



INTERNATIONAL LTD

WHERE MILLING INNOVATION MEETS PROCESS EXCELLENCE.

ABOUT NCPI

NCPI are suppliers of new Grinding Mills throughout the world. NCPI provides impeccable engineering solutions that are tailored to our customer requirements. We also specialize in the refurbishment of used mills from any OEM and consider ourselves “market-leading experts” in this regard.

Included in our project capabilities are logistical, installation and commissioning management to deliver turnkey project and service solutions. NCPI has completed several such projects with the largest of them installed in Australia - this successful supply of a 15MW SAG mill has cemented our place as a global leader in the supply of gear driven Grinding Mill Projects.

NCPI has access to the largest workshop in South Africa, this workshop is amongst 4 of the largest heavy engineering workshops in the world, with the works covering 20 000 m². These works include crane lifting capacity of 200T, plate rolling up to 260mm thick and machining capacity up to 16m diameter.

NCPI offers a solid reputation in the Grinding Mill industry with expertise based on technical management and a meticulous, hands-on approach in everything that we do.

NCPI have supplied over 260 mills into 30 countries to date, delivering some of the worlds largest gear driven mills ever supplied.

NCPI - where milling innovation meets process excellence.



NCPI DESIGN EXPERTISE

NCPI supplies SAG, AG, Ball, Rod, Regrind, Pebble and Dry Grinding Mills.

The Grinding Mills supplied by NCPI are reputedly recognised based on our robust design, innovative technology and superior quality.

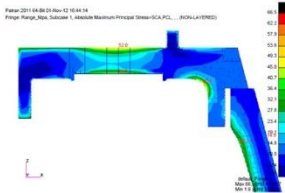
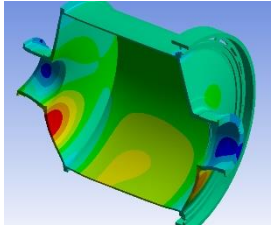
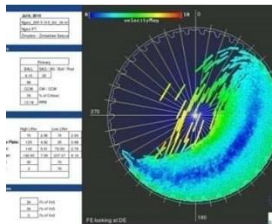


Figure 4.8: Stress range [MPa] - Front tension



PROCESS DESIGN

- NCPI utilize modified Bond Theory with proven Service factors established from our extensive practical experience for Ball Mill sizing.
- SAG/AG mills are sized using a hybrid model, including published information from Barrett, Austen & Morrell.
- NCPI has developed a Specific Energy / Breakage distribution model for accurate SAG Mill sizing.
- This model offers more circuit detail (e.g. PFD's, PSDs, Mass Balance, Stream products, particle size distribution prediction) & covers the full comminution plant (crushing, screening, milling, classification).

MECHANICAL DESIGN

- FEA is completed with a 3-dimensional Structural Finite Element package and is integrated into our 3D Modelling Package.
- Mill structures are sufficiently designed in accordance with AAC323001.
- Mill designs also incorporate Casting Simulations, Fatigue Analysis (in accordance with BS7608) and Fluid Film Analysis where outputs are integrated into the FEA model.
- Gearbox Design submitted for NCPI review to AGMA 2001:C95. NCP specify a SF of between 2.0- 2.3.
- Bearing life L10basic >52,000hrs. Pinion Bearing life L10h > = 100 000 hours.
- NCPI Specification stipulates Couplings SF > 2.0
- Open Gearing designed to AGMA 321.05 / 6014:B15. Strength > 2.50, Durability between 1,5 and 1.75.

E & I DESIGN

- Electrical, Instrumentation & Control System Design.
- VSD Specialist Sub-Contractor Management.
- Main Drive Motor Design Review & Contractor Management.
- Induced Torque Spike Design Review.
- PLC Design & Implementation.
- E&I Interface Management.

QUALITY CONTROL



- NCPI operates in accordance with ISO9001.
- All NDT undertaken by independent NDT technicians at specified Hold Points.
- All Hold points are inspected by NCPI Project Engineers & QA Engineers which include: Casting Processes, NDT, Fettling, Workpiece Set Up, Final Machining, Gear Cutting, Work-piece Run Outs, Dimensional Inspections, FAT, Sandblasting, Painting and Packaging.
- Vendor Data Report document control management.
- QCP's for every component manufactured.
- Full Manufacturing Data Report (MDR) issued on project completion.

