SCHENCK

# eTeNO

The flexible solution for precisely balanced e-Drives

*Passion for Balancing*

RE 1082

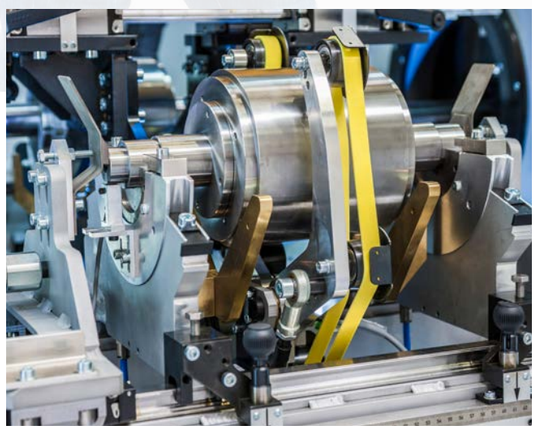
# eTENO

## The future belongs to e-Mobility

Consumers are increasingly accepting of electric vehicles which also translates into increased sales. Therefore, we have to say goodbye to low-volume production methods. The future belongs to the e-Drive, manufactured to the highest production standards.

Electric vehicles in particular, which are generally very quiet, are very sensitive to oscillations and vibrations in the power train. These are instantly perceived as annoying, which can lead to a negative overall impression of the vehicle.

To keep the large number of influencing factors under control, a comprehensive approach is required for the development of e-Drives. We support you during this journey with interdisciplinary know-how at any step of your development stage. Benefit from our experience – from the initial idea to conception and from planning to volume production!



Highly precise measurement station with intelligent tangential belt drive, which folds away during measurement and therefore does not influence the measurement result.



## Fully automatic balancing

### of e-Drives and rotors of similar geometry

Balancing is the last step towards a perfect rotor in the production process. With its design concept, the eTENO provides a consistent implementation of the balancing process in volume production. Cycle times of 40 to 100 seconds provide the solution for a broad production range at the highest balancing quality.

## Advantage at a glance

### MAXIMUM FLEXIBILITY

- Wide range of correction methods
- Flexible rotor support
- Easy and fast changeover
- Dual machine concept eTENO and eTENO$^{flex}$

### HIGHER EFFICIENCY

- Fully automatic balancing of e-Drives and rotors of similar geometry
- Cycle times of 40 to 100 seconds
- Self-folding drilling units for simultaneous unbalance correction
- Fast, precise interlinking by means of internal rotor handling
- Easy to load and unload

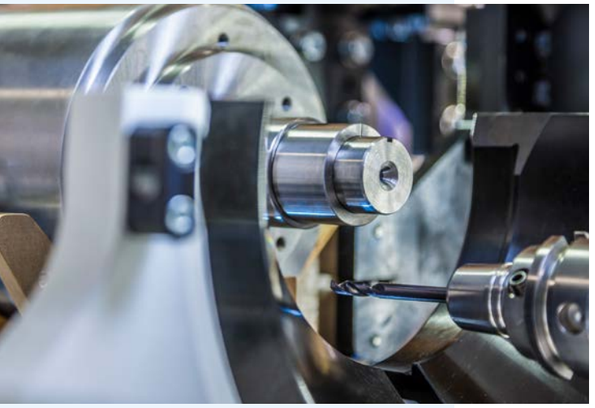
### MAXIMUM PRECISION

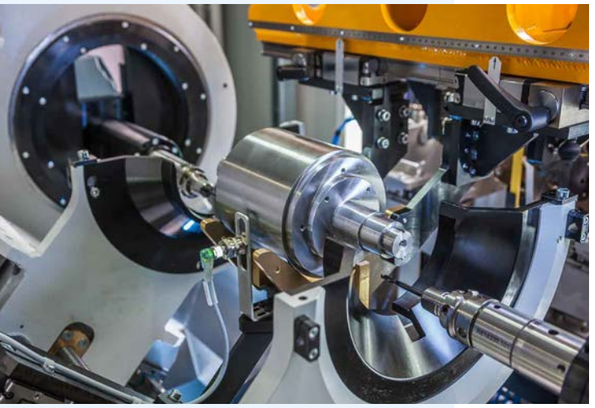
- Folding tangential belt drive for perfect measurement results
- Aerostatic bearings in the measuring station
- Smallest achievable measurement uncertainty (workpiece-dependent): 0.15 µm
- Measuring device CAB 950 for maximum precision and intuitive operation

## Maximum flexibility

### Discrete measurement and correction station

The new eTENO is designed as a two-station machine with a discrete measurement and correction station. The results are considerably shorter cycle times and better measurement and correction results. Supporting the armature in the measuring station with v-blocks, bearing rollers, or aerostatic bearings for example provides maximum flexibility and precision. A wide range of correction types are possible in the correction station: Axial drilling, radial drilling, radial slot milling, axial/radial finger milling or additive correction by inserting pins.





Very fast unbalance correction through self-folding drilling units for simultaneous correction of both planes

## Dual machine concept

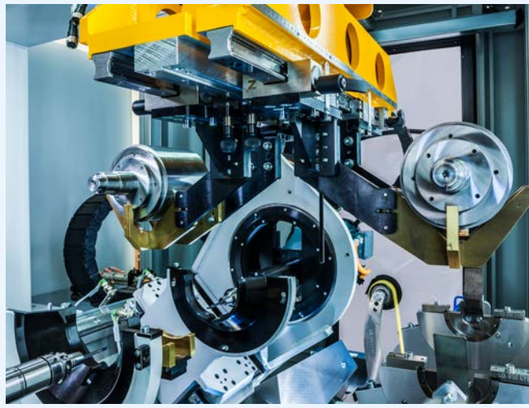
### eTENO und eTENO[flex]

The eTENO comes in two versions: As a stand-alone solution, complete with protective shroud and internal transport.
And as eTENOflex without shroud, with particularly flexible setup options for the two stations facilitating integration into existing production cells. Loading and unloading can easily be accomplished with a robot or a loading gantry.

