

AIR COMPRESSOR 1

ECL Dual Air compressor consisting in two small air compressors, interconnected in a master-slave configuration adjusted to reduction crane air consumption:

- Energy savings
- Preventive maintenance plan optimization
- Especially designed for aggressive reduction environment leading to longer life duration

CABLE CHAINS 2

New plastic chains to replace existing steel chain:

- Easier maintenance
- OPEX optimization

LONG-TRAVEL MOTION 3

- Upgrade to VFD to control speed and protect mechanical equipment
- Increased speed to meet production requirements
- Enhance braking system for reducing maintenance costs

EMERGENCY POWER SUPPLY 4

An emergency solution in case of smelter power outage in order to keep reduction cranes powered to perform critical tasks

CONTROL SYSTEM UPGRADE 5

- Electrical refit for managing equipment obsolescence
- Latest control and PLC systems to upgrade performances, reduce cables and connections, improve flexibility and networking capabilities, and increase reliability

AIR TREATMENT 6

- Air cooler designed especially to operate in electrolysis environment: longer life duration
- ECL water extractor to remove 95% of the liquid water trapped in the incoming air
- ECL air dryer to reduce the air relative humidity to avoid water generation up to a 20°C temperature reduction

AUXILIARY HOISTS 7

Increased lifting capacity to meet production requirements

ANTI-COLLISION SYSTEM 8

- Upgrade for compliance to latest standards for enhanced safety

MAINTENANCE REPAIR AND OVERHAUL

Multiple levels of services and overhauls to improve asset utilisation, reduce costs and optimize CAPEX, including:

- PTM tool servicing
- Compressor servicing
- Equipment maintenance on demand

Aluminium

Modernization of Pot Tending Machines



Enhance the value of your existing assets as an alternative to replacing it

- Optimize your production and costs
- Extend Pot Tending Machine service life



Overview of Tools' Trolley upgrade

Code	Benefits
●	Improve Performance
●	Increase Reliability and maintenance
●	Process evolution/creeping
●	Increase Safety and Ergonomics

CRUST BREAKER 1

Different tool geometries depending on the process

- Automatic breaking cycle to ensure repeatability and quality of the operation
- Tool tilting limitation system to limit tool damages



CABIN 2

VISIO+: an Ergonomic Tending Machine Cabin:

- Advanced air control system
- New cabin structure to improve visibility
- Ergonomic seat for better operator comfort including customised side consoles (for joysticks and controls)
- Terminal operator with simplified functions



EXTRACTING & TIGHTENING DEVICES 3

- DIANA: a semi-automatic measurement of anode level allowing the overall sequence to be performed from the cabin with repeatability and consistency:
- Torque monitoring to meet process requirements and increase clamps' life expectancy
- Anode transport securing
- New generation clamp anti-fall device
- Laser positioning assistance to optimize cycle time
- Tool tilting limitation system to limit tool damages



CANDI 4

CANDI 4.0: an automatic and continuous monitoring of the electrical insulation of the machines in operation:

- Failure identification to reduce troubleshooting time
- Potential difference display to prevent safety risks
- Flexible and evolving system
- Possible installation on any crane

HYDRAULIC FUNCTIONS 4

- New generation secured cylinders to improve safety
- Hydraulic unit upgrade to increase tool speed and optimizing cycle time

CROSS TRAVEL MOTION 5

- Upgrade to VFD to control speed and protect mechanical equipment
- Increased speed to meet production requirements
- Enhanced braking system to reduce maintenance costs

