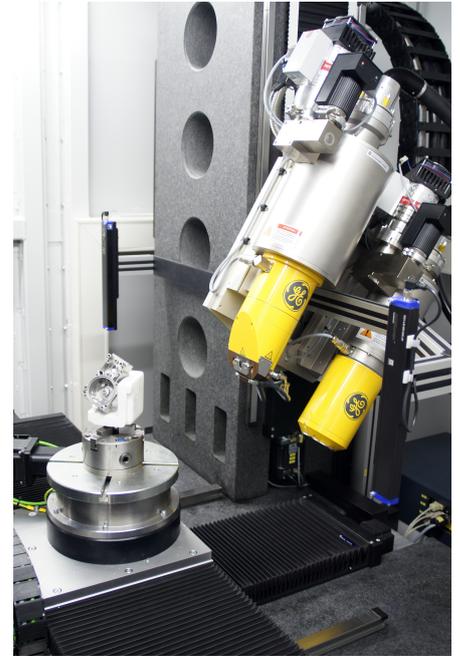


X-RAY MICRO-COMPUTED TOMOGRAPHY

Since 2nd December 2016 CMI in collaboration with X-ray micro and nano computed tomography (XCT) laboratory at CEITEC BUT offers [accredited XCT measurements](#) according to accreditation requirements [in accordance with ČSN EN ISO/IEC 17025:2005](#) of the Czech Accreditation Institute.

X-ray computed tomography is an advanced imaging technique capable of non-destructive visualization and analysis of objects. Three-dimensional outputs are obtained by the X-ray beam going through the investigated sample for different angles of rotation of the sample and by subsequent mathematical processing (i.e. tomographic reconstruction) of the acquired images representing the virtual cross-sections of the sample. Microtomography allows scanning of the inner structure of three-dimensional objects with high spatial resolution without damaging the object. Various materials are suitable for the detection of the shape of both internal and external structures, inhomogeneities, voids and material porosities. Microtomography can be employed in many different fields such as mechanical engineering or construction industry.



EQUIPMENT

GE phoenix v|tome|x L240

- Maximum sample size: Ø500 mm x 600 mm (i.e. size of the circumscribing cylinder).
- Maximum weight of the sample 50 kg.
- Achievable voxel resolution < 2 micrometres for 240kV microfocus X-ray tube and ~ 1 micrometres for 180kV nanofocus X-ray tube.

GE phoenix v|tome|x M300

- Maximum sample size: Ø290 mm x 400 mm (i.e. size of the circumscribing cylinder).
- Maximum weight of the sample 50 kg.
- Microfocus X-ray tube 300 kV/500 W.



Software

3D visualization software "VG Studio MAX 3.0" with metrology packages:

- Coordinate measurement module.
- Nominal / actual comparison module.
- Wall thickness analysis module.
- Porosity / inclusion analysis module.
- Fiber composite material analysis module.
- Defect analysis according to specifications P201/VW 50097 and P202/VW 50093.

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Application examples

Mechanical, material, electrical and civil engineering. Development, trouble shooting & reverse engineering. Quality and inner/outer shape control of components from plastics, ceramics, light metal castings, wood, etc. Food industry (counting the number of bone fragments in meat products), medicine (study of bones or implants), archaeology (museum artefacts, ancient violins), anthropology, restoration etc. Forensic sciences and legal engineering, criminology, etc. (in a wide range of applications focused on non-destructive investigation of the inner/outer structure and damage of both materials & dimensions). Composites and nano-composites (carbon fibers reinforced materials or glass fibers reinforced plastics). Study of biological materials and soft tissue (biodegradable collagen scaffolds, cells, mouse embryos).