2020-12-02

Project Plan for the CEN Workshop on "Innovative testing in support of the sheet metal forming industry"

(Approved during the Kick-off meeting on 2020-12-02)

1. Status of the Project Plan

- Initial draft Project Plan, to be further developed, prior to submission for approval
- Draft Project Plan to be approved at the Kick-off meeting of the Workshop
- Approved Project Plan

2. Background to the Workshop

2.1 Market environment

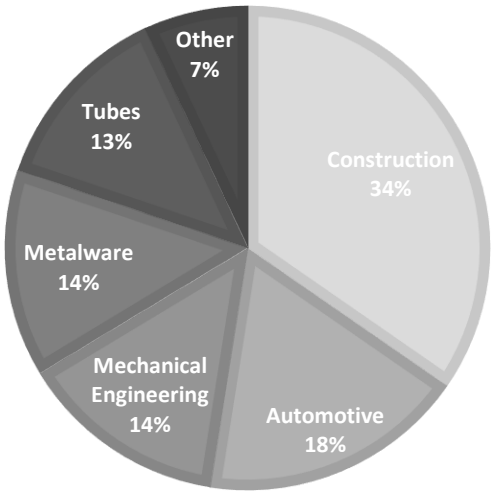
Sheet metal forming processes are those in which a force is applied to a piece of sheet metal to modify its geometry rather than remove any material. The applied force stresses the metal beyond its yield strength, causing the material to plastically deform, but not to fail. By doing so, the sheet can be bent or stretched into a variety of complex shapes.

The sheet metal forming sector is one of the most important manufacturing processes to obtain high performance metal parts from steel and aluminium for almost every industrial production sector, such as transport, construction, home appliances and packaging, generating over €400M in 2016.

Nevertheless, the sector faces a major challenge with respect manufacturing of sheet metal parts, represented by the lack of adequate test methods to assess sheet formability and part performance at the product design stage. This is essential to be able to develop high-performance parts at a reduced cost with new high strength materials. Such high strength makes them processing sensitive, so forming parameters and sheet properties must be assessed to assure a zero-defect production and part quality, avoiding unexpected defects that cannot be

predicted at the product design stage using traditional experimental or computational approaches.

Sheet metal fabrication market by sectors
[Sheet metal fabrication services market - Transparency market research aug. 2017]



2.2 Existing standard related activities

In the framework of the European standardisation system, some CEN standardisation technical committees are related to metallic materials test methods. In the following table they are summarized.

REFERENCE	TITLE
CEN/TC 459/SC 1	Test methods for steel (other than chemical analysis)
CEN/TC 138	Non-destructive testing
CEN/TC 262	Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys

2.4 Motivation for the creation of this Workshop

This workshop is a result of the currently ongoing Horizon 2020 FormPlanet project (Sheet metal forming testing hub), whose general objective is to develop and demonstrate an integrated ecosystem offering novel testing methodologies to characterise metal sheet properties, predict part performance and prevent production loses to the sheet forming industries to tackle the upcoming challenges in formability of processing sensitive materials.

The creation of this CEN Workshop (CEN WS) was identified by the project consortium as a very useful way to **disseminate the FormPlanet project findings and results**, in accordance with the dissemination activities carried out to facilitate the acceptance and utilisation by the market of the developed solutions through the interaction with the standardisation system. This CEN WS will allow the drafting and issuing of CEN Workshop agreements (CWAs) including some FormPlanet results, as well as supporting the ongoing and future FormPlanet activities.

In the future, a Test Bed service provision will be offered through a solid, sustainable and simple organisational structure, based on the partners' experience and FormPlanet results, e.g. CWAs developed by this CEN WS, with strong business focus.

3. Workshop proposers and Workshop participants

This CEN WS is proposed by EURECAT and by the Spanish Association for Standardisation (UNE), which will hold the CEN WS secretariat.

