

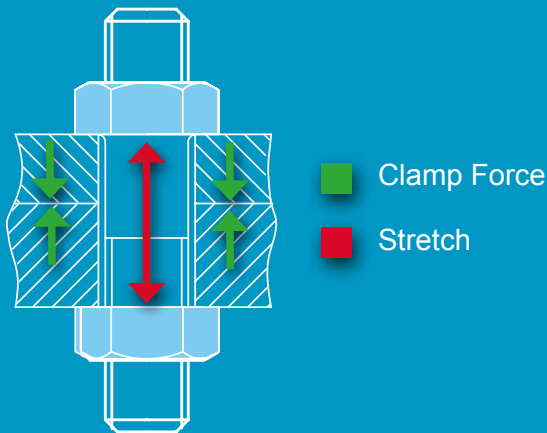
BOLT TIGHTENING SOLUTIONS

No matter what your preference for bolt tightening,
Atlas Copco have it covered.

Atlas Copco



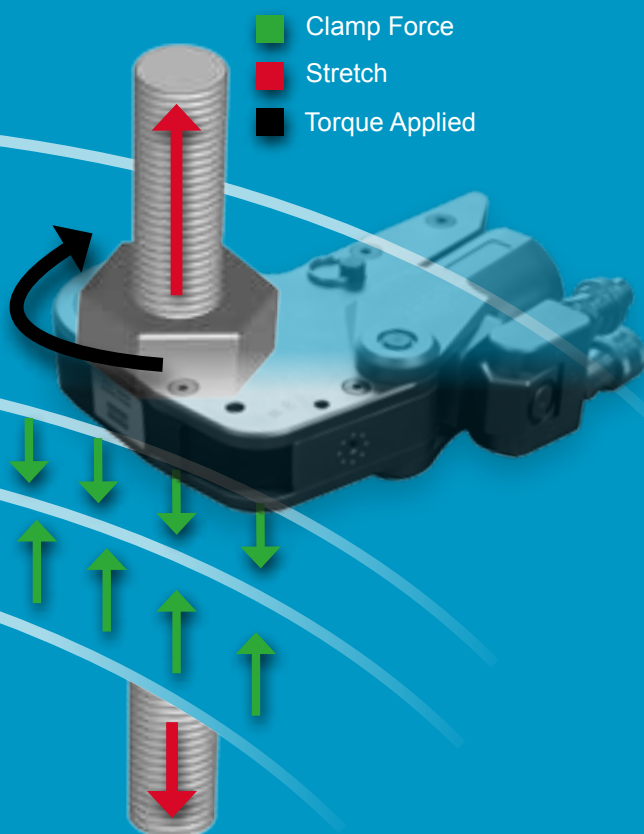
TIGHT CONNECTIONS FOR YOUR APPLICATIONS



Torque and Tension are two distinct ways to achieve the same result: create the appropriate **clamping force** for the joint or connection. To do this, the **bolt has to stretch**, while a nut holds the load and thereby creating the desired clamp force. Atlas Copco offers a comprehensive product range of torque and tension tools, to work on critical bolting applications.

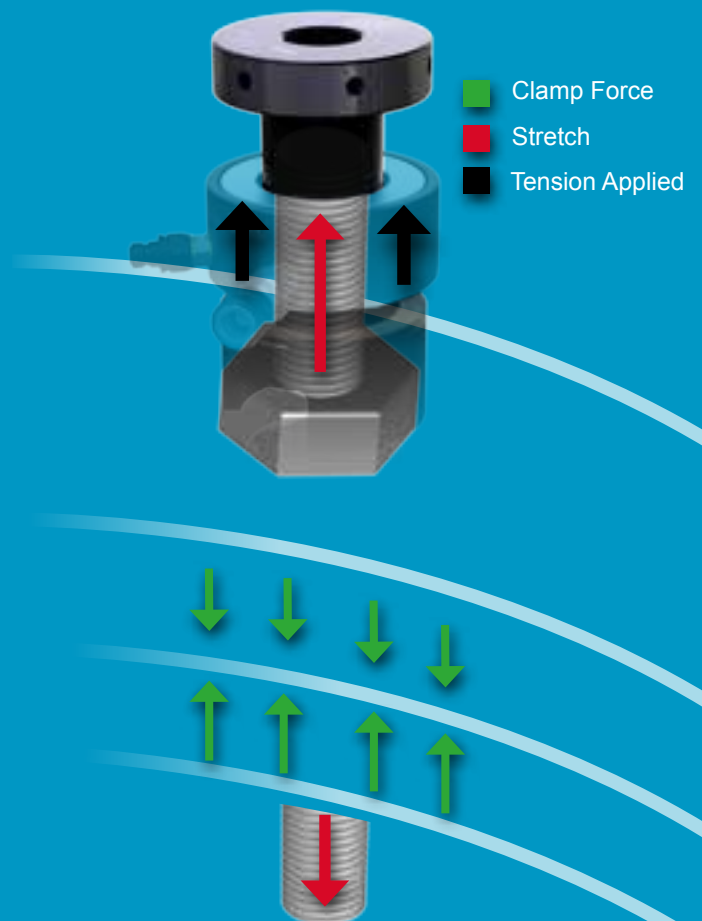
TORQUE

Using torque tools, such as nutrunners or hydraulic torque wrenches, you turn the nut. As the nut turns, it stretches the stud. The torque setting for the tool translates into load on the connection. When the tools are used following the appropriate specifications for lubrication, coating and other factors, a desired clamp force can be produced.



TENSION

With tensioners, the action is not directly on the nut, rather tension is applied directly to the stud in order to produce stretch. Once the prestretch is achieved, the nut can be tightened. Once the pressure is released the nut holds the load on the bolt. This produces the clamp force. Multiple tensioners can be used together to provide even load when tightening. Hydraulic bolt tensioners have a footprint and thread height requirement.



BOLT TIGHTENING SOLUTIONS

No matter what your preference for bolt tightening, Atlas Copco have it covered. With over 25 years of experience our bolt tightening products are used throughout the industrialised world on many diverse applications and in varied working environments.



Tentec CTST Series **BOLT TENSIONERS**

The CTST range of manual return topside bolt tensioning tools consist of 6 base tools covering bolt sizes from 3/4" to 4" (M16 to M100). The tools are designed to fit on to most ANSI B16.5, ANSI B16.47 Series 1, MSS-SP44, API-6A and API-17D flanges



Tentec FORCE10 Series **BOLT TENSIONERS**

A general purpose range of spring return tensioners the FORCE10 range of topside bolt tensioning tools consist of 10 base tools covering bolt sizes from 3/4" to 4" (M20 to M100). Force-10 tensioners are designed to fit on to most ANSI B16.5, ANSI B16.47 Series 1, MSS-SP44, API-6A and API-17D standard flanges.