INNOVATIVE PRODUCTS



CONVENIENCE COMES IN SMALL PACKAGES

NCPI's range of skid-mounted mills are designed to offer a simple, easy to manage grinding equipment solution.

- Our skid-mounted mills are perfectly suited to projects with lower tonnages, limited space, or tight deadlines. These modules offer a simple concrete pad solution required for civil laydown. These modules are prefabricated for quicker installation times and offer an "easier to install" solution.
- Depending on the size, these mills and skids can be shipped to site in 40ft containers or on flat racks.
- Our skid-mounted mill sizes range from 6ft to 12ft in diameter and from 110kW to 1250kW of installed power.

Contact our sales team for more information.

INNOVATIVE PRODUCTS

WORLD'S FIRST TRUNNION-SUPPORTED STAINLESS STEEL GRINDING MILL

NCPI have successfully designed, manufactured and commissioned the world's first trunnion-supported, fully stainless steel grinding mill. A project so unique - we had to share some detail.

NCPI collaborated with the client to design and deliver a machine that met, if not exceeded, their specific requirements. The product is a work of tailor-made engineering, and a world first.

To manage this application effectively and efficiently, NCPI's iteration of grinding mill technology was introduced into the processing stream. The mill was designed by NCPI's team of engineers to offer strong resistance to the extreme, low pH conditions of the acid in a raffinate solution.

Many factors contributed to the surety of the materials, compounds and surfaces. These factors included various testing, and precise material developments. Many aspects of the ancillary equipment were also improved in order to provide robust and lengthened operating life. This is a 18'x16.5' 2500kW Ball mill supplied.

Key Features include:

- Duplex stainless steel mill shell and ends
- Stainless steel girth gear guard
- Specifically designed main trunnion bearings and stainless steel wetted area protection for low pH conditions
- Fully fabricated, stainless steel feed chute
- Liners designed for corrosion resistance
- All sealants and rubber compounds tested for low pH suitability



MILL SPARES / AFTERMARKET SUPPLY AND SERVICES

NCPI can provide spares and all aftermarket services for all mill OEM brands. We have successfully completed the following for many clients globally:

- Supplied all mill spares including girth gears, pinion gears with bearings and housings, gearboxes, motors, feed chutes, trommel screens, trunnion bearing assemblies and all seals
- Repair services on various types of mills
- Full mill refurbishments from 6ft to 40ft diameter mills
- Full Design audits including FEA and fluid film analysis to ensure that a mill can handle upgraded load masses for increased throughputs
- Lubrication system upgrades
- Process system audits including mill sizing, cyclone sizing, pump assessment, pipe sizing, crusher sizing, screen audits and several sampling exercises
- Drive train alignments
- Foundation plinth repairs
- Vibration analyses of drive train and foundations
- Gearbox redesign and upgrades
- Clutch redesign and upgrades
- Motor Upgrades, VSD upgrades and electrical control upgrades



Supply of a 36' x 18' SAG mill
– Installation taking place



Gearbox upgrade

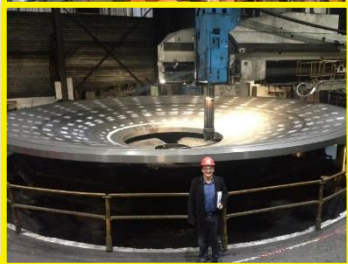


Trunnion bearing spares /
refurbishment thereof

PROJECT REFERENCES

Here are a few examples of some of our latest milling supplies...





Supplied into Namibia: 36' x 19,5', 13.5 MW SAG mill & 22' x 34', 8.5 MW Ball mill.

Each Mill supplied with a dedicated VVVF drive including chilled water supply circuits.

Supply included Liner Handler, Thunderbolt and Monorails.

Supplied, delivered and installed by NCPI.