WINCHES, HOISTS AND PULLEY TACKLE 6

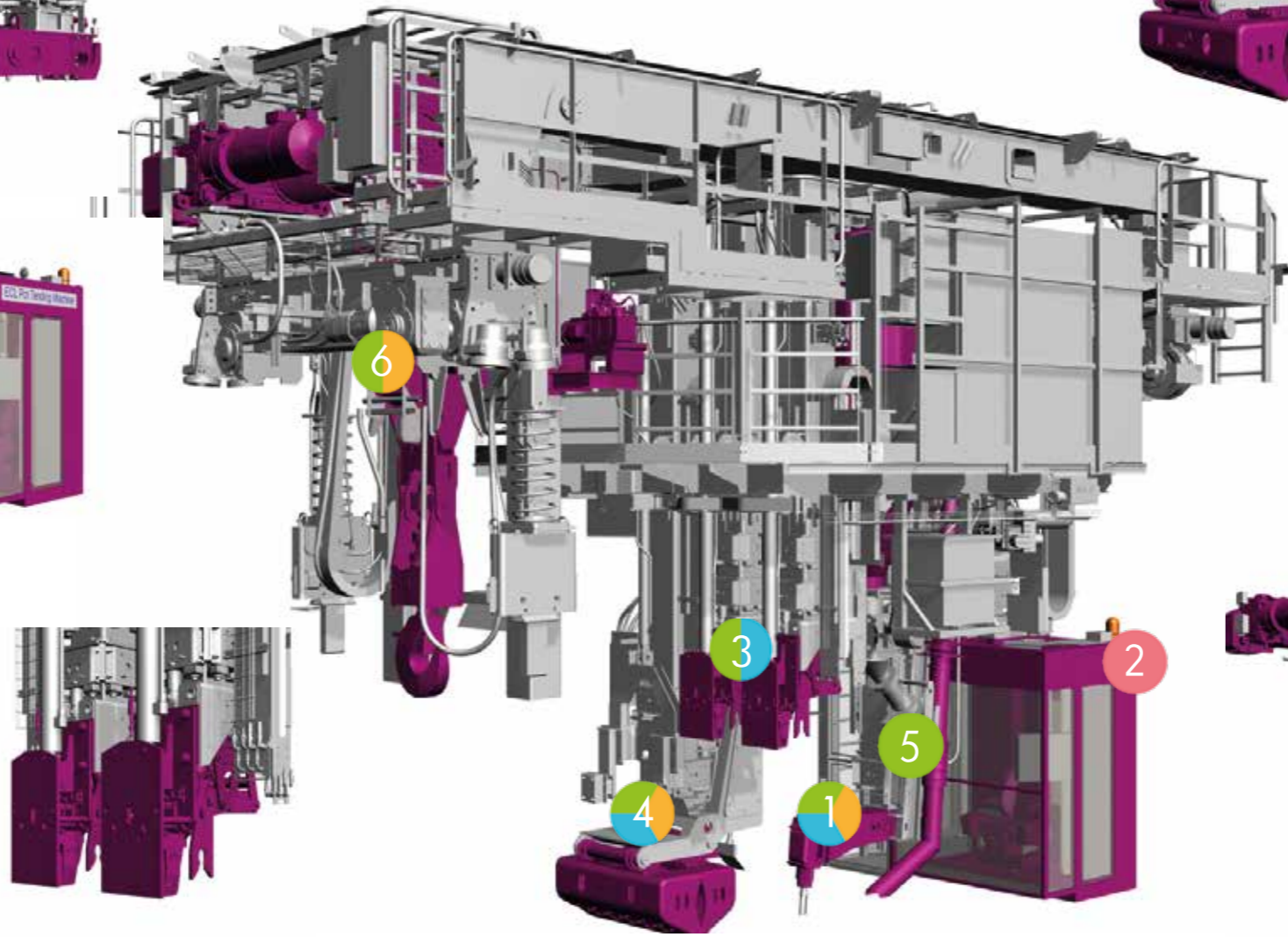
- Over-speed system
- Anti-overlapping system
- Balanced lifting beam
- New generation brakes to increase safety and reduce maintenance costs
- Increased lifting capacity to meet production requirements

REMOTE-CONTROLLER 6

- A wireless communication tool designed to operate any crane from the ground
- Ease of mobility for the operator to increase operation flexibility and safety

AIR CONDITIONING 6

- New A/C kits for compliance with latest environmental regulations and gas obsolescence
- New semi-hermetic compressor to reduce maintenance costs



SHOVEL 4

- New cast buckets with better life expectancy and reduced OPEX
- Fully hydraulic scraping shovel to improve process
- Tool tilting limitation system to limit tool damages



BATH PIPE & HOPPER 5

- New generation Bath Pipe for better covering accuracy
- New generation Hopper filling interface to improve tightness
- Bath deflector to reduce the bath amount in basement
- Dosing (screws, pallets) to improve covering product volume accuracy
- Fluidization system modernization for continuous product flow



TAPPING & TROLLEY 6

- Tapping regulation system to improve quality and reducing OPEX
- New generation safety brakes to comply with latest lifting regulations while optimizing performance and maintenance
- New Hoist monitoring system to improve safety
- Increased lifting capacity to meet production requirements
- Greater hook rotation accuracy
- Limited rotation angle to reduce damages and failures



INTELLIGENT SOLUTIONS

- Process safety modules:
 - Communication between PTM and Pot Micro to secure Tapping operation
 - Crucible management and tracking
 - Skill2perf module to adapt your crane configuration to operator's skills
- Crane automation modules:
 - Predefined automatic motion for optimized trajectory avoiding PTM tool and pot damages
 - Accurate positioning for better consistency and repeatability of operation
 - Anode covering for savings on bath consumption and to maintain the level or height of the product cover.
 - Crust breaking for process consistency
 - Anode changing to apply best practices
 - Hood handling to take operators away from hazard areas

SMARTCRANE 6

Through remote data monitoring, Fives' SMARTCrane service allows to monitor the performance of your crane fleet in real time:

- Optimization of operations by analyzing past operational data
- Real-time visibility through remote monitoring
- Predict danger-points on specific functions