Tentec V Series **COMPACT FLANGE BOLT TENSIONERS**

The V-Series tensioners are a purpose designed range of tools designed specifically for use on SPO Compact flanges. The range consists of 11 powerful bolt tensioning tools covering bolt sizes from 3/4" to 4"



Tentec Compact 8 Series **SUBSEA BOLT TENSIONERS**

The COMPACT-8 range of subsea bolt tensioning tools comprises of just 8 tools. The tools are capable of tensioning most standard flanges including most of the newer Vector SPO* Compact flanges. Tentec subsea bolt tensioning tools have been used in the UK North sea by most of the large bolting contractors since 1991 and have a proven reliability and safety record.



Tentec WT Aero Series **WIND TURBINE BOLT TENSIONERS**

We offer purpose designed bolt tensioning tools and hydraulic torque wrenches for wind turbines.

Developed over many years, our wind turbine bolt tightening solutions offer the most advanced, safe, rapid and operator friendly tools in the market today.



Tentec MST Series **MULTI STUD TENSIONERS**

The Segmented Multi Stud Tensioning System (MST) is a portable system designed to simultaneously tension all studs on system closures such as steam generator primary and secondary manways, handwheel and valve covers.

Tentec BCHN & TCHN Series HYDRAULIC NUTS

Tentec Nuts replace existing hexagon nuts to give a rapid, accurate and uniform bolt load to any bolted joint. The Tentec Nut offers a method of bolt tensioning multi-bolt applications which greatly improves the integrity of the joint.



Permanent
Bolt Tensioning

RT Series HYDRAULIC TORQUE WRENCH

Our vision for the RT Series is a simple one: create a hydraulic torque wrench with legendary durability for the most demanding applications. The RT series is a hydraulic torque wrench that will deliver superior performance and accuracy over a longer tool life.



Hydraulic
Torque Wrench

RTX Series HYDRAULIC TORQUE WRENCH

Our RTX direct-fit, low profile torque wrenches combine high power-to-weight ratio, durability and hands-free operation. The result is a tool that is perfectly suited for low clearance applications that require high torque.



Hydraulic Torque
Wrench

Tensor Revo ELECTRIC NUTRUNNERS

We supply a full range of Tensor electric assembly tools with intelligent controllers and software. The Tensor range covers all production requirements for safety critical and quality critical fastening applications.



Electric
Nutrunner

RTP Series PNEUMATIC NUTRUNNERS

Pneumatic nutrunners, such as the RTP, are essential part of building up and breaking out. These tools are normally used to pre-torque nuts and before final torque values are applied by hydraulic torque wrenches.



Pneumatic
Nutrunner

BTS - Bolt Tightening Software

Tentec BTS software allows users to manage and rapidly calculate bolt tightening pressures. The software was designed with the philosophy of minimal input, maximum output.



Bolt Tightening
Software

Joint Integrity Training

We are a specialist provider of training and competence assurance programmes in the assembly and tightening of bolted connections to industries as diverse as oil & gas (onshore and offshore), power generation, construction, defence and renewable energy.



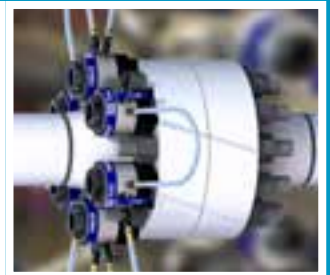
Joint Integrity
Bolt Training

BOLT TIGHTENING SOLUTIONS

A WORLD OF BOLTING APPLICATIONS

OIL & GAS

- Topside Flanges*
- Sub-sea Flanges*
- BOP*
- Well heads*
- Valve Trees / Christmas Tree*
- Pumps*
- Sand Separators*
- HPHT Pipe Joints*
- Heat Exchangers*
- Reactor Covers*
- Gate / Ball valves*
- Maintenance*



Subsea Tensioners

WIND ENERGY

- Foundation bolts*
- Tower Section Bolts*
- Nacelle mounting*
- Hub mounting*
- Bearing to Hub*
- Blade bearings*
- Generator bed*
- Gearbox bed*
- Main bearing Bolts*
- Nacelle yaw bearing*
- Axle shaft bolts*
- Maintenance*



Wind turbine bolt tensioners



OFFSHORE

- Flange Connections*
- Riser Clamps*
- Sand Separators*
- Slug Catchers*
- Crane Bearings*
- Single Point Moorings*
- Vector SPO Compact flanges*
- Pressure vessel covers*
- Hull assembly*



No matter what your preference for bolt

A World of Bolting Applications

POWER GENERATION

*Steam Generator
Manway Covers
Boiler Feed Pumps
Fuel Handling Systems
Steam Valves
Steam Turbine Casings
Compressor
Casket covers
Maintenance*



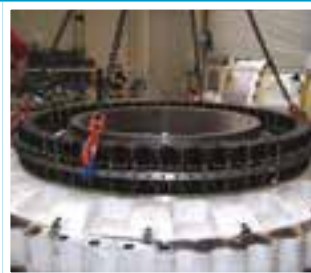
MINING & OFFROAD

*Frame bolting
Belt tensioning
Shovel maintenance
Wheel and tire maintenance
General maintenance*



OTHER APPLICATIONS

*High Exchange Covers and
Nozzles
Boiler feed pump covers
Compressor casings
Diesel engine & Compressor
Connecting rods
Power Presses
Material Testing Machines
Water Turbine casings
Hydraulic power units*



tightening, Atlas Copco have it covered.

BOLT TIGHTENING SOLUTIONS

CUSTOM BOLT TIGHTENING TOOL DESIGN

Standard Tool Not Suitable?

We are one of the few tensioning companies in the world who offer custom tensioner tool solutions. If the standard ranges of tensioners are not suitable, contact us and we will design a custom tool to do the job. We use the latest 3D modeling software (Solidworks) and FEA analysis software (Solidworks Simulation) to design non standard tools. Once the custom solution has been designed we offer either 2D drawings of the proposed tool or if requested we can supply 3D step files which allows our customers to import the custom tool into their 3D assembly to check fit.

Custom Detachable Bolt Tensioners

Custom Hydraulic Nuts

Custom Torque Wrenches

Custom Torque Wrench Reaction Equipment

Custom Multi Stud Tensioning Systems

CUSTOM BOLT TIGHTENING SOLUTIONS

We recognised from the start that having the ability to rapidly design custom tensioner solutions was an important and necessary function of the company and we have invested heavily in its engineering department. We aim to provide special tensioner solutions within one week of receiving the enquiry. Special tensioner tools currently make up approximately 60% of the whole business.