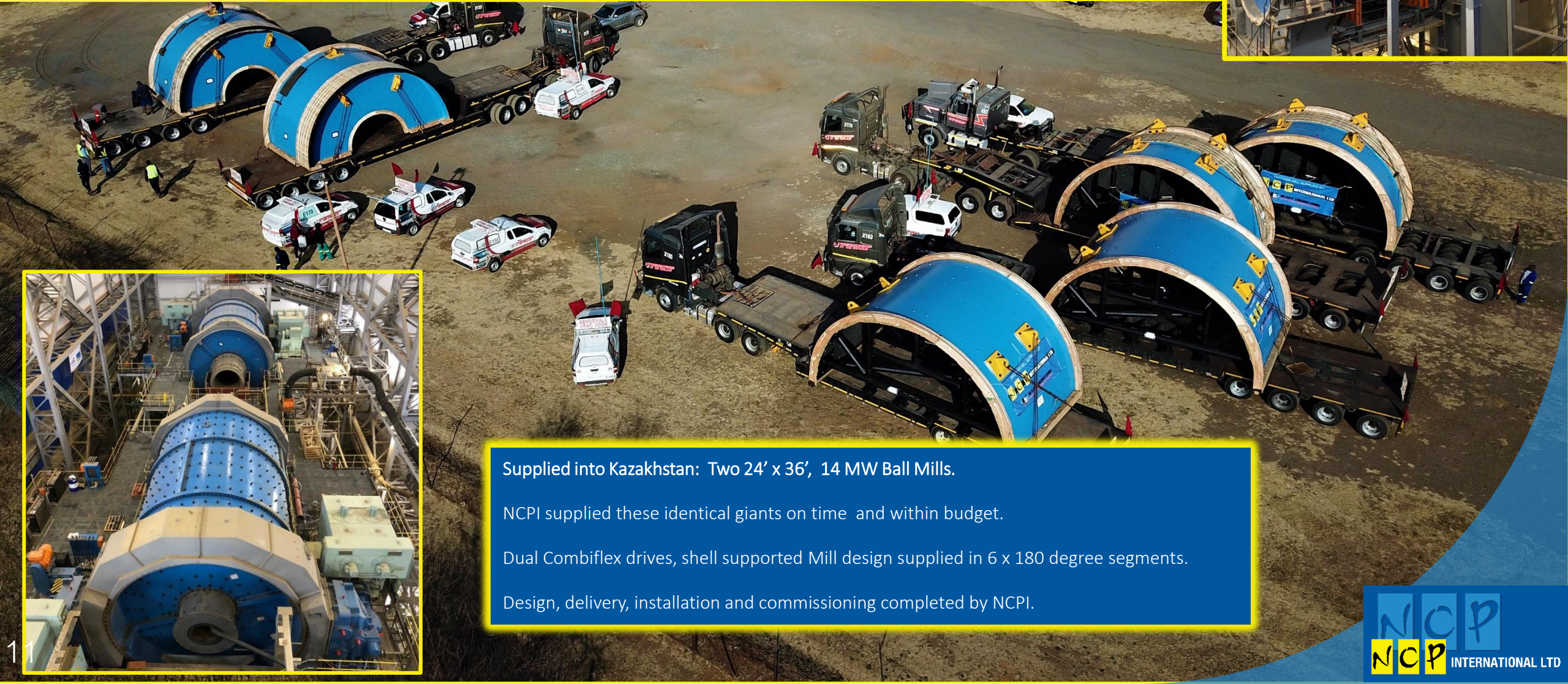
Supplied into Australia: 36' x 18', 18 MW SAG Mill.

One of the largest gear driven mills ever supplied globally.

Dual Drive slow speed synchronous motors directly coupled to pinions including VVVF drive.

4 pad self-aligning bearings.

Designed and supplied, delivered to site & installation supervision done by NCPI.

