19th EuroSciCon Conference on Nanotechnology and Smart Materials

"Nanotechnology based solutions for enhanced products and processes in existing industrial manufacturing plants" Workshop

> Chair: Elena Melotti Warrant Group – Gruppo Tecnoinvestimenti



Amsterdam (NL) - October 04th - 2018

IZADI

nano2industry

Horizon 2020

Nanotechnology for the EU progress

Nanotechnology as a Key Enabling Technology

Key Enabling Technologies (KETs) are a group of six technologies:

- micro and nanoelectronics,
- nanotechnology,
- industrial biotechnology,
- advanced materials,
- photonics, and
- advanced manufacturing technologies.



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They have applications in multiple industries and help tackle societal challenges. Countries and regions that fully exploit KETs will be at the forefront of creating advanced and sustainable economies.



Source: http://ec.europa.eu/growth/industry/policy/key-enabling-technologies_en

The problem

KET's and the European "Valley of Death"

Europe is a global leader in the development KETs.

However, the European record in translating this knowledge advantage into marketable products and services doesn't match this. KETs-related manufacturing is decreasing in the EU and patents are increasingly being exploited outside the EU.

One of Europe's major weaknesses with KETs is its difficulty converting knowledge into marketable KETs-based products and services.

This **innovation gap** has been identified as the **European 'Valley of Death'**.



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Source: https://ec.europa.eu/growth/industry/policy/key-enabling-technologies/challenges_en

The strategy

European strategy for KETs

Creating the right investment conditions and economic environment for the KETs industry to develop its manufacturing capacities in Europe

Reinforcing the KETs innovation capacity of SMEs

Helping industry develop innovative products that integrate different technologies

Addressing the skills requirements for KETs

Ensuring a level playing field for KETs



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Source: https://ec.europa.eu/growth/industry/policy/key-enabling-technologies/challenges_en

The role of Horizon 2020 Programme

Horizon 2020

Horizon 2020 is the biggest EU Research and Innovation programme ever.

Seen as a means to drive economic growth and create jobs by coupling research and innovation, it is aimed at ensure Europe produces **worldclass science**, removes barriers to **innovation** and makes it easier for the **public and private sectors** to work **together** in delivering innovation.





Source: https://ec.europa.eu/programmes/horizon2020/what-horizon-2020

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The role of Horizon 2020 Programme

Leadership in Enabling and Industrial Technologies (LEIT)

This part of H2020 programme covers different areas:

- Nanotechnologies
- Advanced materials
- Advanced manufacturing and processing
- Biotechnology

Activities address the whole innovation chain with **Technology Readiness Levels** (TRLs) spanning the crucial range from medium levels to high levels preceding mass production.

TRL	9	Actual Technology Proven Through Successful Use in an Operational Environment	Real World	
	8	Actual Technology Completed and Qualified Through Tests and Demonstrations		
	7	System Prototype Demonstration in an Operational Environment		
у	6	System/Subsystem Model or Prototype Demonstrated in a Simulated Environment	Simulated World	
	5	Component Validation in a Simulated Environment		
	4	Component Validation in a Laboratory Environment		
	3	Analytical and Experimental Critical Function and/or Characteristic Proof-of-Concept	Research	
	2	Technology Concept and/or Application Formulated	Lab	
TRL	1	Basic Principles Observed and Reported		

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Source: <u>https://ec.europa.eu/programmes/horizon2020/en/h2020-section/nanotechnologies-advanced-materials-advanced-manufacturing-and-processing-and</u>

The contribution of IZADI-NANO2INDUSTRY Project to overcome the European Innovation Gap

IZADI-NANO2INDUSTRY Project and KETs

Funded under the LEIT pillar of H2020 programme, IZADI-NANO2INDUSTRY proposes different **solutions based on KETs** (such as nanotechnology, advanced materials and manufacturing) **to contribute to overcome the barriers that nano-materials are facing to get introduced in the market.**

Nanotechnologies/ Advanced Materials	Advanced processes	TRL
Nano-reinforced thermoplastics	Nanotextured mould inserts	TRL7 – ESTCRATCH pilot line
Nano-reinforced metal castings	Gravity casting process for nanoreinforced metal parts	TRL7 – HARDCAST pilot line
Nano-structured coatings	Thermal spray technology	TRL7 – TRIBONANO pilot line