EXPANDING BOLT TIGHTENING SOLUTIONS BUSINESS

Tentec, an experienced provider of specialist bolt tightening solutions, featuring tensioners design, marketing and manufacturing, became a part of the Atlas Copco group. The acquisition broadens Atlas Copco's range of bolting products and services offered to the oil and gas, power generation and mining industries.

"The acquisition of Tentec completes our portfolio of hydraulic bolt tightening solutions that we are offering to several key industries" said Mats Rahmström, Business Area President for Atlas Copco Industrial Technique. "This will help enhance customers' productivity and assembly process quality."

Synergy between the bolt tightening solutions product portfolio and Atlas Copco traditional products, such as nutrunners and QAT solutions opens up an expanding growth potential for the Industrial Technique group in the bolt tightening solutions market.

DID YOU KNOW...



We have delivered the largest custom hydraulic nuts ever manufactured?

The contract, to supply 4 massive custom design hydraulic nuts for a major forging press refurbishment project in the USA, was completed and delivered on time and on budget. The special hydraulic nuts required for the forging press had 25" Buttress thread forms and each hydraulic nut weighed 4 tonnes with an 8000 tonne bolt load capacity.

Hydraulic nuts are a permanent form of bolt tensioning where the hydraulic nut replaces the conventional hexagon or round nut. With application of hydraulic pressure to the hydraulic nuts, bolt load is generated effortlessly and the user needs only to insert easily fitted shims to retain the bolt load. The hydraulic pressure is then released and an accurate bolt load is retained.

Custom Bolt Tightening Solutions



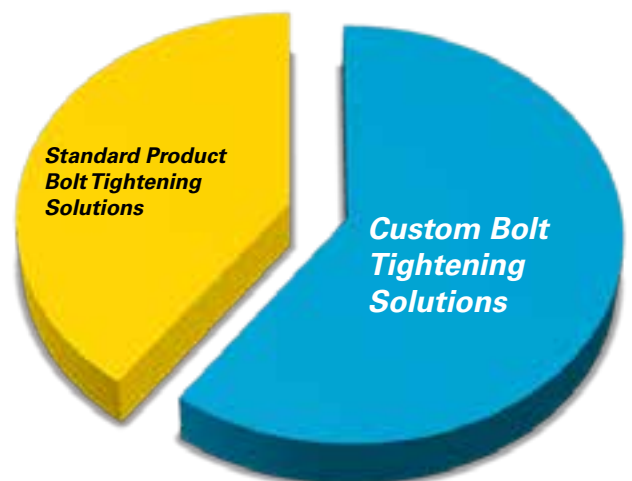
We aim to provide special tensioner solutions within one week of receiving the enquiry.

We are very aware that there are many diverse and specialised types of bolted joints being used throughout the industrialised world. Each bolted joint can offer its own set of problems and engineering challenges.

Many bolt tightening solutions providers offer simple general purpose standard ranges of bolt tightening equipment. If the standard bolt tightening equipment is not suitable for a specific bolting applications then a solution cannot be offered.

We do not exclude the difficult and challenging bolted joints, we thrive on finding solid engineering solutions to the most demanding of bolted joints. In fact we supply more custom bolt tightening solutions than solutions from our standard ranges of tools.

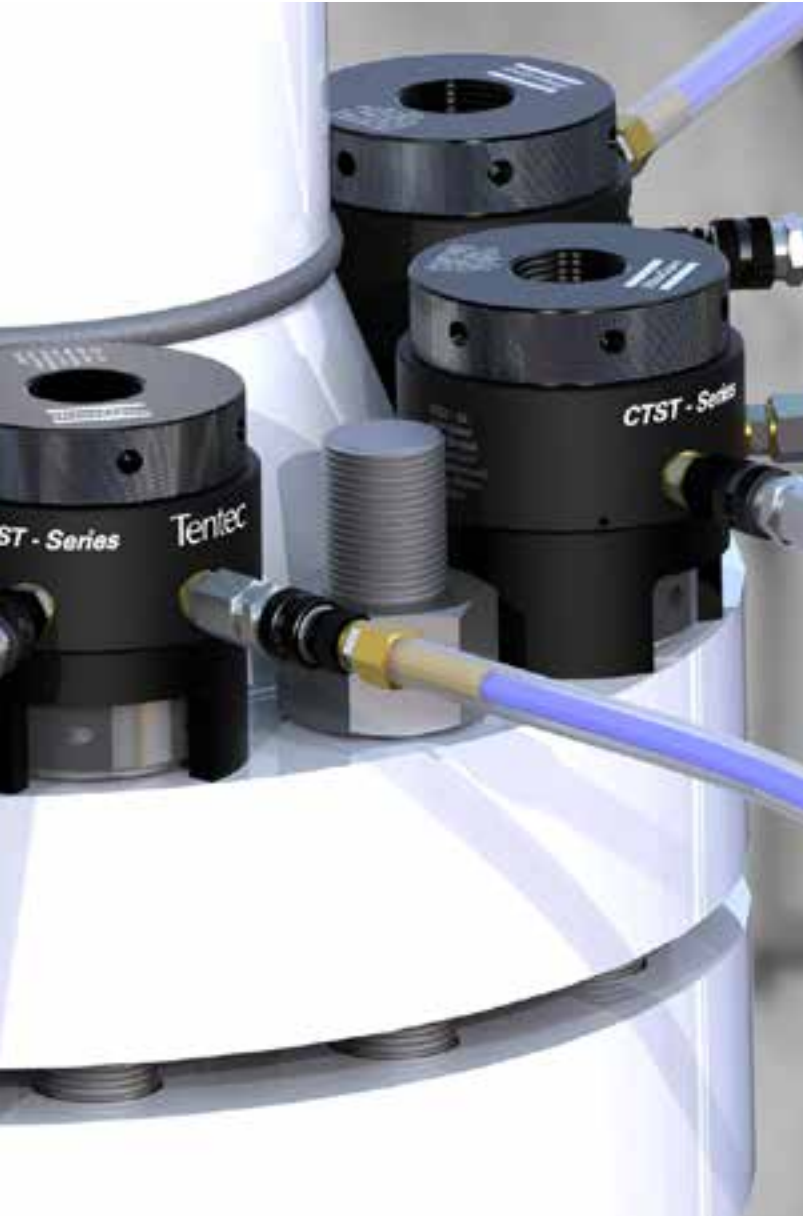
If you have a problem with a specific bolted joint, contact us because we probably already have a solution available.



