

# CASE STUDY

JUNE 2015

SAMPLING SYSTEMS



## ABOUT ROY HILL

Roy Hill is leading the development of a new generation of integrated iron ore mining, rail & port operations in the Pilbara region of Western Australia. The operation will introduce a new wave of innovation, technology and knowledge to Australia's iron ore industry.

Construction has started on the state-of-the-art:

- 55 Mtpa mine, processing plant, airport and permanent accommodation village
- 344 kilometre heavy haul railway linking the mine and port
- Port stockyard and two-berth export facility in Port Hedland
- Integrated Corporate Headquarters and Remote Operations Centre based in Perth

The Roy Hill project will introduce a new dimension to the mining industry, by delivering cutting-edge automation to more efficiently manage safety and production, while also streamlining operational efficiencies. Integrated planning, operations and automation presents the operator with a holistic view of the entire demand chain, which considerably reduces cycle times and increases productivity.

## ROY HILL SAMPLES THE FUTURE WITH CONSEP

In June 2014 Consep were selected as the supplier of a complete sampling solution for the Roy Hill Processing Plant. The package supplied includes a wide range of solids and slurry samplers, feeders, crushers, sample collectors, chute work, as well as the electrical control systems for all of the sampling stations. A total of 14 sample stations were supplied by Consep.

To achieve Roy Hill's goal of minimising iron ore production costs, the project required innovative solutions to maximise automation. Consep provided a package of fully automated sampling systems including, wherever possible, automated sample delivery systems to the laboratory. This process has ensured that maximum efficiency and safety is achieved in the sampling process. Critically, Consep's sample stations minimise operating costs for the Roy Hill project.

The key technology supplied by Consep is the solids station primary samplers. These devices represent the latest development of extreme duty linear samplers incorporating a belt drive for maximum reliability. The largest duty, the Train Load Out (TLO) sample station, has a maximum throughput of 16,000tph, making it amongst the largest samplers installed in the world.

Almost all of Consep's scope of supply is designed and manufactured in our own workshop which allowed us to provide Roy Hill with two important advantages. It maximises local content for the project and has allowed an express delivery of the equipment, with most of the scope delivered within 20 weeks.

Key to the project was to be able to supply a wide range of sampling technologies and peripheral equipment. Consep has also designed and manufactured a wide range of complementary equipment for the fourteen sampling stations in the Process Plant, including:

- Belt drive linear samplers
- Ball Screw linear samplers
- Vezin Samplers
- Belt feeders and sample conveyers
- Sample crushers
- Sample collectors
- Automation systems
- Custom chute work package

Importantly almost all of this scope was designed and manufactured inside our own ISO9001 Accredited workshop in Australia.



Consep Sampling Station at Roy Hill



*Our clients are able to work directly with staff who have both the experience and ability to develop custom solutions to a clients requirements. Consep is a professional organisation with all the resources, manufacturing standards and project management processes needed to meet the contractual requirements of the world's largest projects.*

*For Roy Hill, the challenge as we saw it was to design and supply our high quality customised sampling systems in a compressed delivery period, while also meeting the projects contractual and vendor data needs. We believe that only a company with 25 years of experience and in house design and manufacturing could achieve the projects 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
- Solution wire 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. For most 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.

For the Roy Hill Project, Consep has designed and supplied a range of conforming automation systems for the sample stations. These were custom designed to meet the project specifications and are based upon Allen Bradley PLC systems. Consep designs and builds the electrical panels in our own workshop using our in house team of electrical engineers.



**Consep's sample crushing, feeder and integrated linear sampler arrangement**

The Roy Hill Iron Ore Project also incorporated a solution for the interfacing between the in-field automated sampling stations and the automated laboratory building. The solution was a transfer system that carries the final sample of lump and fines from the plant to the laboratory where it is discharged. This final link in the project ensures that Roy Hills goal of a automated sampling system is achieved, with no need for any operator involvement in the collection or transfer process.

Consep is proud to be supplier to the Roy Hill Iron Ore Project.



**Assembly and testing of Roy Hill equipment in November 2014**



Consep Pty Ltd is committed to providing customers with long term satisfaction through innovative, cost effective products and solutions which answer the customers individual needs.

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