

ISOLATION GATES Isolation Gates and Platforms

PROJECT SCOPE

Project:	Iron Ore Project, Western Australia
Material:	Primary Crushed Iron Ore
Equipment:	Bin Isolation Gates
Scope:	Design and Manufacture of gates with shared Hydraulic Power Unit and Local Control Stations (LCS)
Aim:	To provide isolation of one apron feeder while the adjacent feeder is operating from a fully loaded common bin.

With many years of experience in the design and supply of heavy-duty hydraulic equipment, Bulk Handling Technologies (BHT) was awarded the contract to design and manufacture two (2) large bin isolation gates for a new iron ore project in WA, complete with ancillary hydraulic equipment. The gates were to be installed on a new surge bin with a dual outlet, allowing one feeder to remain in service while the other is isolated for repair or service.

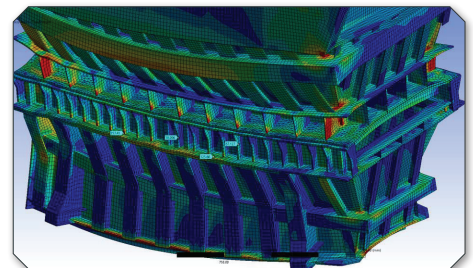


DESIGN CHALLENGES AND CONSIDERATIONS

After sitting idle in extremely harsh conditions for many months, bin isolation gates must be capable of closing without jamming. This requires careful design of the gate internals to protect them from wear due to flow through the hopper, and also multiple design features to ensure any build-up of hardened product is cleared and does not prevent the gate from closing.

Capable of opening with a full bin of iron ore above, detailed calculations of opening and closing forces were completed using material flow property data, and based on calculated head loads for both initial fill and flow conditions.

To ensure the hopper is able to contain material without imparting excessive deflections and stress to the gate below, BHT carried out a complete FEA of the entire system to ensure the necessary design integrity.



THE FINAL SOLUTION

The final design of the surge bin isolation gates incorporated the following key features to meet the specific requirements of the application:

Inlet Opening:	1,856mm width x 5,476mm Length
Gate Design:	Dual 70mm thick Grade 350 blades
Cylinders:	4 off Hydraulic (8" bore x 5" rod)
Frame Height:	550mm flange-to-flange
Liners:	Full Duatrap Block & Duaplate Wear Liner package
Controls:	Push-button electric-over-hydraulic control panel
Hydraulic Power Unit:	Shared 55kW HPU

Mechanical locking pins were also installed to provide positive locking of the gate plates in either the fully open or closed positions, allowing personnel to attach their personal danger tags to a positive, physical lock - in addition to isolating the main HPU electric motor.

All equipment was manufactured, assembled and fully tested by BHT in Perth WA before transport to site for installation and commissioning.



For more information on this project, or any other enquiries, contact us + 61 (0)8 9332 3454 or sales@bulkhandlingtech.com.au