

CRANE ASSEMBLY: HOW THE STEEL GIANTS ARE BOLTED

CASE STUDY: M10 LIMITADA, Santiago, Chile

Reaching high into the sky, a crane loads several tons of materials, thus ensuring that buildings can be skyscraping. Cranes are indispensable helpers on every construction site. But how is a revolving tower crane set up? Assembly at lofty heights and in tight spaces can be a challenge for some workers. Safety, quality and production efficiency are extremely important for the assembly of cranes. The Chilean company MDIEZ LIMITADA (M10) is considered an expert in the field of revolving tower cranes. Alkitronic products were used to assemble a SAEZ crane from M10 in Santiago, Chile - thanks to consultation from our partner TecnoTorque.

COMPANY PROFILE

The company M10 from Santiago, Chile specialises in the sale, rental and operation of revolving tower cranes. The company offers its national and international customers excellent service in structural engineering. M10 is active in construction, mining, and in the shipyard, maintenance and events industries. When it comes to bolting SAEZ cranes, M10 is SAEZ's main customer in Chile. As they needed a torque multiplier with special requirements, they turned to our partner Tecnotorque. The alkitronic dealer based in Santiago has only been selling alkitronic products in Chile since 2019. TecnoTorque's mission is to become the leading supplier of torque tools in the Chilean market.

THE STARTING POINT

M10 has long been using electric torque multipliers from alkitronic for work in struc-

tural engineering, such as the angled electric multiplier alkitronic EFW400 with up to 4,300 Nm and the alkitronic ECWip100. The torque multiplier with their angled design are designed so that the user can work comfortably even in confined spaces. The shut-off torque multiplier impresses with its high assembly speed and low running costs, but the project could not be achieved with the electric multipliers alone. The company's new crane model brings with it new challenges. The torque requirement exceeds the torque of the electric multiplier. Therefore, another torque multiplier from alkitronic had to be found for the TecnoTorque customer.



Figure 1: The angled electric torque multiplier ECWip100 from alkitronic on the crane bolting connection.

The requirements are the bolting of M70 stud bolts using the SAEZ method with 7,200 Nm. In a user guide specifically for this crane model, SAEZ recommends electric or hydraulic torque multipliers and refers to alkitronic products. The challenge was to find the best tool and the ideal method for bolting all the connections of the huge crane. The base, which was embedded in concrete, also had to be bolted in place so that the large TLS 65B SAEZ

crane could be assembled. The user guide recommends that all tower bolts be re-tightened after the crane has been in operation for two or three days. A possible loss of torque due to the material elasticity can thus be avoided. The crane model from SAEZ lifts and can move up to ten tons. No wonder that the capacity of the tools has to be large.



Figure 2: Working in crane construction poses many challenges.

The safety and comfort when bolting these steel giants are important aspects for fitters and technicians. The decisive factor when working at heights is the weight of the tools and the possibility of working in the extremely tight space within the crane assembly. The space around the tool with reaction arm is generally very small.

The safety and convenience of bolting in the crane are important aspects for fitters and technicians.

Our partner TecnoTorque saw the use of hydraulic multipliers as being the best solution. Hydraulic multipliers are usually the

first choice when heavy bolting connections with large threads have to be tightened with high forces in confined spaces. At first, the AT10 hydraulic multiplier from alkitronic was tested.



Figure 3: Test with the hydraulic torque multiplier AT from alkitronic.

However, given the limited space available, the multiplier was not the optimal solution.

THE SOLUTION

The best solution was finally found in the form of the hydraulic bolting system alkitronic X Driver 8 from Norwolf. We succeeded in using the alkitronic X Driver 8 with a special reaction arm for the assembly of the SAEZ rotating tower crane. The alkitronic X Driver 8 has the perfect ratio of weight and torque capacity. "The X Driver 8 was a great help while installing the crane. It is easy to replace and install in

different positions. That saves time and enables safe operation at heights,” says Ricardo Cornejo from TecnoTorque.

What is special about the hydraulic X Driver System from alkitronic is that the convertible hydraulic drive head snaps into the hexagonal or square housing with no need for pins and bolts. That gives maximum flexibility.

“The X Driver 8 was a great help to us when assembling the crane. It is easy to replace and install in different positions.”

In addition, the alkitronic X Driver System is ideal for working at heights and in confined spaces thanks to its flat design with no protruding edges. The convertible hydraulic drive head can be swiveled through 360° - this ensures comfort for the workers during crane assembly. The small cylinder diameter and the longer levers also ensure that all parts are subjected to less stress in order to handle bolting operations in tight and difficult to access areas.



Figure 4: The alkitronic X Driver with its flat design is ideal for working in tight spaces.

The end customer M10 was very satisfied with the hydraulic bolting system from alkitronic and the advice from TecnoTorque. The users could work well with the alkitronic torque multipliers because they are very light and have great performance.

FURTHER INFORMATION

You can find out more about the company M10 at <https://www.m10.la/>.

If you have any questions about our products, such as the alkitronic X Driver System, please feel free to contact us. Our employees and partners at home and abroad are happy to offer you tailor-made solutions to help you solve your challenges easily and reliably.

TECHNICAL DATA OF THE ALKITRONIC X DRIVER 8

- ✓ hydraulic torque system in the flattest design, with no protruding edges
- ✓ small cylinder diameter and longer levers
- ✓ The convertible hydraulic drive head snaps into the hexagon housing with no need for pins and bolts (A-Drive) or square housing (V-Drive).
- ✓ Hydraulic drive with 2-hose system and optional handle
- ✓ Slim, robust steel design with one-piece piston construction.
- ✓ Only one O-ring, easy to change with four bolts
- ✓ New articulated coupling: Swivel-mounted by 360° or with only one additional element convertible to 360° x 360°.