

Heavy bolting applications in the mining and steel industry

CASE STUDY: JCA Soluções, Brazil

Our sales partner in Brazil, JCA Soluções, has been promoting our alkitronic[®] torque multipliers for years, especially for applications in the mining and steel industry. Reason enough to point out some of some interesting bolting applications in this industrial sector.

COMPANY PROFILE

JCA Soluções is a sales partner of alki TECHNIK GmbH and distributes alkitronic[®] torque multipliers in Brazil.

Mining requires heavy machinery that needs to be maintained on an efficient and frequent basis.

BACKGROUND INFORMATION

The mining industry, which is a strong economic sector in Brazil in particular, requires high performance machinery to, among other things, crush, and process rocks and minerals. Some of these machines weigh several tons and are not always easily accessible for maintenance work. The machines which are in daily use also require regular and, above all, fast maintenance. Heavy vehicles such as excavators and dump trucks are also regularly needed on the construction site in quarries and mines. They also require regular and reliable maintenance and service.

JCA Soluções bolts in addition to conventional construction machinery such as excavators, dump trucks in the mining industry, also so-called shredders, and crushers, which are used for the processing and reduction of raw rock material.

In addition to the mining industry, JCA also uses our products in the steel industry.



Figure 1: Large machines require reliable torque multipliers - picture: bolting on a turntable of a CAT excavator.

Maintenance with the highest safety precautions is an extremely complex routine process and requires highest concentration, as well as the right tools.

For the maintenance of a shredder, for example, highest power and precision was required. This was achieved with the alkitronic[®] EF 4000. The client was one of the largest steel construction companies in Brazil.

THE SOLUTION

Whether electric, battery-driven, or hydraulic torque multipliers, alkitronic[®] offers the right tool for every application, thanks to its wide and specialized product range.

For bolting applications on excavators and heavy construction machinery in the mining and steel industry, highest precision and safety is required. For this reason the electric torque multiplier EFCip and the battery - driven torque multiplier EAF are the preferred tools.

The alkitronic® torque multipliers prove themselves every time in the most various applications, thanks to their reliability and quality “Made in Germany”.

Bolting with the battery-driven torque multiplier EAF is precise and safe. The alkitronic® multipliers are particularly suitable for use in confined spaces. The maintenance-free and low-wear brushless synchronous motor allows numerous boltings in sequence.

Due to its angled construction, the electric torque multiplier alkitronic® ECWip is also suitable for working in confined spaces, such as mines or steel mills. This torque multiplier can also be used on all international power grids and does not require a great deal of checking during use. This again leads to time savings.



Figure 2: A worker maintains a machine with an alkitronic® torque multiplier EAF.

Below you will find an overview of the alkitronic® torque multiplier models used and all bolting applications in detail.


alkitronic® torque multipliers: The battery-driven torque multiplier EAF

- ✓ Low running costs: The brushless synchronous motor is maintenance-free and low-wear.
- ✓ Kind to health: Low weight, ergonomic design, low noise emission. In addition, no noise protection measures are necessary during load operation.
- ✓ Powerful: Two 18V 5.2 Ah Li-Ion battery packs ensure up to 360 bolting operations under full load in sequence. LED charge level indicator directly on the battery.
- ✓ Precise cut-off torque even when the battery is low on charge.
- ✓ More powerful battery packs are also available as an option.

The electric driven torque multiplier EFCip

- ✓ Safe and uninterrupted operation in any weather conditions (extreme cold, humidity, dust) - thanks to IP54 protection.
- ✓ Low running costs: Maintenance-free, low-wear and brushless synchronous motor with excellent efficiency.
- ✓ Permanently higher bolting quality compared to ratcheting bolting tools due to continuous rotation.
- ✓ Simple and intuitive operation for fast and comfortable working.
- ✓ OLED display with glare-free display - for perfect reading in all weather conditions.
- ✓ Optional software packages, also a Bluetooth interface for data transmission, are available.





Bolting applications in the mining and steel industry

No.	Machine model	Torque/ rotation angle	Bolt count	alkitronic [®] model
1	<p>Sotreq Caterpillar - Tracked excavator CAT 744KII - Turntable</p> 	332 ft.lbs + 90° 450 Nm	122	<p>EFCip 65, EAF 2/600</p> 
2	<p>Vale 511D Mine - Sandvik Cone Crusher CS 660</p> 	2323 ft.lbs 3150 Nm	-	<p>EAF 2/600</p> 
3	<p>Vale N5 Mine - CAT Engine head</p> 	258 ft.lbs + 90° 350 Nm	128	<p>EFCip 65</p> 
4	<p>Vale Pico Mine - Crusher - Reloading machine</p> 	1475 ft.lbs 2000 Nm	-	<p>EAF 2/600</p> 

Bolting applications in the mining and steel industry

No.	Machine model	Torque/ rotation angle	Bolt count	alkitronic® model
5	<p>Vale Caue Mine - Mining truck CAT 793D</p> <ul style="list-style-type: none"> ▪ internal coupling of the axle drive unit  <p>▪ front wheel suspension</p>  	369 ft.lbs + 60° 500 Nm	-	<p>EFCip 60</p>  <p>EAF 2/400</p> 
6	<p>Komatsu - Mining truck 730E - Bearing lower coupling</p> 	996 ft.lbs 1350 Nm	-	<p>EFCip 60</p> 
7	<p>Komatsu - Mining truck 793E - Upper inner coupling</p> 	1918 ft.lbs 2600 Nm	42	<p>EAF 2/600</p> 




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No.	Machine model	Torque/ rotation angle	Bolt count	alkitronic® model
8	Vale Caue Mine - Mining truck CAT 793D - Brakes 	369 ft.lbs 500 Nm	-	EAF 2/280 N12 
9	Vale Caue Mine - Mining truck CAT 793D - Wheel 	738 ft.lbs 1000 Nm	-	EAF 2/280 N12 
10	Skava Mine - Wheel Loader John Deere 744K-II - Wheel 	738 ft.lbs 1000 Nm	-	EAF 2/280 N12 
11	Vale Mariana Complex - Mining truck Komatsu 730E - Wheel 	1365 ft.lbs 1850 Nm		EAF 2/280 N12 

Bolting applications in the mining and steel industry

No.	Machine model	Torque/ rotation angle	Bolt count	alkitronic® model
12	Ternium truck for steel transportation - Wheel 	295 ft.lbs 400 Nm	-	EAF 2/280 N12 
13	Eletrobras - Demonstration flange with EAF 2/280 N12 	-	-	EAF 2/280 N12 
14	Mosaic Fertilizers - Scania truck G440 - Spring bar 	1254 ft.lbs 1700 Nm	4	EFCip 60 
15	Samarco Mine - Geho-Sludge pump - Pressure pipe 	3319 ft.lbs 4500 Nm	-	EAF 2/600 

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No.	Machine model	Torque/ rotation angle	Bolt count	alkitronic® model
16	Vallourec - John Deere Feller - Engine mount 	-	-	EAF 2/280 N12 
17	Gerdau Steel - Rolling mills 	520 ft.lbs 705 Nm	-	EAF 2/280 N12 