BOLT TIGHTENING SOLUTIONS

GENERAL PURPOSE TOPSIDE BOLT TENSIONING

Tentec CTST - Manual Return Tensioners



The CTST range of manual return Tentec topside bolt tensioning tools consist of 6 base tools covering bolt sizes from 3/4" to 4" (M20 to M100). The tools are designed to fit on to most ANSI B16.5, ANSI B16.47 Series 1, MSS-SP44, API-6A and API-17D flanges. Each base tool can be converted for use on a different bolt size by the use of a conversion kit.

Safety & Reliability

Integrated into the design of each CTST tensioners are enhanced safety features including mechanisms to remove the hazard of over-stroking the tensioner rams. All CTST Models feature a mechanism which directs oil flow away from the operator in the instance the ram is over-stroked and exhausts oil harmlessly into the internal section of the tensioner.

Seal Technology

Over the years we have developed a class leading high pressure seal technology. This innovative seal technology is industry proven and offers many 1000's of reliable and safe pressure cycles.

Conversion Kits

Conversion Kits offer a very economical way to expand your inventory of bolt tensioning tools. Kits are available to convert a CTST tensioner to suit an alternative bolt size within its size range.

Kits consist of a Puller, Bridge and Nut Rotating Socket. Get in touch with us and we can advise on suitable Conversion Kits part numbers.

BOLT TIGHTENING SOLUTIONS

Consistent, Dependable and Safe.

Consistent: Using multiple bolt tensioning tools on a bolted joint gives a much improved uniform bolt load across all bolts.

Axial Bolt Load: Bolt load is applied axially to the bolt. Inconsistencies such as friction, bending and lubricant are not a factor when using bolt tensioners. No torsional stresses are involved.

Rapid: Multiple bolt tensioners offer a quick and accurate method of tightening a bolt.

Adaptable: Conversion kits are available to convert a tensioner from one bolt size to another offering an economical and versatile solution.

Accurate: Bolt load is directly proportional to the pressure applied to the tensioner.

BOLT TIGHTENING SOLUTIONS

The compact nature and enhanced bolt load capacity of the FORCE10 tensioners means they are ideally suited to many non standard bolted joints. Contact us if you need advise to determine suitability on your non standard bolted joints.

Tentec FORCE10 - Spring Return Tensioners

BOLT TIGHTENING SOLUTIONS

Why Use FORCE10 Series - Spring Return Tensioners?

Fast Tensioning

FORCE10 tensioners from models F10-04 to F10-10 feature heavy duty integrated springs that assist in resetting the tensioners in between pressure cycles. This greatly speeds up the tensioning operation and reduces the physical effort needed by the user.

Versatile

The 10 tool range offers multiple tool variations per bolt size. Only 5 tools are required to suit bolt sizes from 3/4" to 4" (M20 to M100).

Powerful

The enhanced bolt load offered by the FORCE10 Series bolt tensioning tools allows for time efficient 25% and 50% tool to bolt ratio usage on most standard pipeline flanges, using the industry standard A & B tensioning pressure procedure.

Adaptable

Conversion kits are available to convert a tensioner from one bolt size to another offering an economical and versatile solution.



Each base tool can be converted for use on a different bolt size within the tool size range by the use of conversion kits.

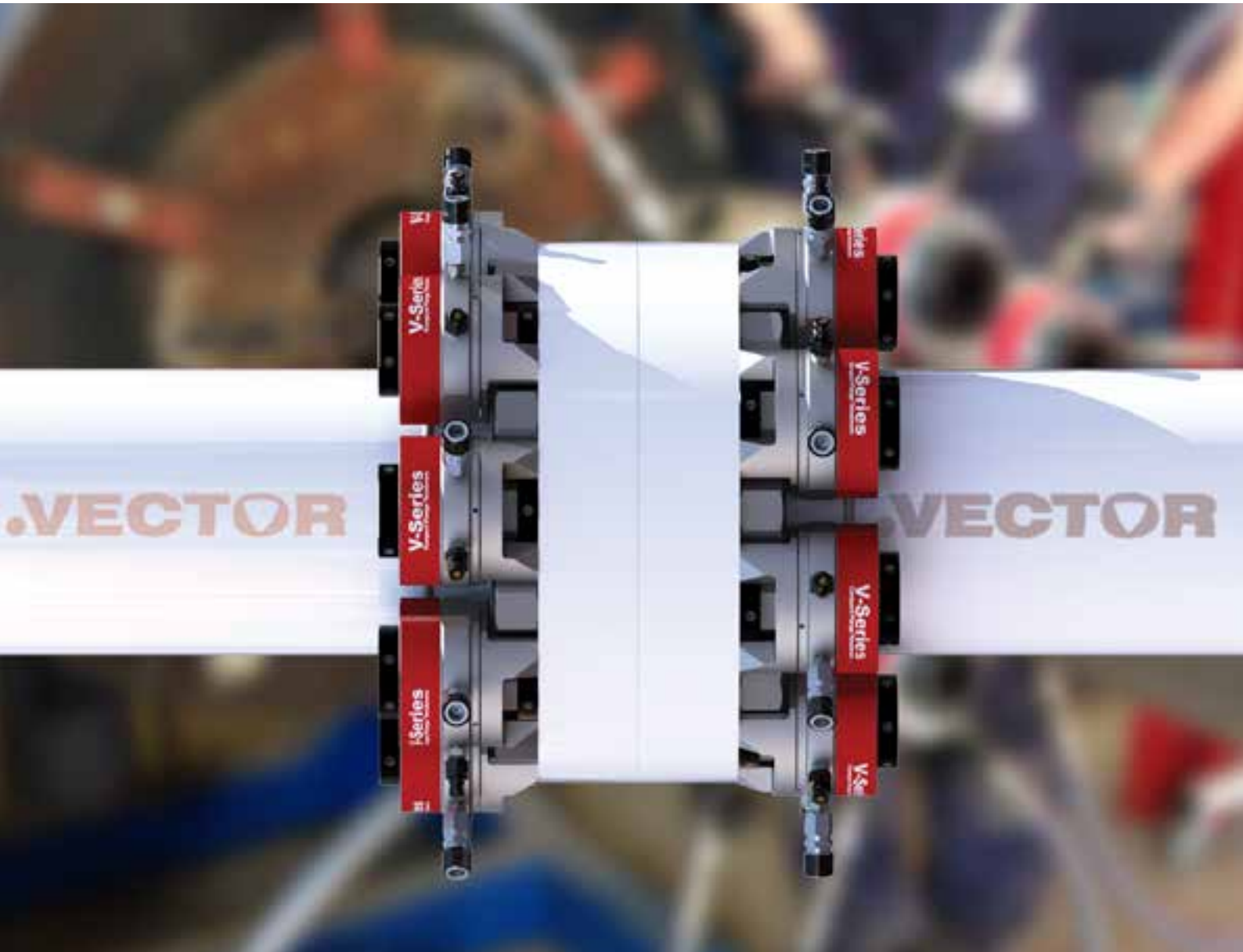
The FORCE10 range of topside bolt tensioning tools consist of 10 base tools covering bolt sizes from 3/4" to 4" (M20 to M100). This general purpose range of tools are designed to fit on to most ANSI B16.5, ANSI B16.47 Series 1, MSS-SP44, API-6A and API-17D standard flanges.

