IZADI
nano2industry

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To Impulse the Uptake of Nanotechnology Based Solutions

ESTCRATCH PILOT

Improved Materials and Innovative Injection Moulding Process for More Performing and Aesthetics Enhanced PMMA Plastic Parts

MATERIAL DEVELOPED

Optimized PMMA Nanocompounds for injected thermoplastics

Advantages:

IMPROVED SCRATCH RESISTANCE

More than 140% compared to standard PMMA

LOW VARIATION OF GLOSS

Gloss equal to the 98% of the gloss of the reference material

LOW VARIATION OF COLOUR

Low color variation of the PMMA material developed compared to reference materials

PROCESS

INNOVATIVE DECORATION SYSTEM FOR INJECTION MOULDED PLASTIC PARTS WITH IMPROVED AESTHETICS AND COLOR EFFECTS

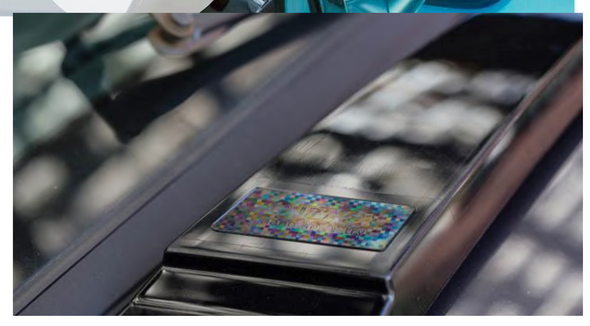
Advantages:

- Reduction of production phases and costs as the parts are made in a single step and several decoration and labelling processes can completely be removed
- More green manufacturing process due to lower energy consumption, less transportation and increased recyclability as parts consist of fewer materials
- Nanostructured surfaces developed can also be used to add other functional effects to a plastic surface such as anti-reflection, self-cleaning, increased wetting and reduced friction

EARLY ADOPTER

Result achieved:

B-pillars fulfilling OEM requirements and combining diffractive and plasmonic colors with anti-scratch properties



TRIBONANO PILOT

Nanocermet micropowder materials and innovative spray coating technology for metal parts with improved wear resistance

MATERIAL DEVELOPED

Nanostructured Coatings

Advantages:

IMPROVED DUCTILITY, TOUGHNESS AND SINTERABILITY

INCREASED STRENGTH AND RESISTANCE

FASTER STRAIN RATES

PROCESS

SOLID-STATE DEPOSITION PROCESS THROUGH COLD SPRAY TECHNIQUE

Advantages:

- Spray of thermally sensitive materials (eg. nanomaterials)
- Limited oxidation and interaction with environment
- Spray of fine cut size powder < 10 micron
- Avoid grit blasting preparation of substrate
- No barrel build-up
- Retain properties of initial powder materials
- Dense, hard, cold worked microstructure
- High thermal and electrical conductivity
- Reduced thermal heating and residual stresses

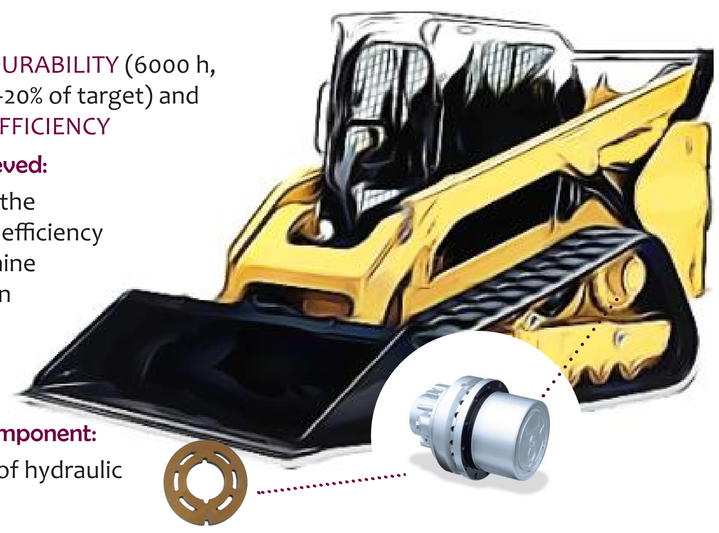
EARLY ADOPTER

Need:

Improved DURABILITY (6000 h, i.e. 5000 h +20% of target) and Increased EFFICIENCY

Result Achieved:

Increase of the mechanical efficiency of the machine transmission



Selected Component:

Valve plate of hydraulic motor

HARDCAST PILOT

Nano-improved materials and suitable industrial casting process for metal parts with enhanced strength and hardness properties

MATERIAL DEVELOPED

Nanoreinforcements for improved metal castings

Advantages:

EASIER DISPERSION AND WETTABILITY

IMPROVEMENT OF PROPERTIES OF METALLIC MATERIALS

REDUCTION OF THE PRODUCTION PHASES OF THE COMPONENTS AND OF THE RELATED COSTS

PROCESS

NEW GRAVITY CASTINGS PROCESS FOR NANOREINFORCED METAL PARTS

Advantages:

- Robust casting process allowing homogeneous structure and properties of the nanoreinforced components
- Completely safe process, similar to the ones currently used in the foundries where nanometer size powders are not handled
- Suitability to most common stirring systems

EARLY ADOPTER

Need:

Improved DURABILITY (6000 h, i.e. 5000 h +20% of target) and Increased EFFICIENCY

Result Achieved:

Increase of the mechanical properties of the components

Selected Component:

Swash plate of hydraulic motor

IZADI-NANO2INDUSTRY Project Consortium

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