The participants in the CEN WS are the partners in the H2020 project FormPlanet:

#	ORGANISATION	COUNTRY
1	Eurecat	Spain
2	University of Pisa	Italy
3	Applus+ Laboratories	Spain
4	Letomec SRL	Italy
5	Spanish Association for Standardisation (UNE)	Spain
6	Aludium	Spain
7	Arcelor Mittal Maizieres Research	France

The workshop is open to any interested party or entity that is willing to support the aims of the project plan. The participation will be free of charge.

4. Workshop scope and objectives

The scope of the CEN WS "Innovative testing in support of the sheet metal forming industry" is to develop novel testing methodologies that allow to characterise metal sheet properties and predict part performance. The activities of the CEN WS will be aligned and coordinated with those CEN/TCs with which a direct relationship may exist.

In principle, this workshop will develop two CWAs according this scope, based on some FormPlanet findings and deliverables:

- CWA #1 Determination of fracture toughness in thin metal sheets
- CWA #2 Measurement of diffusible hydrogen in metallic materials – HELIOS 4 HOT PROBE method

The CWAs are expected to disseminate the FormPlanet project findings, as well as to support the implementation of the FormPlanet Test Bed services. The final published documents will be freely distributed though the CEN/CENELEC website, on the basis of an agreement between UNE and CEN.

5. Workshop programme

The working language will be English, and the CWAs will be drafted and published in English. The estimated duration of the Workshop is 13 months, until December 2021.

5.1 Work Plan

The work Plan includes two work items:

- **Work item #1 (CWA #1)**
  - **Title:** Determination of fracture toughness in thin metal sheets
  - **Scope:** This document defines a test procedure for the characterization of the fracture toughness in thin metallic sheets. This procedure is based on the Essential Work of

Fracture (EWF) methodology. The main advantage of the EWF methodology is the relative easiness of the tests compared to the standard methods. It is also described an innovative procedure for preparing thin high strength metal sheet specimens.

- **Work item #2 (CWA #2)**
  - **Title:** Measurement of diffusible hydrogen in metallic materials – HELIOS 4 HOT PROBE method
  - **Scope:** This document defines a test procedure for the measurement of diffusible hydrogen content in metallic materials by means of the HELIOS 4 HOT PROBE equipment.

Since the scope of the proposed CWAs is directly related to CEN/TC 459/SC 1 "Test methods for steel (other than chemical analysis)" and CEN/TC 262 "Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys", these CEN/TCs were contacted prior to the creation of this CEN WS requesting their consent to develop the proposed CWAs, according CEN/CENELEC Guide 29. Both CEN/TCs gave their consent (see Annex A and Annex B). A self-assessment with regard CEN requirements is included in Annex C.

The CWAs will be developed according the following schedule:

Task	2020			2021									
	O	N	D	J	F	M	A	M	J	J	A	S	O
Project Plan elaboration													
Commenting period 1													
Kick-off meeting													
Drafting													
Commenting period 2													
Final approval													
Publication													

Both CWAs are expected to be published at the end of September 2021.

Despite no safety aspects will be included in the CWA, for both CWAs a commenting period of 60 days after the drafting period is foreseen to maximize the transparency and openness of the process. Received comments will be circulated among CEN Workshop participants and will be addressed prior the final draft approval.

6. Workshop structure

6.1 Chairperson

The Workshop Chairperson will be appointed by EURECAT (subject to formal approval of the Project Plan at the Kick-of meeting) and will have five main responsibilities:

- Presides at Workshop plenary meetings
- Ensures Workshop delivers the agreement in line with its Project Plan
- Manages the consensus building process, decides when the Workshop participants have reached agreement on the final CWAs, based on the comments received
- Interface with CEN-CENELEC Management Centre (CCMC) and CEN Workshop Secretariat regarding strategic directions, problems arising, and external relationships
- Ensures due information exchange with the Workshop Secretariat

6.2 Secretariat

The CEN Workshop Secretariat will provide the formal link to the CEN system through administrative and operational tasks. The Workshop Secretariat will be held by UNE (subject to formal approval of the Project Plan at the Kick-of meeting) and will have five main responsibilities:

