Accessories for the measurement of tightening torque

Digital and electronics
dynamometric wrenches

FIAM
PEOPLE AND SOLUTIONS

METHODS USED FOR THE MEASUREMENT OF TIGHTENING TORQUE

For an effective analysis of the tightening process, and therefore in general for an evaluation of the Process Capability *, it is necessary to have adequate instruments and correct methods to measure the tightening torque. Basically there are two methods for the measurement of the torque: Static measurement and Dynamic measurement

** Process Capability is an index of the variability with which the production process obtains results. Many external factors can influence the evaluation of the Process Capability, such as : the accuracy of the screwdrivers, the variability of the joint, use of screwdriver, air pressure and/or air flow variation, maintenance of the screwdriver.*

DYNAMIC MEASUREMENT

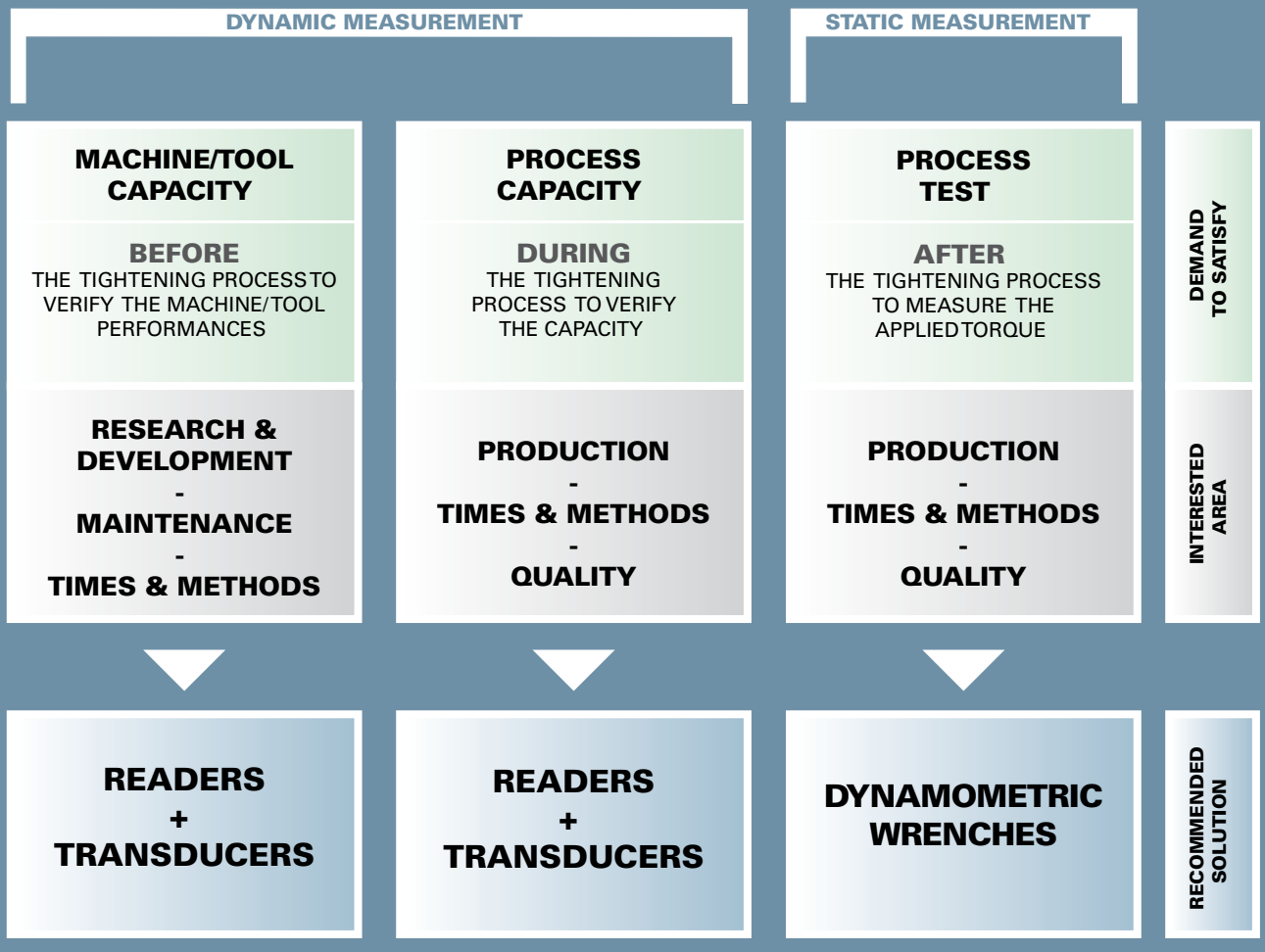
It is a measurement "in process", i.e. it is carried out **before or during** the tightening process using rotary transducers combined with a torque reader. It is a method with which a better accuracy of the torque is obtained since:

- it is independent of the operator (the torque transducer is placed between the screwdriver and the joint and the operator acts only on the screwdriver);
- the joint is not influenced by the relaxation, since the measured torque is exactly the one applied by the screwdriver.

STATIC MEASUREMENT

It is a "post process" measurement, i.e. it is carried out **after** the tightening process, with the aid of dynamometric wrenches..It is a method with which the accuracy of the obtained torque is strictly dependent on:

- operator's experience
- the moment the measurement is carried out (influence of the phenomenon of joint relaxation).



The answer to your quality needs

The new range of Fiam digital dynamometric wrenches is able to measure, control, visualize, print, store the tightening torque values and therefore:

- **to guarantee the required quality standards**
- **to certify the accuracy of the assembly**
- **to guarantee a greater quality of the assembled product**
- **to reduce the risk of "product responsibility"**

These control instruments are fundamental when it is necessary to **certify every single tightening**, particularly when operating according to ISO 9000 standards.
The storage and the analysis of the data collected with these systems consent **to rapidly eliminate errors thus giving important productivity returns and correctly tightened products.**

example of static measurement with digital dynamometric wrench TWD

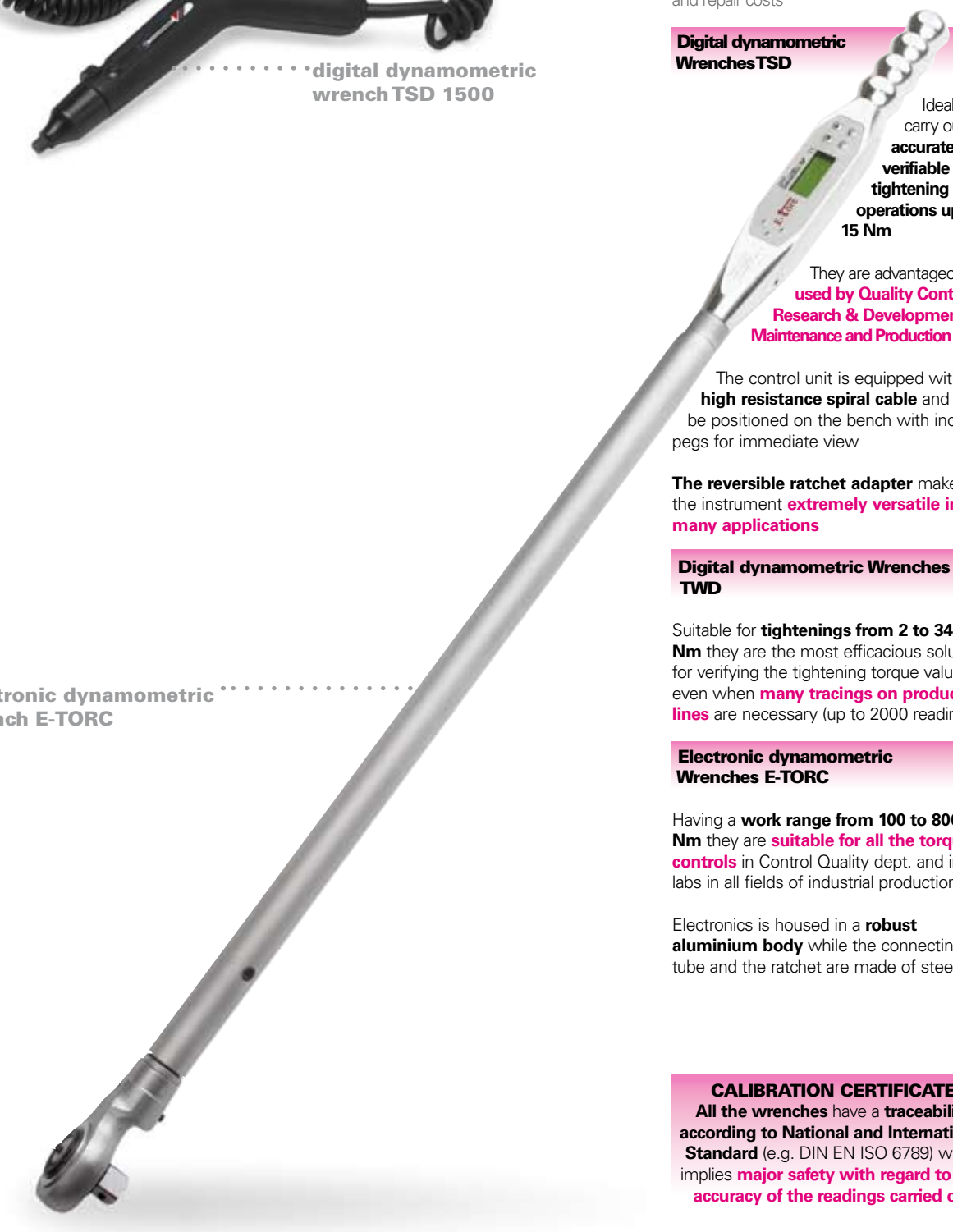
example of static measurement with digital dynamometric wrench TSD

