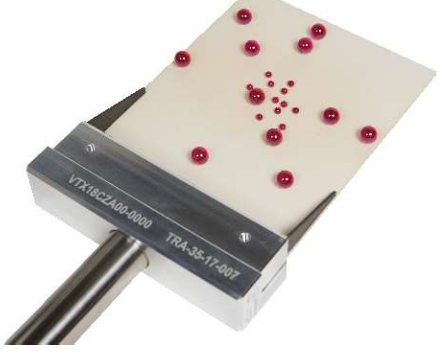
Waygate Technologies
a Baker Hughes business

V|tome|x M Metrology 2.0 Upgrade

You can now retrofit your Phoenix V|tome|x M Computed Tomography system with the latest metrology 2.0 upgrade package. This upgrade complies with the VDI 2630-1.3 standard and enables you to fully benefit from the advantages of CT based metrology. The metrology 2.0 upgrade package comes with True|position and Ruby|plate technologies to grant high accuracy measurements within the sample travel length.

The Metrology|edition upgrade package consists of:

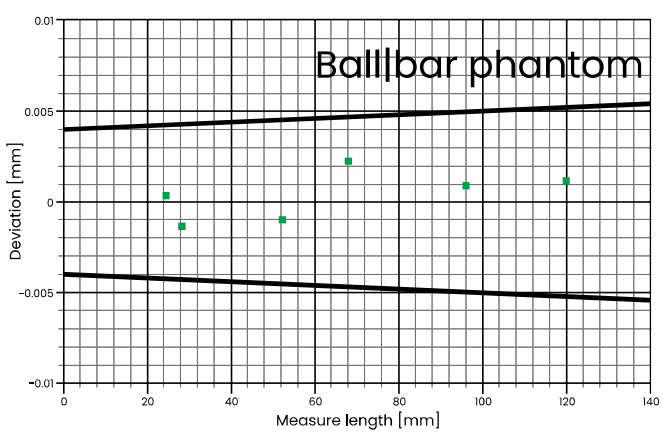


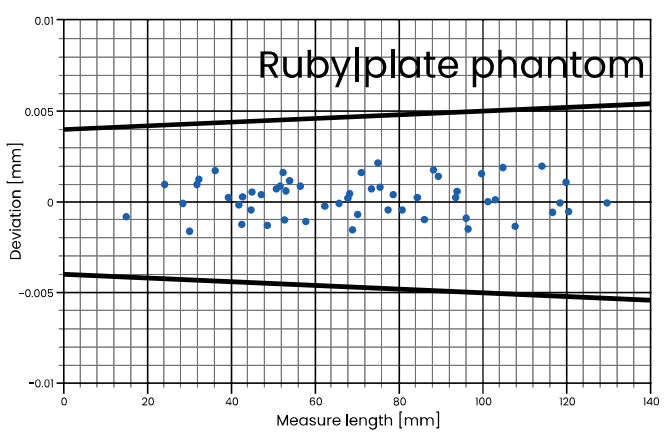
Patented Ruby|plate phantom

- **Ruby|plate**
  Patented calibration phantom design with ruby spheres on a ceramic plate for fast and reliable VDI 2630-1.3 verification and voxel-size calibration
- **True|position**
  Laser-based compensation method for residual mechanical uncertainties of the sytem manipulator expands the measurement positions with specified accuracy
- **Voxel|calib**
  Automatic calibration for exact measurement of Focal-Object-Distance (FOD) and Focal-Detector-Distance (FDD)
- **Easy|calib**
  Automated tool for fast system calibration to ensure VDI 2630 specification at any position within the CT system
- **Temperature sensor** to compensate thermal drift

Innovative Ruby|plate technology

- New calibration phantom for VDI 2630 verification and voxel-size calibration
- Patented design: ruby spheres with different diameters on ceramic plate, covering a wide scan envelope
  - full VDI 2630-1.3 compliance covering 3 directions (horizontal, vertical, diagonal) with one scan
  - 3x faster verification compared to metrology 1.0 technology
- Maximum probing length of 130 mm
- Accurate calibration uncertainty of the phantom: < 1 µm



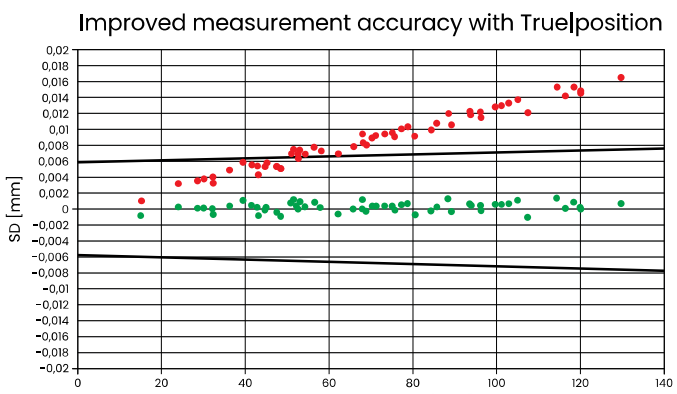


metrology|edition 1.0 with Ball|bar technology
- 6 measurements per scan, all in one direction
- Limited metrology specification

Metrology|edition 2.0 with Ruby|plate technology
- 55 measurements per scan, in all directions
- Wide metrology range

True|position / Easy|calib

- Advanced method for compensation of residual system mechanical uncertainties based on laser-scan data once generated at system calibration. This allows measurement with specified accuracy at all positions.
- Expands the measurement positions with specified accuracy to all positions which allows a faster setup of CT scans with high measurement accuracy.
- New VDI 2630 specification: $S_D \leq$ **(3.8 ± L/100 mm) µm** (2 positions per standard)
- Specification for any other position: $S_D \leq$ **(5.5 ± L/50 mm) µm** (which can be verified with the Ruby|plate)



Without True|position:
- Specification only available at predefined position
- Up to 15 µm length measurement error at other positions

With True|position:
- Specification available at all positions
- Length measurement error SD ≤ (5.5 ± L/50 mm) µm

- The systems´ VDI 2630 accuracy specification can be increased for any other position by applying the simple and fast automated **Easy|calib tool** (<10 min effort): $S_D \leq$ **(3.8 ± L/100 mm) µm**

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