

## **New focal spot range: MesoFocus**

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Traditional focal spot designs of sealed high power (HP) x-ray tubes are larger than 400µm. The focal spot designs limit the resolution capabilities. Today new manufacturing technologies like additive manufacturing or composite materials require a detection of smallest defects. This type of failure detection was limited to open micro focus X-ray technology so far. With the new emitter concept of Comet focal spots in the range of 50-200µm can be achieved with known form factors of tubes that enable in-line inspection processes where a high focal spot stability is required. The following features are achieved with a novel triode focusing concept: - Adjustable focal spot size from 50 to 200µm (100 to 500µm) (ASTM E 1165-12) - Constant tube power from 25% of the max. kV - Homogeneous resolution in the entire radiation field, due to a 20° target angle As functional models, unipolar tubes with a maximum voltage of 225kV were built. A resolution of 25 micrometers could be demonstrated. Due to the steep target angle of 20°, the difference of the resolution in the entire radiation field is only one duplex wire. As valued from traditional tubes more than one focal spot size can be integrated into one tube. This allows applications to dynamically adjust the focal spot depending on requirements like speed of exposures or resolution. This paper shows the latest development and first field results. Keywords: x-ray source, closed x-ray tube, focal spot, micro focus, meso focus