Digital and electronics dynamometric wrenches

Reliability

Long lifetime of the wrenches thanks to careful design and to quality of the production process which results in less maintenance and repair costs

digital dynamometric wrench TSD 1500



electronic dynamometric wrench E-TORC

Digital dynamometric Wrenches TSD

Ideal to carry out **accurate and verifiable tightening operations up to 15 Nm**

They are advantageously **used by Quality Control, Research & Development, Maintenance and Production Areas**

The control unit is equipped with a **high resistance spiral cable** and can be positioned on the bench with inclined pegs for immediate view

The reversible ratchet adapter makes the instrument **extremely versatile in many applications**

Digital dynamometric Wrenches TWD

Suitable for **tightenings from 2 to 340 Nm** they are the most efficacious solution for verifying the tightening torque values even when **many tracings on production lines** are necessary (up to 2000 readings)

Electronic dynamometric Wrenches E-TORC

Having a **work range from 100 to 800 Nm** they are **suitable for all the torque controls** in Control Quality dept. and in test labs in all fields of industrial production

Electronics is housed in a **robust aluminium body** while the connecting tube and the ratchet are made of steel

CALIBRATION CERTIFICATE
All the wrenches have a **traceability according to National and International Standard** (e.g. DIN EN ISO 6789) which implies **major safety with regard to the accuracy of the readings carried out**

Don't be satisfied
with the maximum

Productivity

Considerable increase of the efficiency of the tightening cycle thanks to innovative monitoring technologies

Digital dynamometric Wrenches TSD and TWD

They can be pre-set to a **specific torque**, either on the instrument, or from a PC with the aim to **certify the accuracy of the assemblies**

Possibility to commute the measuring unit from Nm into lbf, ft/lbf in

Optical, acoustic and sensorial (vibration) signals when the pre-set torque values have been reached for a **fast assembly and test process**

The **procedures of measurement** are: **CONTINUOUS, to check just in time the applied torque; PEAK, to note the maximum value of the torque obtained; PRESETTING to store different measurement configurations and retrieve them when necessary** (up to 99 configurations)

Readings (date, hour, measured values…) **can be transferred onto a PC**, where they can be stored and analysed using the Excel programme, in order to carry out controls useful for the **improvement of the quality of the assembled product (software is being supplied)**

Many languages can be selected (Italian, English, German, Spanish, French and Portuguese)

Supplied with **bi-directional serial interface RS 232** for a better transfer of the data onto a PC/printer

Can be employed in the production of small series to **completely tighten** or to complete **tightenings already started** thanks to the ratchet contained in the kit

Electronic dynamometric Wrenches E-TORC

The built in display can be **rotated by 120°** for **better handling and reading** during the control operations

Readings (date, hour, measured values…) **can be transferred onto a PC**, where they can be stored and analysed using the Excel programme in order to carry out controls useful for the improvement of the quality of the assembled product (software being supplied with the wrench)

The **procedures of measurement** are: **CONTINUOUS, to check just in time the applied torque; PEAK, to note the maximum value of the torque obtained; PRESETTING to store different measurement configurations and retrieve them when necessary** (up to 25 configurations)

