

Aerospace series - Metrological assessment procedure
for kinematic fields measured by digital image
correlation

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 4861:2020 sisaldab Euroopa standardi EN 4861:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 4861:2020 consists of the English text of the European standard EN 4861:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 09.12.2020.	Date of Availability of the European standard is 09.12.2020.
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ICS 17.180.01, 49.025.01

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ICS 17.180.01; 49.025.01

English Version

Aerospace series - Metrological assessment procedure for kinematic fields measured by digital image correlation

Série aérospatiale - Procédure d'évaluation
métrologique applicable aux mesures de champs
cinématiques par corrélation d'images numériques

Luft- und Raumfahrt - Metrologisches Messverfahren
für kinematische Felder durch digitale Bildkorrelation

This European Standard was approved by CEN on 26 August 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 4861:2020) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2021, and conflicting national standards shall be withdrawn at the latest by June 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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1 Scope

This document specifies the monitoring of mechanical tests and inspections performed both at the material (coupon) and at the structural scale by the implementation of kinematic field measurements by digital image correlation. This document describes an in situ method for evaluating the metrological performance of an extensometer system using image correlation for the delivery of displacement fields, and by extrapolation, of deformation fields. It can be implemented prior to the actual start of the test (or inspection). It will inform of the metrological performance in testing conditions.

This document allows the metrological performance of the measuring technology to be quantified. The methodology described herein is not to be considered as a calibration step. This reference document does not exhaustively specify the constitutive elements of a generic system of Digital Image Correlation measurement. This reference does not address the measurement of 3D shapes via stereocorrelation systems.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

extensometer system

equipment used to measure displacement or strain fields on the surface of a tested piece

Note 1 to entry: The equipment consists of an image acquisition device and a computer system for calculating the displacement and / or strain fields from the recorded images.

Note 2 to entry: For the purposes of this document, the term "Extensometer system" applies in particular to kinematic field measurements by digital image correlation.

3.2

user

person in charge of the extensometer system implementation

3.3

2D measurement - monovision

extensometer system consisting of a single imager is a monovision system

Note 1 to entry: This system can provide full-field measurements in two (2) dimensions. The relevant plane is perpendicular to the optical axis of the imaging system.