FORCE10 tensioners have many new features and user requested enhancements and provide extra bolt load capacity without compromising on the tool size and ease of handling. The 10 tool range offers multiple tool variations per bolt size, only 5 tools are required to suit bolt sizes from 3/4" to 4" (M20 to M100). For added versatility each base tool can be converted for use on a different bolt size within the tool size range by the use of conversion kits.

We have provided world class bolt tensioning solutions for over 25 years and offer some of the most reliable, safe and durable tools on the market.

BOLT TIGHTENING SOLUTIONS

COMPACT FLANGE BOLT TENSIONING



The Vector International SPO Compact Flange have been used across the globe since 1989, offshore, onshore and subsea, offering significant weight and space savings over conventional flanges, leak-free joint integrity and therefore is the most effective environmentally friendly piping joint available today.

The preferred method of tightening the SPO compact flange bolts is with the use of bolt tensioning tools. Due to the compact size and relatively high bolt load requirements of the flanges, most conventional bolt tensioners either do not physically fit onto the flanges or do not have enough bolt load capacity.

The V-Series tensioners are a purpose designed range of tools designed specifically for use on SPO Compact flanges. The range consists of 11 powerful bolt tensioning tools covering bolt sizes from 3/4" to 4".

Suitable for use on the following Compact flange classes:

150 Lbs
300 Lbs
600 Lbs
900 Lbs
1500 Lbs
2500 Lbs

7500 Lbs 520bar (Formerly 4500i)
5000 psi **NEW**
10000 psi **NEW**
15000 psi **NEW**

Tentec V-Series - Compact Flange Tensioners

BOLT TIGHTENING SOLUTIONS

Why Use V Series - Bolt Tensioners?

Designed for the Job

V-Series Tensioners are purposely designed to perfectly bolt tighten SPO Vector compact flanges

Powerful

The enhanced bolt load offered by the V - Series bolt tensioning tools satisfies the higher bolt load requirements of the SPO Vector compact flanges

Joint Integrity

SPO Vector Compact flange bolt tensioning is generally achieved using 100% tool to bolt coverage. This makes for a very rapid and even spread of bolt load over all bolts. This results in a high level of joint integrity.

Adaptable

Conversion kits are available to convert a tensioner from one bolt size to another offering an economical and versatile solution.

Simplified Tensioning

Using the Tentec BTS-Bolt Tightening Software takes away the complexity of calculating tensioner pressures and torque values. The BTS software includes tightening data for SPO Vector compact flanges



11 powerful bolt tensioning tools covering bolt sizes from 3/4" to 4"

BOLT TIGHTENING SOLUTIONS

SUBSEA BOLT TENSIONING



Tentec subsea bolt tensioning tools have been used in the UK North sea by most of the large bolting contractors since 1991 and have a proven reliability and safety record.

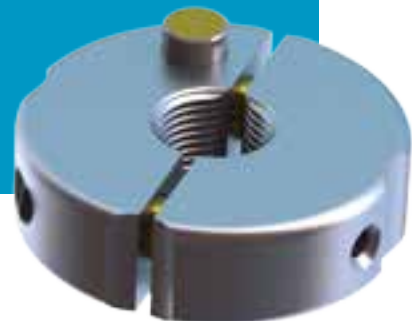
The COMPACT-8 range of subsea bolt tensioning tools brings a new generation of bolting solutions.

Comprising just 8 bolt tensioning tools, the COMPACT-8 series is capable of tensioning most standard flanges including most of the newer Vector SPO* Compact flanges. The COMPACT-8 series is made from high strength stainless steel which greatly reduces maintenance work to a minimum after subsea use.

BOLT TIGHTENING SOLUTIONS

The Compact-8 range of subsea bolt tensioning tools can be supplied with quick acting Split Reaction Nuts. Simply mount the tensioning tool over the bolt, slide the open reaction nut over the bolt and snap the reaction nut halves together for rapid and reliable assembly.

The quick speed of fit ensures the most efficient use of expensive diver time.



Tentec Compact 8 - Subsea Tensioners

BOLT TIGHTENING SOLUTIONS

Why Use Subsea Tensioners?

Joint Integrity

Subsea tensioning is generally achieved using 100% tool to bolt coverage. This makes for a very rapid and even spread of bolt load over all bolts. This resulting in a high level of joint integrity.

Versatile

The Compact 8 range is capable of bolt tightening most standard pipe flanges and most SPO/Vector compact flanges. Only 8 tools are required to suit bolt sizes from 3/4" to 4" (M20 to M100).

Powerful

The enhanced bolt load offered by the Compact 8 Series bolt tensioning tools satisfies the higher bolt load requirements of the SPO Vector compact flanges

Low Maintenance

Compact 8 tensioners are manufactured from high strength stainless steel material, minimising the maintenance work after usage

Seal Technology

The proven and mature sealing technology incorporated in the Compact 8 series tensioners can achieve multiple 1000's of pressure cycles



Recommended configuration for subsea tensioning - All bolts simultaneously tensioned

BOLT TIGHTENING SOLUTIONS

WIND TURBINE BOLT TENSIONING



Fully aware of the difficulties associated with wind turbine blade tensioning, the Tentec Aero WT is a purpose designed range of hydraulic bolt tensioning tools to suit most wind turbine bolting applications. The WTB Tensioning tools have the capacity to achieve the specified proof load requirements as detailed in EN ISO 898-1:1999 and ASTM A490M for grade 10.9 Bolts. These feature packed tensioners have been designed with rapid tensioning in mind and offer a safe, reliable and consistent method to simultaneously tension many wind turbine bolts.

