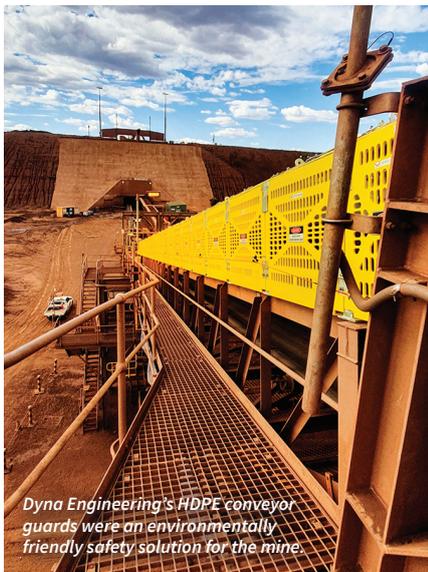


# Mine site chooses HDPE over steel

By using recycled plastic instead of steel for its conveyor guards, a major iron miner has increased its safety while reducing its environmental impact and maintenance requirements.



*Dyna Engineering's HDPE conveyor guards were an environmentally friendly safety solution for the mine.*

**AN IRON ORE MINE AT CHRISTMAS** Creek, in the Pilbara region of Western Australia, was looking for the most suitable conveyor guarding to increase safety for their site personnel.

However, during the early phases of development, the mine identified a way to reduce its environmental impact by using 100 per cent recycled high-density polyethylene (HDPE) plastic guards instead of conventional steel.

HDPE is a thermoplastic polymer produced from monomer ethylene that presented significant benefits when compared with older steel technology. The new guards provided greater safety, significantly reduced maintenance and managed to save four tonnes of plastic from going to landfill.

In addition, the decision to use recycled plastic was even more environmentally sustainable because the guards can be recycled after their expected service life of 10 to 15 years.

Dyna Engineering manufactured the conveyor guards in its Perth-based

workshop, reducing offshore lead times and avoiding overseas supply and shipping problems.

Thomas Greaves, General Manager at DYNA Engineering, says one of the key challenges of recycling plastic is the demand for the products which use the material.

“The large miners can really lead the way and create a global demand for recycled plastic, which is a major step towards a more sustainable future,” he says.

## HDPE's benefits

Compared to conventional steel guards, HDPE guards present a lightweight solution, weighing up to 40 per cent less.

Greaves says safety risks around lifting weights have been in the industry spotlight and that lifting objects more than 15 kilograms is considered a no-go.

“Most steel guards struggle to remain lighter than 12 kilograms. When site operators are consistently removing and re-installing guards to maintain your conveyors, the repetitive nature and stress can add up and take its toll,” he says.

“DYNA Engineering HDPE conveyor

guards can be as light as six kilograms for one metre-by-metre panel, with the guard weight engraved on the panel for quick and easy assessment by operators to help prevent the risk of lifting injuries.”

Conventional steel guards can also be painful to install. When the guards don't fit perfectly, a lot of work is required to alter the size.

The tools involved in this include a welder, cutter, grinder, bender and a hot work permit. Alongside this, the size of a steel panel can often only be altered by 50 millimeters due to the inherent mesh size and design.

With DYNA Engineering's HDPE guard design, small adjustments can be made comparatively easily. For example, if the post was out of line by five millimeters it would be as simple as shaving or cutting the edges to accommodate the size adjustment. HDPE only requires a saw to modify, cutting down the amount of hot work required.

As a non-metal, HDPE cannot rust where steel can, reducing the long-term maintenance costs and minimising potential rectification works. The material is also resistant to many chemicals, such as caustic soda, hydrochloric acid and



*Installation is easy and does not require hot tools.*



sulfuric acid, making them applicable for guarding processing plants and facilities.

Steel guarding also has the potential to interfere with metal detectors. This requires operators to lower the detector's sensitivity, potentially allowing fugitive material to slip through. The HDPE alternative does not interfere with these sensors, instead enabling sites to calibrate the detectors to the optimal level.

Dyna Engineering's HDPE conveyor guards are also made in safety yellow coloured material, which Greaves says makes maintenance much easier.

"If anyone has experience with maintaining conventional steel guards, they would know how much painting is required to maintain the safety yellow colour," he says.

"Not only is regular painting required, but due to the size of the mesh, it's a costly process. A lot of paint is used and lost. Operators have to resort to hand painting for a good portion of the time, which is extremely expensive.

"Conveyor systems are considered one of the highest risk areas on a mine site. Reducing time spent in and around the conveyors is a major plus and helps reduce overall risk."

DYNA Engineering HDPE conveyor guards are designed to the Australian Standards for Australian conditions. They can be designed to suit existing equipment, replace conventional steel mesh guards and can be adapted to incorporate metal detectors, belt change stations, access platforms, access points, conveyor trip wires, cabling and any other requirement. They can even be designed to incorporate retractable idler roller frames.

"Not all HDPE conveyor guards provide the same levels of safety," Greaves says. "DYNA Engineering designed, developed and patented a stronger, more robust panel than others on the market, which delivers reduced deflection of fugitive material leaving the belt.

"The secret is in the actual design layout of the panel itself. Its exclusive and patented "X" shape design increases the guard's strength up to 60 per cent when compared with others."

The HDPE guards are engineered to exceed Australian Standards Series AS 4024 : 1 : 2014, AS 4024 : 3610 : 2015 and AS 4024 : 3611 : 2015.

DYNA Engineering HDPE conveyor guards are manufactured in Perth, Western Australia. Typically, a replacement guard for an existing conveyor can be manufactured in as short as a couple of days compared to potentially weeks or months if sourced internationally. **B**