



Bucket Wheel Reclaimer Availability Upgrade 2020-2021

Project

Bucket Wheel Reclaimers (BWR) form a critical part of iron ore ship loading circuits at port operations.

This particular BWR chute experienced a significant number of stoppages due to belt drift and blockage/build-up issues reducing the availability of the fines ship loading circuit. Several investigations over the past 15 years failed to identify root causes and solutions to the problem.

As part of a program of sustaining works targeted at reducing delays and improving port operations availability overall, Onyx Projects were given the task of finding a solution to reduce the BWR delays. Working closely with the client we identified the previously un-identified underlying root cause for the belt drift delays and replicated these problems using our Rocky DEM simulations, which had never previously been achieved.

The articulated chute solution developed was innovative and unique. The Rocky DEM simulations were able to demonstrate the predicted improvements to flow and the improved centralisation of the material burden onto the

receiving yard belt across the full range of machine luff and slew conditions.

The chute has been commissioned, and chute performance has eliminated the belt drift delays and allowed a rate increase for the route.

This challenging brownfield project takes advantage of our specialist Root Cause Analysis and Discrete Element Modelling (DEM) capability to improve transfer chute wear life and minimise belt tracking problems.

Value Delivered

Collaborating closely with the client's project team and site representatives, we implemented a constructive design process through successive study and detailed design phases.

Complex Root Cause Analysis techniques were applied and advanced DEM modelling was completed to identify and resolve this longstanding reclaimer transfer issue. The project was recognised by the client as a design highlight.

Rigorous design and Safety in Design reviews were especially important due to the introduction of untried technologies within the iron ore handling sector.