*Blade to Bearing
Rear Main Bearing
Nacelle Frame
Front Main Bearing*

*Nacelle/Yaw Bearing
Tower Bolting
Main Shaft to Hub
Foundation Bolting*

BOLT TIGHTENING SOLUTIONS

Due to the very limited space available in many blade bolt compartments and to help where many tensioners are connected together every Aero WTB tensioner has the option of a 360° swivel connection.

Tentec Aero WT Series - Wind Turbine Tensioners

BOLT TIGHTENING SOLUTIONS

Why Use AERO WT - Wind Turbine Tensioners?

Real World Experience

Tentec Aero WT tensioners have been continually developed over a 15 year period. We know all the difficulties associated with wind turbine bolt tensioning. Every design feature of these tools is there for a good reason.

Versatile

The Aero WT Series consists of purpose designed tools for every bolted joint on a Wind Turbine.

Safety First

At the heart of all Aero WTB tensioners is the Puller, manufactured from high grade aerospace material and carefully designed to give the maximum possible life.

All Aero WTB tensioners have a device that ensures the tool fails safely in the unlikely event of a puller failure.

Adaptable

Aero WTB Tensioners are profile cut at the base to ensure they fit onto as many applications as possible. This interchangeable profile cut spacer gives the tensioner the flexibility to be used on many different applications.



WTP3 Electric Driven Wind Turbine Tensioner Pump

We have supplied bolt tensioning tools to the wind industry for over 15 years. We have developed a class leading support and advise system

BOLT TIGHTENING SOLUTIONS

*Quick Delivery, Local Stock
On-Site Support
Telephone Support
On-Site Training
Technical Advise
Easy On-Site Tool Maintenance*

BOLT TIGHTENING SOLUTIONS

GENERAL PURPOSE SQUARE DRIVE TORQUE WRENCH



Our vision for the RT Series standard hydraulic torque wrench is a simple one: create a hydraulic torque wrench with legendary durability for the most demanding applications. The RT series is a hydraulic torque wrench that will deliver superior performance and accuracy over a longer tool life.

From design, to manufacturing and calibration, the RT Series is a purpose-built bolting machine. It stands second to none.

ACCESSORIES

Our design team has come up with many accessories for the RT. Choose from Extended reaction arm, Hex Drive, Insert bit adapters, ALCO reaction arm and much more.

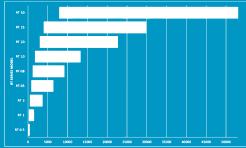
RT Series - Hydraulic Torque Wrench

BOLT TIGHTENING SOLUTIONS

Why Use RT Series - Hydraulic Torque Wrenches?

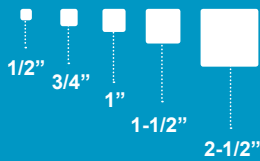
Powerful Torque Output

9 models provide powerful torque output, up to 52,000 ft.lb. of torque.



5 Different Square Drive Sizes

Using the optimal impact socket is easy thanks to the range of square drive sizes.



Accurate

With an accuracy of +/- 3%



With an adjustable reaction arm, the RT Series can work safely on almost any application. Additional reaction arm types are available.

BOLT TIGHTENING SOLUTIONS

LOW PROFILE DIRECT FIT HYDRAULIC TORQUE WRENCH



Our RTX direct-fit, low profile torque wrenches combine high power-to-weight ratio, durability and hands-free operation. The result is a tool that is perfectly suited for low clearance applications that require high torque. Use with the standard set up or customize with high quality accessories.

From design, to manufacturing and calibration, RTX Series is a purpose-built machine. It stands second to none.

ACCESSORIES

Our design team has come up with many accessories for the RTX. Choose from On-side reaction arm, ALCO reaction arm and much more.

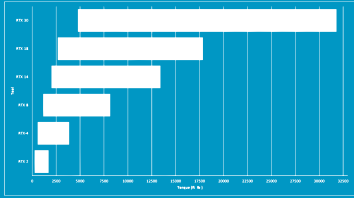
RTX Series - Low Profile Hydraulic Torque Wrench

BOLTTIGHTENING SOLUTIONS

Why Use RTX Series - Hydraulic Torque Wrenches?

Powerful Torque Output

9 models provide powerful torque output, up to 45,000 ft.lb. of torque.



Slim Profile, Large Hex Range

The RTX has a low radius which allows team to tighten and loosen bolts with tight clearances.



Accurate

The RTX has an accuracy of +/- 3%



One powerhead model can be used with many sizes of ratchet links. Our unique design allows each powerhead model to produce consistent torque values, regardless of the ratchet link size being used..

BOLT TIGHTENING SOLUTIONS

GENERAL PURPOSE BOLTING NUTRUNNERS

Tensor Revo - Electric High Torque Nutrunners



BOLT TIGHTENING SOLUTIONS

TENSOR REVO FEATURES:

- Unique and patented 360° swivel with transducer.
- Ultra-compact size improves access.
- Display on tool gives direct feedback of tightening result.
- Program selection is made directly on tool.
- Ideal for handheld application or fixtures with reduced space.
- Torque range from 60-4000 Nm.



When choosing assembly tools for high torque joints, the challenge is often to combine high quality tightening with acceptable ergonomics and usability. Some tools provide higher quality but can be large and heavy. Other tools are lighter, but may not live up to quality and durability requirements.

Why compromise? Tensor Revo has it all. It's also extremely fast. With the unique, patented T-design and packed with smart features, the new Tensor Revo is a true revolution in high torque tightening.

RTP - Pneumatic High Torque Nutrunners



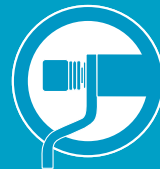
LIGHT
WEIGHT



HIGH
ACCURACY



ACCESSIBILITY



Whatever your industry, if your operations include loosening or tightening heavy duty bolts, Atlas Copco's slim, lightweight RTP pneumatic nutrunner can help increase your productivity.

Perfect for flange-related and other heavy duty bolting applications in the Oil & Gas segment. The handy RTP pneumatic nutrunner is flexible and safe with an exchangeable drive and a slim gear pack giving you effortless access to bolts in cramped spaces.

We offer a full range of accessories in general to support the customer airline installation and pneumatic tools.

For more information visit www.atlascopco.com/products

BOLT TIGHTENING SOLUTIONS

JOINT INTEGRITY TRAINING



We are a specialist provider of training and competence assurance programmes in the assembly and tightening of bolted connections to industries as diverse as oil & gas (on-shore and offshore), power generation, construction, defence and renewable energy.

