

FormPlanet—A Sheet Metal Forming Testing Hub

An EU project within Horizon 2020 European Union funding for Research & Innovation framework

Hybrix™

Using an advanced material as Hybrix™ leads to endless opportunities when designing lightweight products. Hybrix™ is 50% lighter than corresponding solids material with the same rigidity and stiffness.

The sandwich material is a very thin (0.5 - 3.5 mm) metal micro-sandwich that is strong, formable and light weight with a total weight between 1.0 - 8.5 kg/m² (depending on the configuration).

The unique micro-sandwich design also provides good insulation and dampening properties. Being able to use everything from stainless steel to copper to aluminum makes Hybrix™ a very formable material, unlike conventional lightweight sandwich materials.

FormPlanet is planned in 4 major tasks, with a duration of 3 years & a total budget for 8.0 M€ :

1. Development of novel characterization methodologies
2. Generation of success stories by demonstrators
3. Development and validation of the test bed business model
4. Impact activities complements these stages for an efficient project monitoring

The project addresses processability and part performance in the sheet metal manufacturing sector. The sector faces new challenges related to the manufacture of high performance parts with new high strength and multi-layer “sandwich” materials, e.g. Hybrix™. These materials categories makes manufacturing processing more sensitive, so forming parameters and material properties must be assessed to assure Zero Defects production and part quality.

	Sheet Material Development & Production	Part & Forming Process Design	Components Production	Part-performance
Aim	Optimization of sheet metal properties	Design of components with a better performance	Part quality assessment and in-process measurements	End-users demonstrators for tests validation
Test Bed Sites (Material Characterisation and modelling)	CTM: fracture toughness tests /edge fracture tests LTU: crash-resistance tests FRA: tensile tests at different strain rates, T, atmosphere) UNIPI: H embrittlement tests COMTES: small samples tests	CTM: edge-cracking modelling/ micromechanical evaluations LTU: crashworthiness modelling/smart material data/models for anisotropic and thick sheets/microtomography FRA: FLC characterization and formability tests at high T COMTES: alternative formability (biaxial tests, drawing tests, etc.) UNIPI: FEM H embrittlement EUT: Prototyping by ISF	FRA: quality inspection by 3MA system/ in-process monitoring by HFIM and laser tracking CTM: in-process failure detection by thermography LETOMEC: H content in-situ test COMTES: small samples tests	LTU: crash tests CTM: fatigue tests (durability) COMTES: deformation evaluation on real part using ARGUS LETOMEC/UNIPI: delayed fracture (durability)
Others services	GRANTA: Materials Informatics (material data base for sheet metal forming from tests sites measurements) UNE: Standardization EUT: Test Bed operational and business set up APPLUS: automation of compliance with product certification requirements, product certification services, Quality Label			
Industrial Partners (Validation tests)	ARCELOR: AHSS <3mm (automotive) ARANIA: cold rolled steels, 3-6 mm thick (automotive) ALUDIUM: Al alloys (cosmetic packaging /beverage closure/ automotive) LAMERA: multi-layer sheet metals (electric vehicles)	ESTAMP: Al parts (thin sheets <1mm) (automotive) AP&T: Al hot forming of beam part (automotive) ARCELIK: compressor shell / clinch forming on drum sheet (home appliances) CRF: Al and AHSS B-pillar (automotive)	CRF: AHSS parts prone to suffer H-embrittlement and crash part (automotive)	

Specific solutions provided by FormPlanet to the whole sheet metal forming value chain.

Battery Box image is Published by courtesy of TechROi Engineering AB

The aim of the project is to develop and demonstrate an integrated ecosystem offering novel testing methodologies to characterize sheet properties, predict part performance and prevent production losses to the sheet forming industries to tackle the upcoming challenges in formability of processing sensitive materials. New testing methodologies, and FE approaches to predict formability and part performance as well as monitoring and inspecting Non-Destructive Techniques (NDT) will be developed and adapted to the sector needs.

For further information, please contact us
 Mr. Bengt Nilsson, CEO
 Dr. Ramin Moshfegh, CTO



Lamera AB

E-mail: info@lamera.se
 Office: +46 31 757 71 80
 Web: www.lamera.se

A Odhners gata 17
 SE-421 30 Gothenburg
 Sweden

Mr. Bengt Nilsson, CEO