- Formally register Workshop participants and maintain record of participating organisations and individuals
- Offer infrastructure and manage documents and their distribution through the electronic platform
- Prepare agenda and distribute information on meetings and meeting minutes/follow up actions

• Initiate and manage CWAs approval process upon decision by the Chairperson

• Advise on CEN rules and bring any major problems encountered (if any) in the development of the CWAs to the attention of CEN-CENELEC Management Centre (CCMC)

7. Resource requirements

Registration and participation at this CEN Workshop are free of charge, but each participant shall bear his/her own costs for travel, accommodation, and subsistence in the case of on-site meetings.

The administrative costs of the CEN Workshop Secretariat as well as the logistical support, such as online conference tool, will be covered by FormPlanet through its Horizon 2020 funding. The copyright of the CWAs shall be with CEN. 8% secretariat costs will be provided by UNE to CCMC to cover the free download of the published CWAs.

8. Liaisons

The following CEN/TCs will be continuously informed on the progresses of this CEN WS, with respect the development of the CWAs having direct relationship.

- CEN/TC 262 "Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys"
- CEN/TC 459/SC 1 "Test methods for steel (other than chemical analysis)"

If in the future new CWAs are added to the work programme of this CEN WS, the relevant CEN/TCs will be invited to participate or informed periodically on the progresses of the related documents.

9. Contact points

Proposed Chairperson:

Begoña CASAS
EURECAT
Plaça de la Ciència 2
08243 Manresa
Tel.: +34 938 777 373
begona.casas@eurecat.org
www.eurecat.org

Secretariat:

Javier LÓPEZ-QUILES
UNE
C/ Génova 6
28004 Madrid
Tel.: +34 91 432 60 70
jlopez@une.org
www.une.org

CEN-CENELEC Management Centre

Alessia GAETANI
Project Manager
CCMC
Rue de la Science, 23
B-1040 Brussels
Tel.: +32 2 550 09 56
agaetani@cencenelec.eu
www.cen.eu

ANNEX A

Consent communication from CEN/TC 262 to develop a CWA on “Measurement of diffusible hydrogen in metallic materials – Helios 4 Hot Probe method“

De: David Michael <David.Michael@bsigroup.com>
Enviado el: miércoles, 1 de julio de 2020 20:12
Para: Javier Lopez-Quiles Pastor <jlopez@une.org>
CC: f.biagini@letomec.com; 'Corsinovi Serena' <research@letomec.com>; 'm.villa' <m.villa@letomec.com>; l.bacchi@letomec.com; Smith William Mr <w.smith@hdg.org.uk>
Asunto: RE: H2020 FormPlanet - Consent request on CWA proposal

Dear Javier,

Following our correspondence a month ago, I informed CEN/TC 262 about the proposal for a CEN Workshop Agreement entitled 'Measurement of diffusible hydrogen in metallic materials – Helios 4 Hot Probe method' , to be developed within the framework of H2020 project FormPlanet.

I requested feedback by the end of June 2020, and am happy to now confirm full support from CEN/TC 262 for the CWA. Members indicated their wish to be kept informed of the progress of the CWA, and we should be very grateful to receive an update in due course.

Thanks and best regards,

David

David J Michael
Secretary, CEN/TC 262

ANNEX B

Consent communication from CEN/TC 459/SC 1 to develop a CWA on “Fracture toughness in thin metal sheets”

Result of voting

Ballot Information	
Ballot reference	Consultation_Development CWA Fracture toughness_CEN Worshop
Ballot type	CENCIB
English title	Consultation for the development of the CWA **"Fracture toughness in thin metal sheets"** within the relevant CEN Workshop to be created.
Opening date	2020-07-24
Closing date	2020-08-31
Note	