We deliver training in controlled bolting in accordance with "Mechanical Joint Integrity Standards" document published by the Engineering Construction Industry Training Board (ECITB). The training standards available are MJ110 hand torque, MJ118 hydraulic tensioning and MJ119 hydraulic torque wrenches. Our additional derived courses include TE12 Hydraulic Nuts and TE13 BTS-Bolt Tightening Software training.

These standards are recognised by industry and recommended as the benchmark qualification for bolting personnel by The Energy Institute and other influential authorities.

ecitb

Engineering Construction Industry Training Board

APPROVED PROVIDER

Joint Integrity Training

BOLT TIGHTENING SOLUTIONS

Why Use Tentec Training?

Joint Integrity

Hand Torque Bolted Connections
Hydraulic Tensioned Bolted Connections
Hydraulic Torqued Bolted Connections
Hydraulic Nuts*
BTS-Bolt Tightening Software*
*Optional Tentec derived training courses.

Personal Training

Training is given by fully certified ECITB licensed trainers. A preferred Learner/Trainer ratio of 4:1 is available.

Training - Where you need it

We offer a mobile training service as well as our own comprehensive certified training school within our facility. This gives our customers the option of either using Tentec equipment in our training school or on-site at our customers facility giving the trainee's the benefit of learning on the actual equipment they will be using on the job.

Certified

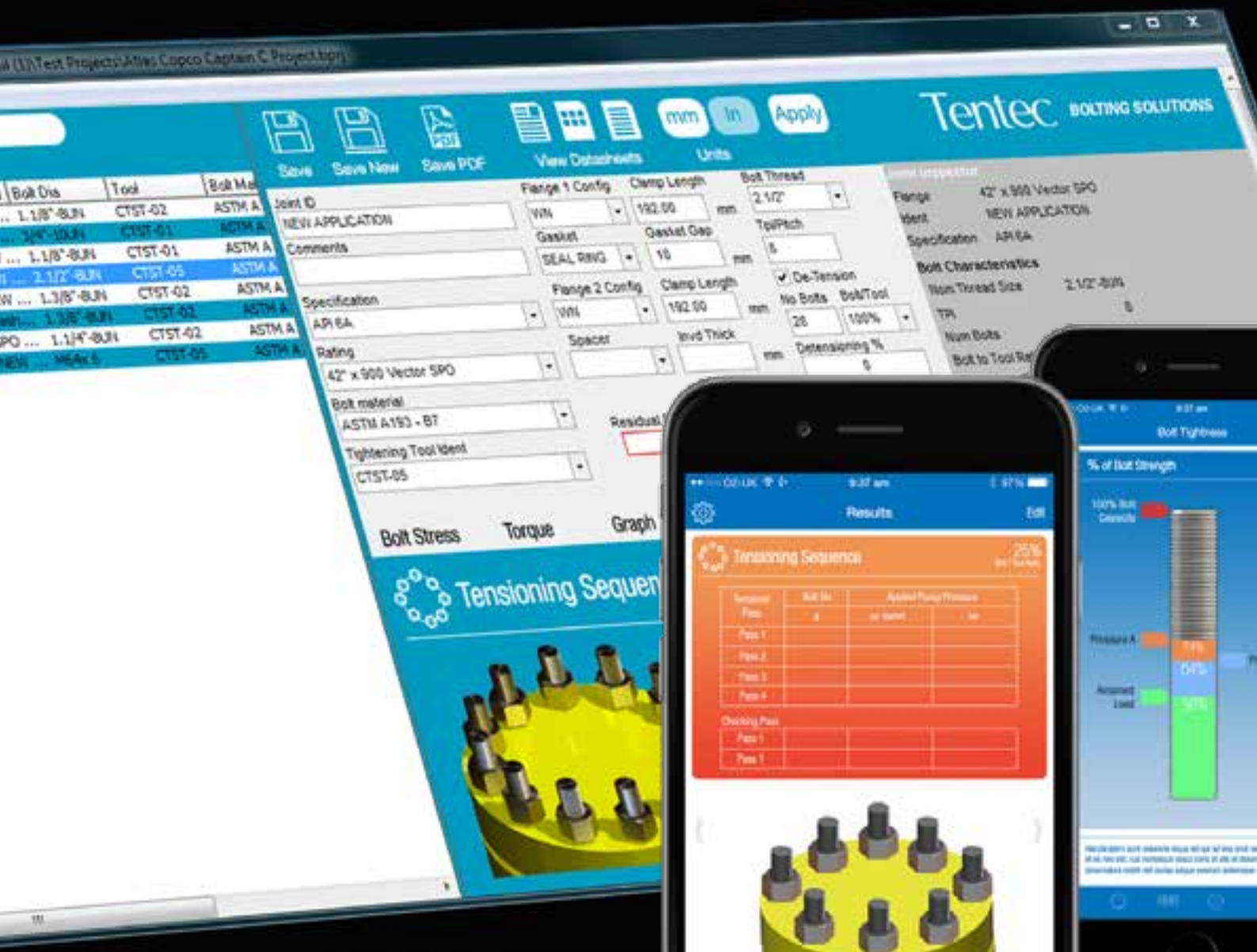
Successful candidates are issued the globally recognised ECITB Certificate of Technical Competence "Management of Joint Integrity"



Training is given by fully certified ECITB licensed trainers.

BOLT TIGHTENING SOLUTIONS

BTS - BOLT TIGHTENING SOFTWARE



Tentec BTS software allows users to manage and rapidly calculate bolt tightening pressures and torque values. Tentec Bolt Load Software has been designed with the philosophy of minimal input, maximum output.

Documentation for multiple bolted joint projects can be created very quickly with minimal operator input.

The software package contains data for all standard ANSI, API and Vector International compact flanges along with the correct tensioner and torque pressures to apply.

The documentation package that the software produces consists of a summary sheet which provides an overall list and core information of all bolted joints covered in the project and individual detailed application documents for every single joint

BOLT TIGHTENING SOLUTIONS

Visit www.bolttighteningsolutions.com to register for your free copy of Tentec BTS

BTS - Bolt Tightening Software

BOLT TIGHTENING SOLUTIONS

Why Use BTS Software?

Bolt Management

build up and manage a "project" of multiple different bolted joints on your plant

Pre-Defined Bolted Joints

BTS software contains bolt tightening data for 1000's of standard flange configurations

Bolting Documentation

Quickly create bolting documentation which gives all the information tensioning technicians need to complete the job

All the Tools you Need

BTS software contains data for all of Tentec standard tool ranges and also offers the ability to create a user definable special tools library.

