Enforceable Undertaking Summary Presentation

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Orrcon Steel

Enforceable Undertaking

Summary:

- During December 2009, an incident occurred in the Electro-galvanising Plant Coil Loading Bay at 121 Evans Road, Salisbury.
- An operator was performing the activity of loading the coil transfer truck with steel coils when the coil being lowered into the truck cradle snagged on another coil already on the truck.
- The suspended coil slipped from the crane C-hook & toppled down into the area in which the operator was standing causing significant crush injuries that later required a medical amputation of the front half of the operator's right foot.

- **System Failings:**
- Coil cradle upright was not captive with the locating pin removed, did not provide a safe system of work
- Procedures & training were lacking for coil loading practices
- Induction for contractors (labour hire) were lacking
- Exclusion zones were not marked at that time

Typical coil loading into cradle

Cradle upright after the incident

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Previous coil transfer system:

- Load restraint required
- Cradle adjusted manually & load support only able to be adjusted in 50mm increments
- Canopy design required significant force to operate

Old wet weather canopy – 2 man operation

Old width adjustment system

Old load restraint requirements

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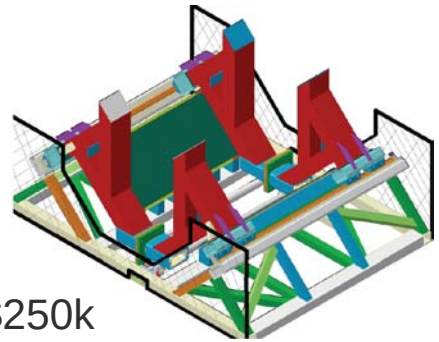
Upgraded Coil Transfer system:



- System is now fully commissioned
- Total project investment: trailer & cradle $250k

Safety & Business Improvements Delivered:

- Cradle design eliminates need for load restraint chains (no manual handling of chains)
- Cradle is hydraulically actuated from safe location at rear (no manual handling of pins & load supports)
- Cradle is rated for 28t SWL & compliant to NTC guidelines 2nd edition.
- Canopy design allows ergonomic, low effort operation.
- All work is performed at ground level. No need to conduct work from trailer bed
- System is providing a 30% improvement in efficiency for these tasks

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Replacement C Hooks

- Orrcon used 2 simple C-hooks to handle single coils with varying widths & weights resulting in varying centres of mass.
- This made it difficult to ensure the load was balanced before taking the load onto the C-hook and required the operator to make a judgment on where to position the coil on the C-hook.
- As part of the ‘Benefits to Workers’ in the EU Orrcon agreed to research the materials handling market to ID the most suitable devices for our use with the following design features.
  - Fully adjustable for the full range of coil sizes and their centre of mass
  - Allow accurate set up charts to be developed for safe operation at a positive 2° lean back
  - Allow increased level of operator control to minimise the risk of crush injuries
  - Include an improved handle to reduce the exertion required to handle an empty C-hook

14T SWL C-Hook – OTO Mill

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Replacement C Hooks

- Orrcon were unable to locate any C-hooks on the market that met the required criteria and had no option but to develop one with industry support.
- The final design has a set up chart and an easily adjustable centre of mass that ensures 0° - 2° lean back into the C-hook for the selected coil weight.
- The C-hooks are fitted with inclinometers to provide operator feedback on positive coil alignment
- An ergonomic handle was developed to provide ease of maneuverability at different heights.
- The fitment of rotators has further reduced the need for operators to handle the C-hook other than for placement & a test lift

14T adjustable centre of mass C-hook

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Procedures & Provision of Training:

- The procedures in place at the time of the incident were found to be inadequate & not well understood.
- Plant & process risk assessments were completed & a complete set of new procedures were developed for all areas of the new coil handling system.
- All operators were trained and competency assessed on the new systems and undergo annual refresher training and competency assessment.

Contractor Management:

- On-boarding procedures for recruitment and induction training have been reviewed and updated to include labour hire contractors (long term) and maintenance contractors (ad hoc).
- Induction training is now more structured and tiered to ensure the safety of the contractors and those around them.
- Emphasis has been given to training for the relevant staff that are responsible for the supervision of contractors on-site (in particular maintenance).

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Coil Crane Rotators

Rotator fitted to 35T Hoist

Relationship to EU

- This project was identified as complimentary to the EU to improve worker safety by eliminating the need to rotate C-hook loads by hand.
- This was a proactive improvement by Orrcon to reduce coil crane operators exposure to high frequency, close proximity manual handling of suspended loads.
- Total project investment $184k (Mill 6 to be completed prior to recommissioning)

20T Rotator

Safety Benefit:

- Rotators installed to all coil handling cranes to date have allowed far better exclusion zone compliance, eliminating the need for operators to touch the C-hook other than during the initial test lift, keeps them out of the “Line of fire”
- They also provide a benefit that the load hook does not rotate during travel requiring manual adjustment by the operator

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Supplier details:

Cradle:

Designed & certified by *Engistics*

Fabrication & commissioning by *Eastall Precision Engineering*

Hydraulics design & commissioning by GFR Industries

Trailer:

Supplied & reconditioned by *Haulmark Trailers*

Canopy:

Supplied by *Haulmark Trailers*

Rotators:

Supplied & installed by OEM crane manufacturers, *Demag, Eilbeck & JDN*

C-hooks

Designed, manufactured & certified by AAAO *Engineering*

Hydraulically adjustable cradle to NTC Guidelines

Trailer, cradle & canopy

20T Rotator

18T adjustable CoM C-hook