

Torque Talk

Tensioning - By Torque'in Nuts ?

Bolts and nuts are basically used on joints for temporary closure. They are there to keep a joint together, to permit a certain joint expansion under peak internal loads and to allow quick disassembly of the joint. With industrial equipment getting smaller in size but higher stressed, the tightening of fasteners has changed from "tight is when you can't turn the nut further" to "tight is when the required residual bolt load is retained". As it is the nut which retains the bolt load, then precise nut application is obviously the key. Just imagine being able to dial in and obtain the desired bolt load within +/- 3% accuracy disregarding bolt grade, bolt length or diameter. Just imagine eliminating the need for bolt measuring. Just imagine cutting out bolt-related unscheduled down times. Just imagine being able to remove the capacity for human error. Just imagine enhanced assembly and disassembly time.

Well, imagine no longer. All of the above is now reality in the shape of the Hytorc Clamp. No leaks. No nut loosening. No bolt yielding. No joint failure. Hytorc Clamp is the simplest and simultaneously the most precise bolting procedure available. So where does the need for a hydraulic torque wrench come into all this ? Hytorc Clamp is a

division of JETYD Corp. as is MULT-HY. The Hytorc Clamp is the result of an extensive research and development programme commenced back in 1990 by the world leader in hydraulic torque wrenches. Via the unique design of the nut, the specially designed drive assembly (see picture opposite) turns a hydraulic torque wrench into a hydraulic load-stretching tool with the speed and accuracy you already associate with MULT-HY tools. So, what is it that makes the Hytorc Clamp quite so revolutionary ? The Hytorc Clamp is a 3-piece nut consisting of an inner tensioning sleeve



The Hytorc Clamp with the JETYD T-100 load-stretching tool alongside. Note the splined drive assembly. The Hytorc Clamp is also available in a limited clearance version, worked from the side.

which is spline-connected to a washer, and an outer turning sleeve. By use of a lightweight, precision torque wrench, action force is applied to the turning sleeve and an equal but opposite reaction force to the tensioning sleeve. The frictional differences between the turning sleeve and the tensioning sleeve convert the reaction force into a holding force, thus causing the turning sleeve to turn on the washer while the tensioning sleeve moves axially only. This axial movement applies a pure pulling force to the bolt without torsion or bending movements. As the turning sleeve turns only on the washer face and on its engaging threads with the tensioning sleeve, both of which are precision manufactured by the manufacturer, the coefficient of friction is known and identical from nut to nut. The Hytorc Clamp is applied by a tool with a torque accuracy of better than +/- 3% and without reaction force, side-load or torsion applied to the bolt. The result is the achievement and retention of the desired bolt load with better than +/- 3% accuracy. Guaranteed universal joint compression. No leaks. No joint failure. No nut loosening. No bolt yielding. No bolt-related un-scheduled downtimes !

In this edition of Torque Talk

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TorqueTalk to us about;

- Hydraulic Socket Wrenches
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Torque Talk to
MULT-HY
North/North West Office
21 Scott Park Road
Burnley
BB11 4JN

Tel: 01282 710828
Fax: 01282 712340

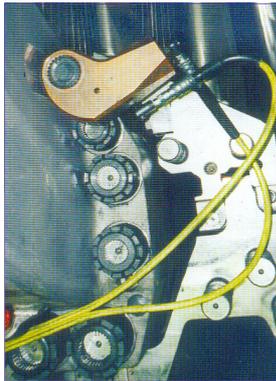
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Hytorc Clamp – Case Study

The upgrading of 2 Low Pressure Turbines, at a power station in Europe, saw the replacement of 230 Turbine Nuts with Hytorc Clamp. The Task: To get back on line, on time, by means of one-pass bolt stretching to the desired residual load without the use of pullers, without replacing bolts, without torsion and without the need to measure elongation. The 230 bolts (nut sizes varying between M52 to M72) were stretched to the desired load with 4 tool-operators in just 7 hours, 43 minutes thus enabling an additional 51 hours of power generation. It is anticipated that future disassembly will gain another 18 hours.



Pocket bolts were easily accessible thanks to extensions available in any length. The lack of reaction or pulling makes the job as simple and quick as easy-access flange bolts.



The Hytorc Clamp opens up the most confined areas to precision load-stretching in less than 2 minutes per bolt. Click-on tool application in any position around the axis of the bolt enhances the use of Hytorc Clamp. With the Hytorc Clamp, job integrity is taken out of the hands of the operator.

You set the load; You get the load !

If you want to learn more about the Hytorc Clamp, please complete the following information and fax it to 01282 712340. Alternatively, please phone or write.

Name:Position:

Company Name:Contact No:

Address:

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The simplicity of tool application and the reliability of the tension obtained eliminates operator's error and elongation check-ups.

Hytorc Clamp – where it's at !

Power Generation; Steam Turbine throttle valves, stop valves, combined re-heat/intercept valves, main steam inlet flanges, couplings, control valves, outer shell and inner-shell bolts; Boiler Feed Pump; Feed Water Heater; Cold Reheat Flange and Man Hole Cover. **Nuclear Power Stations;** Reactor Covers; Reactor Cooling Pumps; Reactor Missile Shield; Vessel Reactor Bolts; Safety Relief Valve; Steam Glands; Containment Door; Bearing Cover; Main Stream Safety Valve. **Chemical & Petro-Chemical;** Heat Exchangers; High Pressure Flanges; Generators; Separators; Crackers; Centrifugal Pumps; Reactors; Steam Valves; Compressors; Boilers. **Steel Mills;** Steel Press Housing; Shear Blades; Rollers; Bearings; Drive Couplings; Furnaces; Torque Arrestor Assemblies; Drive Gear Cases; Crushers; Trunnions; Pinion Gears; Forging Presses; Heaters. **Shipyards;** Propeller Shaft; Main Steam Valve; Crab Nuts on Diesel Engines; Auxiliary Pump; Steam Chest. **Mining;** Gyrator Crushers; Gear Case; Ball Mill; Support Bolts. **Off-Shore;** BOP Flange Bolts; BOP Door Bolts; Clamp Bolts; Compressors; Christmas Trees; Pressure Flanges; Under-Water Assemblies; Crane Assembly & Maintenance.

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North/North West Office
21 Scott Park Road
Burnley
BB11 4JN
Telephone: 01282 710828
Fax: 01282 712340

E-mail Address:
graemegcook@aol.com

Dear Customer,

This issue of **Torque TALK** is devoted entirely to the exciting new Hytorc Clamp. Wherever a critical bolt and nut joint exists and where un-scheduled bolt-related downtime means cost, Hytorc Clamp is the answer. For more details, please contact MULT-HY today.

Graeme Cook