Torque or Tension

The software calculates both bolt torque and bolt load. Bolt Tightness can be defined as.. Load, Stress, Torque and % Bolt Strength



The software package contains data for the following standard bolted flanges:

- | | |
|----------------------|----------------------------|
| ANSI B16.5 | API 17SV |
| ANSI B16.47 Series A | Vector SPO Compact Flanges |
| MSS SP-44 | Norsok L-005 |
| API 6A | |

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BTS is not just for standard flanges. BTS incorporates a custom joint mode which allows users to input data for non standard bolted joints



TENTEC CERTIFIED REFURBISHMENT

For 20 plus years, Tentec have supplied Hydraulic Bolt Tensioning tools to the Oil & Gas, Powergen, Mining and Industrial markets.

Over time Hydraulic Bolt Tensioners can be exposed to very harsh conditions which, in-turn can result in corrosion of components. Corrosion can reduce the working life of a tool and, very often, is one of the key attributing factors of hydraulic leaks.

As the demand for regular maintenance has increased in recent years, we are pleased to announce a Refurbishment and Maintenance service.

Continuous use of Hydraulic Bolt Tensioners without regular maintenance can reduce the tensioner reliability. From time to time some of the moving parts or seal sets may need replacing. Returning these tools for refurbishment or repair will ensure a fast turnaround and assurance that the work undertaken will be completed by our team of experienced technicians.



We refurbish both standard and custom designed bolt tensioning tools.



Purpose built pressure test bays

- ✓ *Dis-Assembly: A complete strip down and clean.*
- ✓ *Inspection: A thorough examination for damaged parts including hydraulic fittings. You will be informed of any damaged parts outside of the scope of the refurbishment.*
- ✓ *Cleaned: Either shot blast or chemical bath.*
- ✓ *Surface Coating: Relevant components will be oil blacked.*
- ✓ *Re-Sealed: New seals will be fitted.*
- ✓ *Pressure Test: Fully traceable pressure test with a Tentec "Certificate of Pressure Test" supplied.*
- ✓ *Packaged & Despatched: A fast and prompt service.*



All refurbished tools are fitted with brand new seals.

Scheduled Maintenance Contract Option.

Many customers have multiple Hydraulic Bolt Tensioning kits that are used frequently in construction or maintenance projects. These tools can be exposed to heavy and prolonged use and it's inevitable that a tools reliability expectancy is reduced without regular maintenance.

We can provide a maintenance contract that ensures that you receive the support you need; at the moment you need it. We offer a selection of contract maintenance plans to suit every customers requirements.

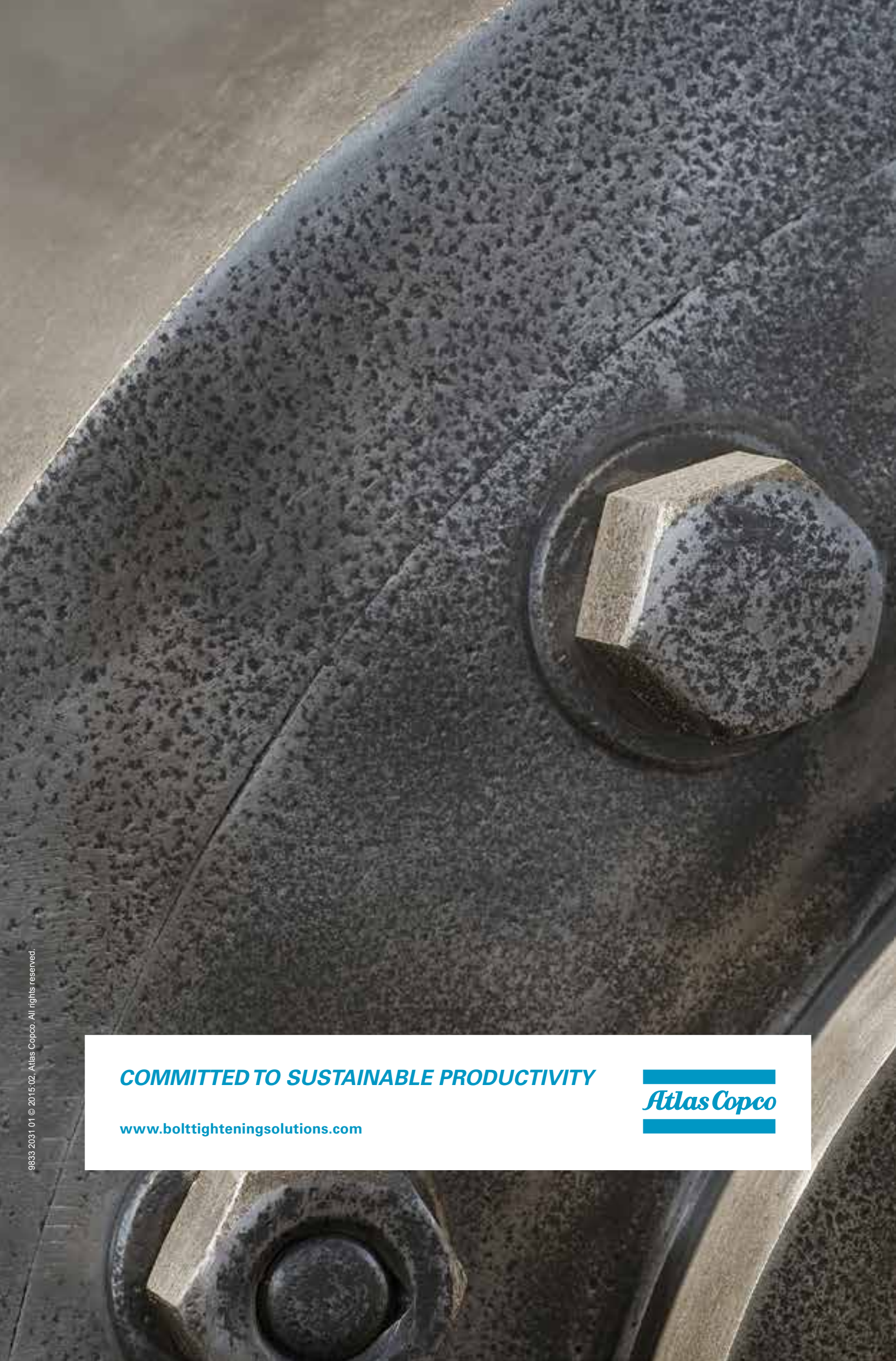


Experienced technicians on-hand for a quick turnaround

**TENTEC
CERTIFIED
REFURBISHMENT**



***BOLT TIGHTENING
SOLUTIONS***



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COMMITTED TO SUSTAINABLE PRODUCTIVITY

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