Optical, acoustic and sensorial (vibration) signals when the pre-set torque values have been reached for a **fast assembly and test process**

Supplied with **bi-directional serial interface RS 232** for a better transfer of the data onto a PC/printer

Perfection is
in your hands

Ergonomics

Optimization of performances of the instruments in regard to ergonomics and operator safety

Thanks to **compact dimensions**, these light and ergonomic instruments are particularly suitable to **optimize the manual sensitivity** when carrying out torque verifications, also at low torques

For torque values higher than 4Nm, **the TSD 1500 model, with its particular grip**, allows to control the torque values up to 15 Nm **without efforts on the operator's hand**

Digital displays of all models allow **the operator an immediate view of the measure found**

When the pre-set torque values have been reached **the different signals (optical, acoustic and sensorial-vibration)** help the **operator in the control operations**

All the instruments have extremely reduced weights for better **operator's handling**

digital dynamometric wrench TWD

Digital dynamometric Wrenches TSD

Model	Code	Torque capacity Nm	Ratchet drive □	Length mm	Weight of wrench Kg
TSD 150	686000682	0,15 ÷ 1,50	1/4	170	0.25
TSD 350	686000683	0,35 ÷ 3,50	1/4	170	0.25
TSD 1500	686000684	1,50 ÷ 15	1/4	200	0.30

Accuracy: lower than 1% of the reading (tightening/untightening condition) on all torque range
Memory: 2000 readings (data, value, min. max. limits)
Interface: RS 232

Standard equipment (supplied with the instrument)

- Packaging case
- Female adapter with hexagonal 1/4" output for bits
- Display unit with high resistance spiral cable and handy inclination pegs
- Reversible assembled ratchet
- Connecting cable RS 232 to transfer data from wrench onto PC
- Adapter cable for RS 232 – USB output
- CD with programming software
- Calibration certificate in compliance with national and international standards
- Batteries
- Use and maintenance manual

Accessories and Models available upon request

- Calibration certificate

Digital dynamometric Wrenches TWD

Model	Code	Torque capacity Nm	Ratchet drive □	Length mm	Weight of wrench Kg
TWD 20 SB	686000685	2 ÷ 20	1/4	410	0.81
TWD 100 SB	686000686	10 ÷ 100	3/8	415	0.81
TWD 340 SB	686000687	34 ÷ 340	1/2	625	1.20

Accuracy: lower by 1% of the reading (tightening/untightening condition) on all torque range
Memory: 2000 readings (data, value, min. max. limits)
Interface: RS 232

Standard equipment (supplied with the instrument)

- Packaging case
- Reversible assembled ratchet
- Connecting cable RS 232 for data transfer from wrench onto PC
- CD with programming software
- Calibration certificate in compliance with national and international standards
- Batteries
- Use and maintenance manual

Accessories and Models available upon request

- Calibration certificate

Electronic dynamometric Wrenches E-TORC

Model	Code	Torque capacity Nm	Ratchet drive □	Length mm	Weight of wrench Kg
E-TORC 600	686000688	100 ÷ 600	3/4	1055	3.20
E-TORC 800	686000689	100 ÷ 800	3/4	1405	6.40

Accuracy: lower than 1% of the reading (tightening/untightening condition) on all torque range
Memory: 2000 readings (data, value, min. max. limits)
Interface: RS 232

Standard equipment (supplied with the instrument)

- Supplied with sturdy metal box with practical partition for accessories; dimensions in mm 1660x210x85; weight: E-TORC 600 - Kg. 14.5; E-TORC 800 – Kg. 16.7
- Reversible assembled ratchet
- RS 232 connecting cable for data transfer from Wrench to PC
- CD with programming software
- Test certificate in compliance with DIN EN ISO 6789
- Calibration certificate in compliance with national and international standards
- Batteries
- Use and maintenance manual with quick guide

Accessories and Models available upon request

- Calibration certificate
- Models for data transfer without cable (wireless) through Bluetooth
- Models for torque-angle and for threshold torque

Fiam Utensili Pneumatici Spa
Viale Crispi 123 - 36100 Vicenza - Italy
Tel. +39.0444.385000 - Fax +39.0444.385002
customerservice@fiamairtools.com
www.fiamairtools.com

PEOPLE AND SOLUTIONS

Quality Management System Certificate

Environmental Management System Certificate