used in industrial applications for many years, the past 10 to15 years have seen a marked increase in the general strength of these magnetic separators due to strong influences for safety in the food and pharmaceutical industries.

When a product is contaminated with very fine weakly magnetic metal, a very powerful rare-earth permanent magnet is often required to remove it. While these rare-earth magnets are very efficient at removing the unwanted contamination, they can be very dangerous to maintenance personnel if not handled properly. Injuries have ranged from pinched fingers to crushed hands to the loss of extremities. For these reasons, plant managers are putting more emphasis on magnet safety training for the protection of their workers.

Magnet Safety

The first step in any safety training program is awareness. Workers must be notified of potential hazards in their work environment so that they can be trained to handle these

Figure 1

hazards in a safe manner. One of the best ways to create worker awareness is make sure the area of potential hazard is properly labeled.

Warning Labels

It is very important that “strong magnet” warning labels be placed on or next to the area where the magnet is installed — this would warn anyone in the area that extreme caution should be used in proximity to the magnet. (See Figure 1.) Your magnet should already have warning labels installed on them when they arrive from the manufacturer. Most manufacturers are glad to send additional warning labels if requested.

Handling of Magnets

After workers have been advised of the potential hazards associated with the strong magnets in their work environment, detailed training relating to the handling of these magnets should follow.

Extreme care should always be used when handling an industrial-strength magnet, especially rare-earth magnets. Most workers are completely unaware of the potential danger and have no idea of the actual strength of these magnets. When used properly, these magnets are extremely effective at removing unwanted metal contamination from bulk products. However, as mentioned earlier, these same magnets have the potential to severely injure a worker if they are not handled with extreme care.

Most accidents occur when workers are either transporting or cleaning the magnet (removing metal from the magnet). Workers remove the magnets from their intended areas of installation and forget that they are now handling very powerful magnets. The magnets can be violently attracted to any carbon steel chutes, pipes, I-beams or other magnets in a split-second. If workers’ hands or fingers are caught between the magnet and the carbon steel, the worker can be seriously injured. For this reason, employee training is crucial.

Transportation & Storage of Magnets

Figure 2
Workers should be trained in the proper handling and storage of industrial-strength magnets. Care must be taken when transporting or cleaning magnets so that they

never come in close contact to any carbon steel. Before transporting a magnet, the route should be pre-inspected for any potential carbon steel dangers along the route. Wood, plastic or other non-ferrous containers can be used to create barriers around the magnet for safe transportation or storage. (See Figure 2.) Although the magnetic field passes through these non-ferrous materials, they lessen the holding force of the magnets by creating barriers between the magnet and the carbon steel.

Medical Devices

Some medical devices (such as pacemakers) can be adversely affected by strong magnetic fields. Therefore workers who have these medical devices should be strongly encouraged to keep away from the strong magnets installed in the plant. If the worker's normal responsibilities place him or her in relatively close proximity to the magnet, the worker should be instructed to contact his or her physician and the medical device manufacturer to determine a safe distance between the worker and the magnet.

Safe Magnet Installation Areas

It is recommended that industrial-strength magnets be installed in areas that are free of carbon steel or other magnetic metals. Even if the magnet is successfully installed, the carbon steel can detract from the effectiveness of the magnet by draining some of its magnetic field. For these reasons, use as much 300 series stainless steel (or other non-ferrous materials, such as wood or plastic) in the area surrounding the magnet.

Industrial-strength magnetic separators play a very important role in manufacturing facilities across the world. If handled properly, they are a safe, efficient way of removing unwanted ferrous contamination from a valuable product. Plant managers and maintenance supervisors recognize the need for these powerful magnets in their plants and are emphasizing the importance of magnet safety training to keep their workers safe. Safety must always be the first priority when handling strong magnets.

For more information, please visit www.eriez.com [1].

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