



Hismelt Kwinana Closure Project

<p>Liberty Industrial Primary Contractor</p>	<p>Rio Tinto Hismelt JV Client</p>	<p>Kwinara, WA Location</p>	<p>January 2013 Start</p>	<p>September 2014 Finish</p>
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Project Overview



Liberty Industrial carried out the deconstruction of Rio Tinto's High Intensity Smelting facility in Kwinana, Western Australia. The project involved the dismantling and relocation of almost half of the Hismelt plant. The award winning project was the first of its kind with the project involving the complex dismantling of significant components of industrial plant; never before has a dismantling project of this scale and complexity been attempted in Australia.

Deconstruction works commenced in January 2013 with the dismantling phase of the project. In total, more than 7,000 tonnes of industrial plant and equipment including four bulk shipments of over 18,000 cubic metres and 280 shipping containers of plant and equipment were salvaged and shipped 7600 kilometres away to Shandong Province in China. Over 2000 bulk units were methodically dismantled, cleaned to export standard, match marked, labelled, recorded and packed, with each item given clear instructions on how to be reassembled.



The salvaged items included the 65 metre high, 1200 tonne Coal drying and grinding structure, the Flue Gas Desulphurisation plant, Hot Metal Handling equipment including an 80t induction furnace, the Hot Metal Desulphurisation plant, Off Gas Scrubbing and Cooling infrastructure, and a 25 megawatt power station. Carrying out lifts of up to 108 tonne, the dismantling process relied heavily on complex engineering lifts using large crawler and mobile cranes.

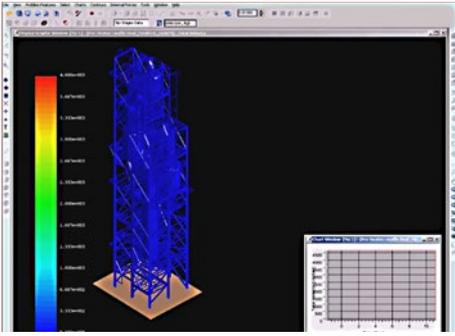
Liberty Industrial managed multiple crews across multiple workfronts within a small footprint. The project workforce hit its peak in the dismantling phase of the project at 60 personnel including significant Senior Management and Supervisory Team of two Project Managers, three Safety Managers, five Supervisors, and three Leading Hands, supported by a team of five Project Engineers.

Liberty Industrial then commenced demolition of the major structures, utilising engineered induced collapse methods to demolish the larger structures, including the 75 metre tall, 1700 tonne Preheater structure.



We utilised ASI Extreme Loading software to 3D simulate our induced collapse methods to ensure we are satisfied with the mode of failure, pre-failure structural stability and the effects of wind on the weakened structure. Modelling the structure and simulating our proposed demolition methodology allowed us to refine our methodology and demonstrate a successful, safe and controlled outcome to our risk averse client Rio Tinto well in advance of executing the task. The application of this innovative technology was a key factor in mitigating and managing the potential risks associated with the task, ensuring the structure was demolished in a safe and controlled manner.

Once the higher structures were at ground level the demolition of the plant and infrastructure was undertaken with Liberty Industrial's heavy duty customised 230 tonne Liebherr 994 (Australia's largest demolition excavator).



This monster machine was assisted by 1 x 120t Hitachi, 2 x 46t and 5 x 36t Volvo excavators, 2 x semi tippers, 2 x telehandlers, a 40t dump truck, water truck, service truck, and various sized boom lifts.

Various structures including the Off Gas Hood, Smelt Reduction Vessel and the Lock Hopper were collapsed using controlled cut and pull demolition techniques whereby engineered pre-cutting and inertia is utilised to bring taller structures to ground level. Working in combination with a smaller fleet of excavators equipped with shear attachments, the 230t and 120t excavators pulled the structures apart. The remaining structures were systematically demolished and the materials processed. Excavators with various demolition attachments down sized and processed the scrap materials to export size for shipment to be recycled in Asia.



Liberty Industrial's resourceful and innovative approach to waste management and environmental stewardship significantly minimised the amount of waste disposed in landfill. 108,000 tonnes (97%) of the site's 111,000 tonnes of waste was recycled with only 3000 tonnes (3%) of all waste going to landfill.

In addition to the 7,000 tonnes of plant and equipment items salvaged and 12,000 tonnes of scrap metal recycled, Liberty Industrial found resourceful solutions to dispose of 25,000 tonnes of concrete, and waste products from the Hismelt process including 50,000 tonnes of slag waste, 7,500 tonnes of dolomite and 5000 tonnes of large iron skulls, sourcing buyers and processing materials to their specifications and consulting geotechnical engineers and blending fill materials.

We delivered this project in accordance with Rio Tinto's world class standards and compliance requirements for the management of health, safety, environment and quality performance and were able to realise maximum value from a number of reusable plant, process equipment and scrap materials and deliver a cash positive project outcome for our client through efficient demolition, and innovative asset recovery and resources recovery solutions.



In addition, Liberty Industrial also delivered optimal project outcomes for Molong; the ground-breaking dismantling and salvage operation was a complete success; delivered within budget, on schedule, without incident and in accordance with their exacting specifications.

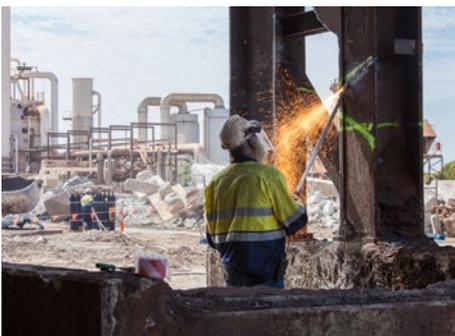
Liberty Industrial successfully completed 115,000 man hours of work on the project without a single lost time injury, recycling over 108,000 tonnes of material.

Liberty Industrial's approach to project delivery embraced the needs of all project stakeholders, delivered value, and above all, delivered safe, sustainable, controlled project outcomes.

The project won the Industrial Demolition Award at the 2014 World Demolition Awards. In addition to the Industrial Demolition category win, Liberty Industrial were bestowed the highest accolade a demolition contractor could receive, with the project taking out the 2014 World Demolition Award, a prestigious award recognising the best of the best across all 2014 award categories.

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