



Innovative hydraulic nuts save energy company a massive \$500,000 per day, plus improve safety

A relatively small project at a major South Korean power station two years ago has mushroomed into a substantial increase in demand for Technofast Industries' High Temperature EziTite® TR Hydraulic Nuts.

Prior to the installation of the innovative EziTite® TR Hydraulic Nuts, engineers at Korea East-West Power's Taeon 5,050 megawatt coal-fired power station in Chungcheongnam-do, 100km southwest of Seoul, were faced with a number of safety and manpower issues when assembling the power station's boiler feed pumps.

The original set-up at the Taeon power station, one of the top ten largest coal plants in the world, involved twelve large M110 x 4.0 studs which were tensioned using a large hydraulic torque wrench until the desired elongation was achieved.

Not only was the torque wrench heavy, weighing in excess of 125kg, but the horizontal stud position made handling extremely difficult, with the irregular torque readings difficult to relate to tension.

As well, the torque often caused serious damage to the studs, hex nuts and pump surfaces. However, with the EziTite® TR Hydraulic Nuts installed, the engineers' job was made significantly easier with straightforward installation and handling.

The precise bolt load was achieved through simultaneous tensioning, with no damage caused to the studs or pump surfaces.

As well there was a substantial reduction in the number of personnel and the time required to assemble the boiler feed pumps.



Previously it took four personnel around eight hours to assemble each pump, however the innovative Technofast method requires only two personnel for 30 minutes, resulting in a time saving of seven and a half hours.

Using Technofast's EziTite® TR Hydraulic Nut technology, the company has been able to reduce maintenance work and manpower on the Taean power station boiler feed pump by at least three days. This, senior managers at the power station say, has saved the company the equivalent of \$500,000 a day.

With the Korea East-West Power company reducing its maintenance bills on its boiler feed pumps by a massive \$1.5m each service, it's not surprising the company says it is planning to apply the High Temperature EziTite® Hydraulic Nuts to the plant's seven other boiler feed pumps, the plant's huge turbine and steam valves, plus the boiler feed pumps at its 6,040 megawatt DangJin coal-fired power station.

Technofast's Founder and CEO, John Bucknell said the customer was very impressed with the time and labour savings as well as the safety improvements achieved by investing in his company's technology.

"These boiler feed pumps are only serviced every two years. In that period the Korean engineers have watched and waited, and now fully appreciate the incredible savings our technology offers."

Another division of Korea Electric Power Corp to take advantage of Technofast's technology is the Korea South-East Power company who is planning to install the High Temperature EziTite® Hydraulic nuts to its boiler feed pumps at its Samcheonpo 3,240 megawatt power station later this year.

Other upcoming projects in South Korea for Technofast include the High Temperature EziTite® Hydraulic Nuts to be used by Korea Southern Power on its main steam stop valve and its combined reheat valve.

Mr Bucknell explained that the impressive time savings achieved by the Korea East-West Power company, and better, are possible using the EziTite® Hydraulic Nuts instead of conventional methods involving sledgehammers, stud heaters and multi-jackbolt tensioners.



“Large nuts of this diameter can require terrific torque forces to achieve the desired tensioning, or require ‘jacknuts’ which have multiple forcing screws to bring the job within the power range of hand tools.”

He said nuts such as those used on the boiler feed pump can easily have 24 forcing screws per nut, and have to be progressively and sequentially tightened to a specific torque at each step, or the individual screws will be overstressed and fail.

“This can add days of downtime to a typical maintenance operation. Also, when the jacknut fasteners need to be removed, the forcing screws have to be backed off in a strict sequence to avoid failure.

“If not, then excessive load will transfer to remaining screws and cause failures. The jacknut assembly will then need to be cut off.”

EziTite® Hydraulic Nuts, by contrast, tension the bolt in one simple operation. They are rapidly applied by being screwed by hand onto bolt studs, hydraulically actuated to stretch the bolt to the precise tension required, then secured in place mechanically with an integral mechanical lock ring.

The charging pressure is relieved, and the EziTite® Hydraulic Nuts remain in situ at the precise target bolt load.

The reverse procedure permits equally rapid disassembly when it is eventually required. All studs can be tensioned or de-tensioned simultaneously by manifolding them to a single hydraulic source.

Mr Bucknell said that just recently, engineers from the Taeon power station were at Technofast’s Head Office in Brisbane to sign off on the quality documentation of the units made there.

“They were here to make sure it meets their high standards, which includes full traceability of all the products we manufacture here at our Brisbane factory.

“If there is ever an issue with a product, we can trace it all the way back to when and where we bought the material.



“Our quality control procedures here are at the highest level, especially now we have been assessed and passed the requirements for the Korean nuclear supply.

“This accreditation follows on from our expanding work in the US nuclear industry where we have manufactured hydraulic fastening components under the accreditation of our partners, such as Westinghouse Electric,” Mr Bucknell explained.

Technofast technologies such as EziTite® Hydraulic Nuts and Bolts and the complementary CamNut range are employed worldwide and are particularly valued where avoidance of downtime and reduced maintenance time is critical, including nuclear, hydro, gas and coal electricity generation plants as well as mining and industrial applications.

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