sgcaustralia

CASESTUDY

BHP MAC ST01 & ST02 SUSTAINABILITY PROJECT

PROJECT PROFILE

Stackers ST01 and ST02 are located at Mining Area C (Newman) in Stockyard 1 (SY1). SY1 at MAC which receives lump product from existing ore handling plants OHP1 and OHP2.

These stockpiles are reclaimed and loaded into ore trains at the existing Train Loadout 1 (TLO1) for transport to Port Hedland.

The aim of this project is to increase the Stacking Capacity from 4,250 TPH to 6,500 TPH by the incorporation of a VVVF and multiple Structural / Mechanical Upgrades to the existing systems.

PRODUCTS USED

- 2x Siemens Sinamics 150 VVVF Drives
- APAC (Rinnai) Vertical HVAC units
- ACTRON split system air conditioning units
- Allen-Bradley Rockwell Safety PLC
- Hardware, Guard Logix Safety controllers and ControlLogix
- EtherNet/IP Network Devices
- Allen-Bradley Rockwell 843ES CIP Safety over EtherNet/IP Encoders
- SIMOCODE Basic units and current
- measuring modules
- Weidmuller DATA lightning and overvoltage protection devices
- Omron Forcibly Guided Contacts
- PCA IPHJ series hollow shaft encoder
- Amlec Dual Channel inclinometer
- SCHMERSAL limit switches
- IDEM rope switches (Utilised for Anti-collision)
- IFM Fail Safe Inductive Sensors
- Inductive Sensors (Pepperl+FUCHS)
- Plummers Industries MCC starter
- modules
- HMA Anybus EtherNet/IP to Modbus-TCP Linking Device
- Pressure Transmitters

PRODUCTS HANDLED

- Iron Ore

OUR INVOLVEMENT

Designed, modified, integrated and commissioned each stacker including:

- Tripper modifications to accommodate the increased rate by replacing the existing chute, impact plate, training plate, skirt box and dust hoods, launch pulleys, blocked chute devices, structural strengthening and installation of additional primary and secondary scrapers
- Boom Conveyor Modifications including an increase in speed by way of VVVF and machine substation modifications, structural strengthening and an upgraded HVAC System, replacement of the idlers and impact idlers, replacement of the dust hood and dust suppression system, installation of an additional oil cooler to drive gearbox, replacement of the drive fluid coupling with a flexible (Samiflex) coupling, and the addition of a secondary lanyard operated anti-collision system

Switch Room modifications including:

- New VVVF
- Installation of new MCC modules to bring in the desired SIL rating
- Addition of an Oil Cooler required for each boom drive gearbox
- Upgrade to the current VESDA system to allow for new environmental changes with HVAC system
- Upgrades to the Network and PLC system including the inclusion of a Safety PLC system and Functional Safety devices
- Structural Strengthening and modifications to the HVAC system due to the increased heat load

Field Device repositioning and upgrades to:

- Luffing, Long Travel and Slew Drive motor encoders incorporated into the Functional Safety System
- Long Travel limits, trailing cable tensions limits and final resting positions
- Incorporation of new Luff Limit and Slew Chamber Proxies
- Installation/Upgrade of Cable Support Systems

CAPACITY

- 6,500 TPH