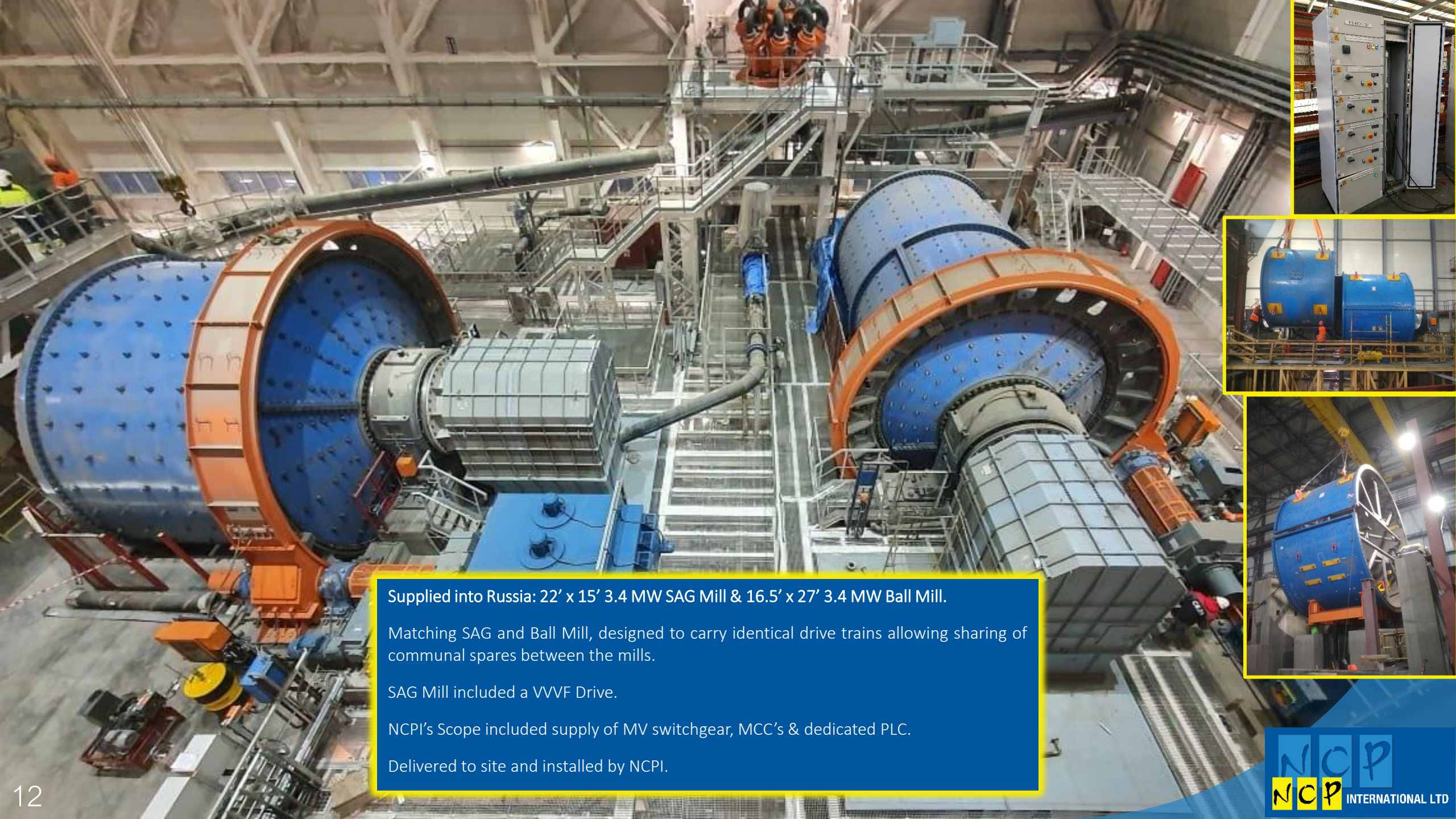


Supplied into Kazakhstan: Two 24' x 36', 14 MW Ball Mills.

NCPI supplied these identical giants on time and within budget.

Dual Combiflex drives, shell supported Mill design supplied in 6 x 180 degree segments.

Design, delivery, installation and commissioning completed by NCPI.



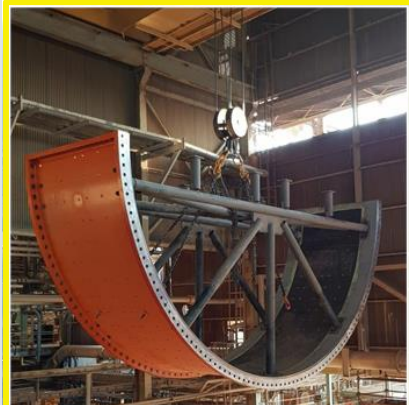
Supplied into Russia: 22' x 15' 3.4 MW SAG Mill & 16.5' x 27' 3.4 MW Ball Mill.

Matching SAG and Ball Mill, designed to carry identical drive trains allowing sharing of communal spares between the mills.

SAG Mill included a VVVF Drive.

NCPI's Scope included supply of MV switchgear, MCC's & dedicated PLC.

Delivered to site and installed by NCPI.



Supplied into the DRC: Two 32' x 14', 6 MW, Dual Drive SAG Mills.

Two reverse engineered SAG Mills supplied to fit the clients existing civil footprints.

Drive trains designed to match the client's existing spares holding including motors, couplings, gearboxes, girth gears and pinions.

Supply included a scats handling system.

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