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FRAUNHOFER INSTITUTE FOR
INTEGRATED CIRCUITS IIS
DEVELOPMENT CENTER X-RAY TECHNOLOGY EZRT

CT PORTABLE – PLANTS


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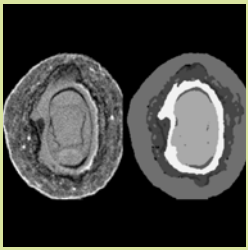
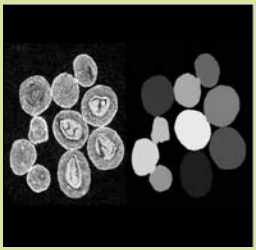


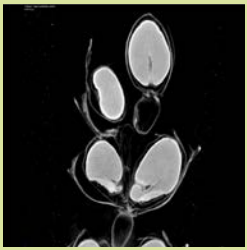


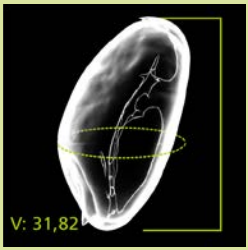
Setup and Function

The compact CT system comprises of a powerful X-ray source, a high resolution detector and a sample handling system with lifting axis and a precise turning device. The data recordings are conducted either in one go or step by step, according to object size (see technical specifications). This is done by moving the axes during the measurement. Following data recording, the data is reconstructed and prepared for visualization.

Simple Operation

Operation of the system is conducted via software developed and supplied by Fraunhofer EZRT. The intuitive and user-friendly surface is leading you through the individual options step by step until the result has the quality desired.





Motivation

To combat the consequences of climate change, selective plant breeding is of utmost importance. This allows for improving crop yield and enhancing plant resistances, e. g. by the selection of plant varieties especially resistant to heat.

When applying conventional methods of analysis the seeds are destroyed – further testing of the same seed is impossible. Also, due to the destruction of the seed it is impossible to conduct long-term studies e. g. for analyzing seed growth or germination capacity.

The Fraunhofer Development Center X-ray Technology EZRT has a solution to that problem: non-destructive analysis by applying X-ray technology encased in a compact and transportable X-ray system, aptly named "CTportable". By applying X-ray techniques, the invisible becomes visible and a non-destructive analysis of the inner structures of seeds becomes possible. CTportable was especially designed for the analysis of small samples consisting of low absorption materials.

The low energy range, completely sufficient for the tasks at hand, is enabling a cost-efficient and compact setup, especially when compared to conventional X-ray systems.

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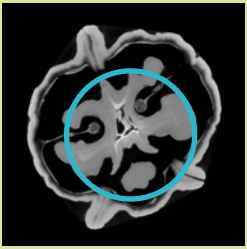
1 *Characterization of barley grains*
2 *Example of a segmentation demonstrated at sugar beet seeds*
3 *CTportable of Fraunhofer EZRT*

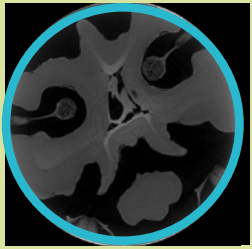
CTportable – Plants

CTportable – Plants is especially addressing the demands of biology and plant breeding and is specifically configured to perform such tasks. The configuration is enabling the analysis of seeds with regards to size, the segmentation of individual seeds as well as a more detailed analysis of (virtual) inner slices inside an individual seed.

The manufacturing of a standard CTportable is conducted by our distributors, to whom we will gladly forward our customers' requests. Fraunhofer EZRT is focusing on individual system configurations for customer-specific tasks.

Do not hesitate to contact us if you require a higher spatial resolution or if your samples have different sizes, weights or material composition. We will find a solution for your individual task!





4 *Increasing resolution of a sample by applying a "region-of-interest" scanning technique. Sample shown is a walnut.*

TECHNICAL SPEZIFICATIONS

W/H/L (in mm):	**300 x 230 x 350**
Weights:	**25 kg**
Max. Sample Size:	**Ø 45 mm, 65 mm (height)**
Max. Sample Weight:	**250 g**
Max. Acquisition Area:	**50 mm vertical travel**
Voxel Size / Spatial Res.:	**18 µm**
	(at magnification 2.7)

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