



IZADI-NANO2INDUSTRY

Industrialization challenges

Speaker

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“Nanotechnology based solutions for enhanced products and processes in existing industrial manufacturing plants”

Workshop

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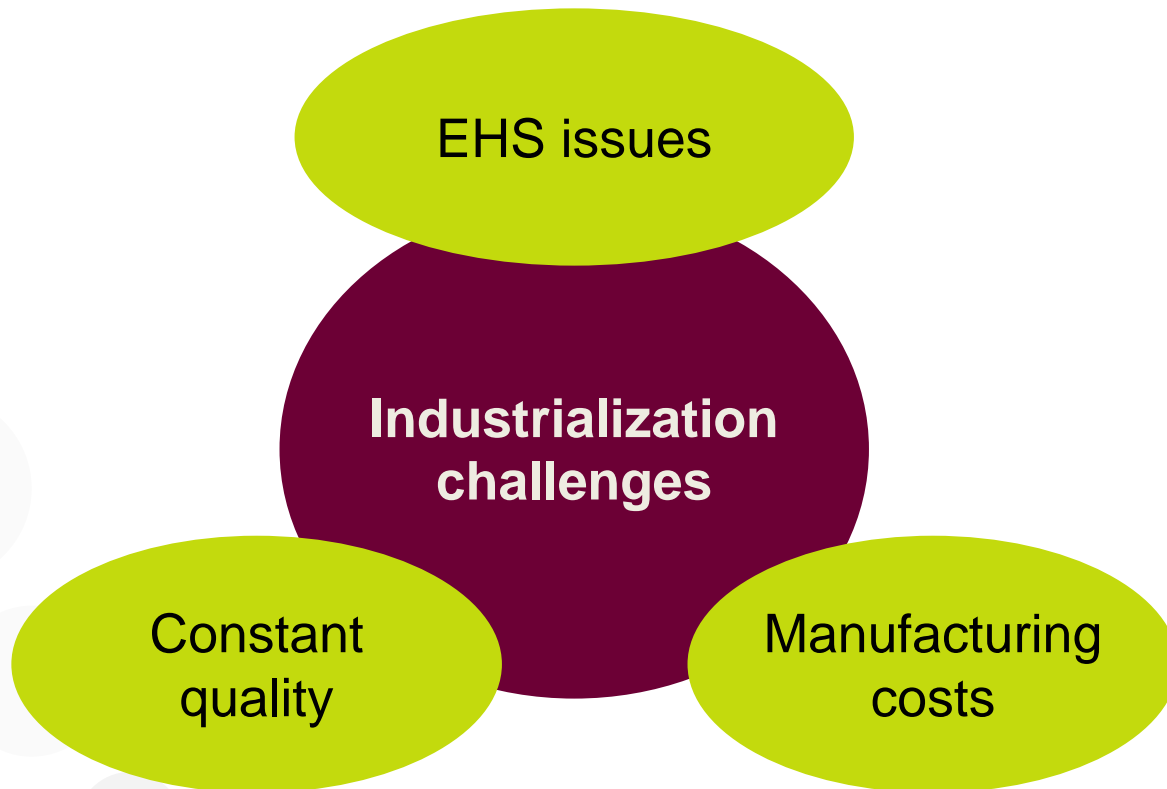
 **IZADI**
nano2industry



Horizon 2020

The three main challenges when industrializing a Nano Enabled Product

Challenges and solutions



EHS issues

Challenges and solutions

Today and especially in the nanomaterials that we are introducing, TiC, ZrO₂, there are hardly any studies carried out on toxicology and explosion risk.

Lack of information about materials



Lack of standards

Safe By Design approach

Nanoparticles are strongly bonded to the matrix

Caution principle
→ Hazard band C
– moderate risk.

Engineering measures to mitigate the risk, such as local ventilation, enclosed processes, HEPA filters, PPEs, ...

At the time that the pilot lines are used to produce parts that are placed on the market, the CE marking is mandatory

These materials and other particular nano silicas used in IZADI project, in fact have not even been registered in REACH in their NANO form.

Constant quality: Robustness and Repeatability of the Industrial Processes

Challenges and solutions

The behavior of some materials when presented in nano-form, is not always as expected

Once selected the key parameters and quantified, define a process control system to assure the product quality.
Keep the process under control !!!

Dynamics of the process not well known

Tests / proofs of concept

Process control

It's necessary to understand the influence of each variable in the product quality. A DOE can be useful for this purpose

Assess the performance of the produced component

Do trials if necessary to discover also how affects the nano-materials to the machine settings, the tools wear, the storage and handling conditions, ...

Manufacturing costs: Productivity and Cost-Effectiveness

Challenges and solutions

Usually we focus on automatization “yes or yes”, but with nano-materials we can find a surprise

Once discovered, try to optimize them: focus on the relevant aspects.

In the example, the optimization of the material loose is 7,5 times more important that the investment, and 9 times more important than labor cost !!!!!

Manufacturing cost optimization

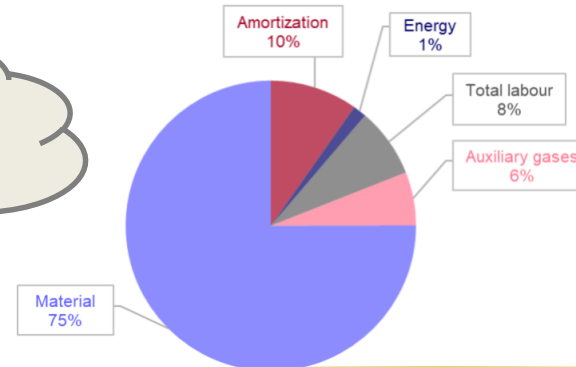
Do a first cost breakdown approach

Focus on the most influencers concepts

The optimization of the gun trajectory with the robot and the synchronization with the part turning tools is much more cost-effective than the automatization of the parts loading / unloading.

Calculate a first estimated cost, based on a simple process (not necessary automated) and find the really important cost aspects

COATING COST BREAKDOWN





Thanks for your attention.