Answers to Q.1: "Do you provide agreement with the development of CWA "Fracture toughness in thin metal sheets" within the relevant CEN Workshop to be created?"		
3 x	**yes**	Czech Republic (UNMZ), Netherlands (NEN), United Kingdom (BSI)
0 x	**no**	
18	**abstention**	Austria (ASI), Belgium (NBN), Bulgaria (BDS), Croatia (HZN), Finland (SFS), France (AFNOR), Germany (DIN), Ireland (NSAI), Italy (UNI), Lithuania (LST), Malta (MCCAA), Norway (SN), Portugal (IPQ), Romania (ASRO), Slovenia (SIST), Spain (UNE), Sweden (SIS), Switzerland (SNV)

Answers to Q.2: "Do you know other CEN Technical Committees (TC or SC) which scope this CWA can fall in? Please provide their number and name."		
1 x	**yes**	France (AFNOR)
5 x	**no**	Austria (ASI), Czech Republic (UNMZ), Lithuania (LST), Netherlands (NEN), United Kingdom (BSI)
15	**abstention**	Belgium (NBN), Bulgaria (BDS), Croatia (HZN), Finland (SFS), Germany (DIN), Ireland (NSAI), Italy (UNI), Malta (MCCAA), Norway (SN), Portugal (IPQ), Romania (ASRO), Slovenia (SIST), Spain (UNE), Sweden (SIS), Switzerland (SNV)

ANNEX C

Self-Assessment for the CWAs included in this Project Plan

Title of the proposed CWA #1:

CWA xxxxx: Determination of fracture toughness in thin metal sheets

1. Does the proposed CWA conflict with an EN or an HD for CENELEC?

☒ NO
☐ YES → **WARNING**: Work on the proposed CWA shall not be initiated.

2. Does the proposed CWA intend to define requirements related to safety matters?

☒ NO
☐ YES Is the proposed CWA within the scope of

☐ CEN? → The CWA proposal shall be submitted to CEN/BT for decision.

☐ CENELEC? → **WARNING**: Work on the proposed CWA shall not be initiated.

3. Is the scope of the proposed CWA within the scope of an existing CEN/CENELEC technical body?

☐ NO
☒ YES → The relevant CEN/CENELEC technical body shall be consulted on the CWA proposal:

- If this technical body responds positively and sees no harm in the CWA being developed, the CWA proposal may be processed.
- If the technical body is opposed to a CWA being launched, the CWA proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

4. Does the proposed CWA intend to define requirements related to management system aspects?

☒ NO
☐ YES → The CWA proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

5. Does the proposed CWA intend to define requirements related to conformity assessment aspects?

☒ NO
☐ YES → CEN/CENELEC Internal Regulations - Part 3, 6.7 applies.

If all these questions are answered NO, the CWA proposal may be processed.
If not, special conditions apply as given above.

Title of the proposed CWA #2:

CWA xxxxx: Measurement of diffusible hydrogen in metallic materials – HELIOS 4 HOT PROBE method

1. Does the proposed CWA conflict with an EN or an HD for CENELEC?

☒ NO
☐ YES → **WARNING**: Work on the proposed CWA shall not be initiated.

2. Does the proposed CWA intend to define requirements related to safety matters?

☒ NO
☐ YES Is the proposed CWA within the scope of

☐ CEN? → The CWA proposal shall be submitted to CEN/BT for decision.

☐ CENELEC? → **WARNING**: Work on the proposed CWA shall not be initiated.

3. Is the scope of the proposed CWA within the scope of an existing CEN/CENELEC technical body?

☐ NO
☒ YES → The relevant CEN/CENELEC technical body shall be consulted on the CWA proposal:

- If this technical body responds positively and sees no harm in the CWA being developed, the CWA proposal may be processed.
- If the technical body is opposed to a CWA being launched, the CWA proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

4. Does the proposed CWA intend to define requirements related to management system aspects?

☒ NO
☐ YES → The CWA proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

5. Does the proposed CWA intend to define requirements related to conformity assessment aspects?

☒ NO
☐ YES → CEN/CENELEC Internal Regulations - Part 3, 6.7 applies.

If all these questions are answered NO, the CWA proposal may be processed.
If not, special conditions apply as given above.