

Pressure Vessel

In line with Klinger Limited's continuing search for products to improve both the quality of service to clients and to improve the cost effectiveness of maintenance by facilitating a complete jointing solution for critical flanges, we have added a NEW division to Klinger to promote a complete Sealing Solutions Package.

Klinger now offers a full package of 'Site Services' in order to provide for a "Leak Free Start Up", offering savings in labour costs and machinery downtime. The goal with all shutdowns involving flanges and joints is leak free start-ups.



Hydroclone Module

Klinger's Site Service Division offers a:-

### "ONE STOP SHOP"

With services such as:-

- On site in situ Flange Facing
- Hydraulic Bolt Tensioning
- Hydraulic Bolt Torquing
- Complete Flange Management
- Flange Management Database Entry



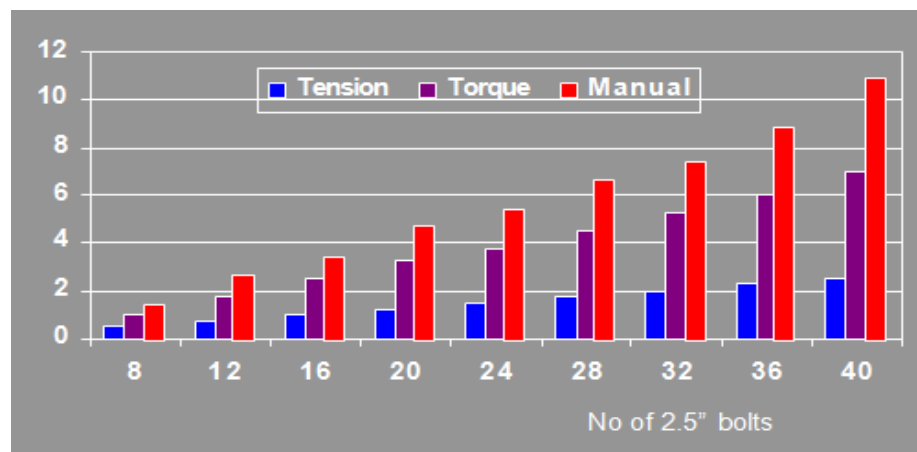
A2 HydraJac

Hydraulic tensioning has many advantages over traditional torque wrenches. This method is suitable for use in extremely confined spaces and only requires that access to the site with a hydraulic hose to apply or release a bolt load without costly and time consuming stripping out of surrounding obstructions.



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The figure below illustrates the huge time saving which can be made when using Hydraulic Tensioning (Blue) rather than traditional methods such as "Flogging Spanners" (Red) or Hydraulic Wrenches (Purple) to achieve a bolted joint.



Tensioning Times Comparison



CamNut



Online Filter for Train 5  
Woodside LNG Plant



Gland Follower



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Hydraulic tensioning stretches the stud bolt, utilizing the elasticity of the metal. This eliminates the frictional forces associated with torque tightening, ensures the correct tension is applied, and improves the longevity of the stud. The closure technique has been successfully used in many heavy industry applications.

### Case Study: Aluminium Processing Plant

The Graph below is an indication of the variations of bolt load applied to 92 x M64 bolts 356 mm long using Torque to apply bolt load, indicating the potential difference of pressure being applied to the gasket.