## Easy changeover

### High flexibility

The eTENO's high flexibility are also important when re-equipping to a different rotor.
Easy access, simple and intelligent design of the control elements, and linear units with holding position that make it possible to quickly and accurately locate positions facilitate the re-equipping procedure and increase the efficiency of the production process.



Very good accessibility and ergonomical design make changeover easier

## Precision that pays off

### Fewer correction steps and shorter cycle times

With the eTENO, we placed particular emphasis on maximum precision to ensure that even the tightest tolerance limits are achieved with accuracy. This is of benefit to your entire balancing process: Together with the correction calculation of the CAB 950, you minimize the number of corrections hence shortening the cycle time even in difficult correction scenarios. In most cases, one correction step is enough for a perfectly balanced rotor. This also extends the service life of the tools, considerably reduces the number of scrap parts, and ends up clearly improving your CPU calculations. The smallest achievable measurement uncertainty (workpiece-dependent) is 0.15 µm.

## Measuring and controlling

### CAB proven measuring technology for maximum precision

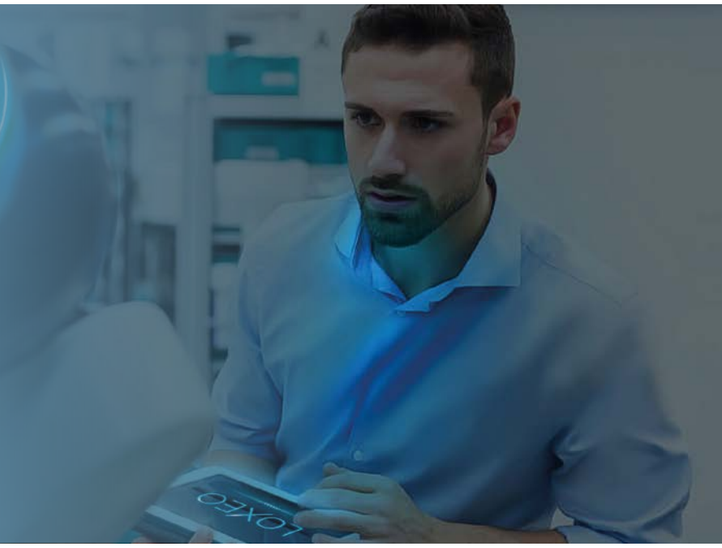
Our current measuring and control unit the CAB 950 in the SmartTouch version is designed as an intuitive human-machine interface (HMI). It provides convenient and clear access to all machine functions.

In addition to the eTENO's precise mechanical system, the CAB measuring technology guarantees maximum precision during unbalance correction. A number of standard functions further optimize accuracy, especially when balancing e-Drives. They include statistic calibration, optimized polar correction, or measurement of the surrounding interference. CAB 950*st* offers online statistics with analysis of the initial unbalance and the process with a certified Q-DAS interface (AQDEF) for your quality management.

## Communication meets measuring technology

### Maximized productivity

Upload a modified rotor data set from the server, check the quality statistics on a smartphone, or create new setup data for the balancing machines in the comfort of your office. Or benefit from the options of our digital marketplace LOXEO, which you can use to optimize the overall process and maximize your productivity. This and much more comes standard with the CAB 950.




## International service – Product safety around the world

### The Service App: The direct link to our Service Helpdesk

Regular service at specified intervals by our Customer Service team provides reliable protection against unexpected failures resulting from wear. In an emergency, our 24-hour hotline with guaranteed response time ensures maximum availability of your system. Our international service team is there for you: More than 200 technicians world-wide provide on-site support and ensure that spare parts are delivered quickly to any location.

Our Service App gives you a direct link to the Schenck RoTec Service Helpdesk.

This makes it possible to promptly identify and rectify faults and to create service requests quickly and transparently.

In our digital marketplace LOXEO, you will discover more practical tools for preventive maintenance and predictive maintenance ensuring that the eTENO will remain efficient and available for the long term.

# Technical data

| ROTOR DIMENSION |
| --- |
| Rotor type: Journals on both sides |
| Rotor weight: 2.5 - 50 kg |
| Overall length: 150 - 500 mm |
| Journal diameter: 15 - 60 mm |
| Rotor diameter: 60 - 200 mm |
| **MACHINE DATA** |
| Outer dimensions: approx. 3,300 x 2,800 x 3,000 mm (WxDxH) |
| Total weight: approx. 5,000 kg |
| Noise level as per EN ISO 3744 (ISO4871) max. 75 dB(A) |
| Air pressure min. 5.5 bar |
| Lubrication Long-term or lifetime lubrication |
| Technical availability 99% as per VDI 3423 |
| **SUPPLY** |
| Operating voltage as per IEC 38 400 V ± 10%, 50 Hz ± 2%, 3 phases |
| Input power: 34 kW |
| Max. back-up fuse by customer: 25 A |
| Control voltage: 24 V DC |
| Internal device voltage: 230 V AC |
| Average cycle time per workpiece at 100% availability (two planes in one step) approx. 40 - 100 seconds |

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