RESPONSE FORM

Standardization needs and suggestions to EURAMET for consideration in their 2017 EMPIR call

In the frame of the between CEN, CENELEC and EURAMET, CEN and CENELEC have been invited by the EURAMET Management to put forward their testing and measurement needs in **Industry**, in **Fundamental** and in **Pre- and co-normative research**.

Relevant technical groups (sector fora, advisory boards, coordination groups, TCs...) are invited to contribute with:

- a short introduction or an overview paper of their unaddressed standardization needs for testing and measurement, and
- a contact person (secretary, chair, convenor, liaison officer, etc.) whom proposers for the Potential Research Topics can contact,

using the table below, **before 12 December 2016**

Source of the identified need (identification of TC, WG, etc, incl. title)	☒ CEN/TC 138/WG 1 ☐ CLC/TC 0/WG 0 ☐ ISO/TC 0/SC 0 / WG 0 ☐ IEC/TC 0/SC 0 / WG 0 ☐ Other, namely *Identification, Title*
European entity responsible for submission of the need	*CEN/TC138* ***Measurement of the focal spot size on X-ray tubes with spot sizes down to 100 nm***
Person that can be contacted for more detail (name, e-mail and telephone number)	*Dr. Uwe Ewert* *Uwe.ewert@bam.de* *+49 30 8104 1830* *Germany*
Unaddressed need (short description)	***Measurement of the focal spot size on X-ray tubes with spot sizes down to 100 nm*** *Scope:* A new generation of X-Ray tubes with nanometer-focus was developed for electronic industries to visualize nanometer structures in integrated circuits with digital radiography and computed tomography. The performance of these inspection systems depends on the spot size dimension. No standardized measurement method is available for exact measurement of the spot size below 5 µm and its uncertainty. A first approach for the measurement algorithm was proposed and first tests were performed with numeric modelling tools. For repeatable accurate measurement it is necessary to test the new algorithm before standardization in a metrology institute together with the manufacturer's labs.
Type of work (more answers possible)	☒ pre-normative ☐ SI-units ☐ co-normative ☒ interlaboratory study ☐ testing ☐ fundamental research ☒ measurement ☒ market support ☐ energy ☐ environment

Estimated effort (if known)	Person months: 24
Further explanation of need (TC business plan, road map, formal decision, work item, etc.)	*The proposed algorithm should be validated by several laboratories. The inner and inter laboratory standard deviation of the measurements of spot length and width should be determined in comparison to an optical measurement of the used test targets. The standard should be developed as standard measurement procedure.* *A test sample will be send around and a measurement software will be developed in a metrology institute for inter-laboratory comparison.* *The measurements will be carried out in different labs and a statistical analysis will be performed.* *The results should be presented until middle of 2018 and the standard draft should be published end of 2018 to start the standardization procedure.*
Enclosures	☒ Yes ☐ No

Email address for sending the Response Form:

STAIR EMPIR WG, Mr Ortwin Costenoble (empir@nen.nl)