

# CASE STUDY

MAY 2008

SAMPLING SYSTEMS



# BHP

## ABOUT BHP

BHP is a world-leading resources company and are among the world's top producers of major commodities, including iron ore, metallurgical coal and copper. We also have substantial interests in oil, gas and energy coal

BHP's Minerals Australia business includes operations in Western Australia, Queensland, New South Wales and South Australia, focusing on iron ore, copper, coal and nickel. The Western Australia Iron Ore (WAIO) division is an integrated system of four processing hubs and five mines, connected by more than 1,000 kilometres of rail infrastructure and port facilities in the Pilbara region of northern Western Australia.

At each mining hub – Newman, Yandi, Mining Area C and Jimblebar – ore from mines is crushed, beneficiated (where necessary) and blended to create high-grade hematite lump and fines products.

[Source: [www.bhp.com](http://www.bhp.com)]

## MT WHALEBACK IRON ORE PROCESSING HUB

**In November 2007, Consep was awarded the contract to design and supply three heavy duty hydraulic drive linear samplers for the BHP Mt Whaleback Hub.**

To meet the client's specifications, Consep supplied three high capacity hydraulic drive samplers for the fines, lump and Satellite Ore Body (SOB) duties. Hydraulic drives have many advantages for large applications, but require careful design to ensure they meet the requirements of ISO3082:2009. The core challenge was ensuring the sampler provided a constant speed of the cutter, and also provided the same speed irrespective of ambient temperatures.

The Newman region has extremes of temperature where there can be a 30°C degree swing from night minimum to day maximum. This results in a significant change in oil viscosity, and hence a change in speed of the cutter over the course of a day. To combat this Consep developed a custom system that actively controls speed to +/- 1%, which exceeds the requirements of ISO3082

Ultimately, the hydraulic system developed by Consep provides a known and programmable cutter speed that will instantly respond to loads. It is also not restricted in the number of cuts it can take per hour and will not over travel as it can only travel the length of the cylinder.

In total, three hydraulic drive linear samplers complete with reverse discharge spoon cutter assemblies were supplied for the following duties:

1. 7800tph, 180mm SOB duty
2. 6500tph, 10mm NVJ Fines
3. 6500tph, 40mm NJV Lump

The sampling equipment was delivered in May 2008, then successfully commissioned with the assistance of Consep staff in July 2009



Newman Hub SOB Primary Sampler



**CONSEP**  
ENGINEERING INNOVATION

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*The unique high capacity hydraulic drive linear sampler was tailor made for this project and showcases Consep's ability to provide high quality custom solutions to high end clients.*

*Please contact Consep to discuss how we can design a custom solution for your project's specific requirements.*

Consep have a very broad product range for sampling systems. The sampling products which are fully manufactured and serviced by Consep include:

- Linear cross cut samplers
- Rotary vezin samplers
- Belt feeders, weigh feeders and shuttle feeders
- Bucket elevators and skip hoists
- Swirl tanks, chute works and structure
- Arcual samplers
- Cross belt ARM samplers
- In-line samplers (Pressure Pipe and Fixed Cutter)
- Poppet Samplers
- Custom made samplers
- Continuous sample dewatering modules
- Sample Collection Diverters and Carousels

Consep also offers the widest range of proven drive types. For instance just within our range of linear cross cut samplers we can offer:

- Electric chain, ball screw & belt drives
- Hydraulic & Pneumatic drives
- Continuous unidirectional electric drives

One unique aspect of Consep is our ability to supply both the process and automation systems to go with the sampling equipment which allows us to provide a complete sampling solution.

For many of our clients we also develop the process design and sampling protocols to meet their specific needs, for instance meeting ISO3082 for Iron Ore. We then can develop the functional design and automation system for the sampling station.

Consep tailors each equipment package to suit our client's specific project requirements. Please contact our experienced engineers to discuss how we can assist with your sampling requirements.



Consep Sampling Systems



Consep Linear Cutters



Consep Hydraulic Drives