IZADI-NANO2INDUSTRY

The entry point for nano-enabled products to go to market

SOLID DEPOSITION OF NANOSTRUCTURED COATINGS

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The problem

– **Adopting cost effective and more efficient manufacturing processes** for coating metal parts (less resources consumption: material, energy, personnel)

– **Improving the durability of mechanical components** through well bonded and superhard wear resistant coatings

– **Increase performances of the metal components (fatigue life)** into the part to be coated and less penalty on critical mechanical properties (fatigue life)

– **Reducing finishing** process steps (coating)
THE SOLUTION

**COST-EFFECTIVE** industrial process to IMPROVE DURABILITY and INCREASE EFFICIENCY

**HVO/AF thermal spray technology for solid state deposition of high quality metal and cermet base coatings**

Key enabling technology to process: low process temperature + low thermal input into the component to the part to be coated

**Nanostructured powders for metallic cermet coatings**
Fields of application: some examples

Aeronautical Industry

Metal Industry

Petrochemical Industry

Hydroturbine Industry

Paper Industry

HVO/AF spraying system
Applications in the Metal Industry

Main Benefits

Higher process productivity: long lasting coating enabling less MRO Maintenance, repair and overhaul needs.

Reduction of post processing steps (finishing) because of the low coating roughness.

Metal sheet roll forming
HVOAF WCCoCr coatings
Applications in the Hydroturbine Industry- hydroelectric generation

Kaplan turbines
HVOAF WCCoCr coatings

Pelton turbines – Needle control
HVOAF WCCoCr coatings

Main Benefit

Best erosion resistant coating to longer life-time of hydro components
Applications in the Paper Industry

Corrugated rolls
HVOAF WCCoCr coatings

Doctor blades
HVOAF WCCoCr and Cr3C2-NiCr coatings

Main Benefit:
Improved production of paper with long lasting doctor blades coated with nanocarbide layer
Applications in the Petrochemical Industry

Ball valves
HVOAF WCCoCr coatings

Main Benefits:
- Best wear resistance for improved durability
Applications in the Aeronautical Industry

**Flap tracks**
HVOAF WCoCr

**Main Benefit:**
Durability of flaps with harder wear resistant coatings

**Turbine shaft**
HVOAF WCoCr

**Main Benefit:**
Improved fretting-fatigue resistance of coated component

Engine shaft
Bearing mounting area
Valudated solution - HYDRAULIC MOTOR SECTOR

- Power loss reduction
- Bonfiglioli Riduttori, end-user, allows us to demonstrate the technology at industrial level
HYDRAULIC MOTOR SECTOR

Provided Benefits

INCREASED COMPONENTS’ LIFETIME
+15/20% in wear resistance

REDUCTION OF PARTS’ MACHINING
−20% of costs associated to the finishing of the component

REDUCTION OF MECHANICAL FRICTION LOSSES
−15%

REDUCTION OF RAW MATERIAL USE
−15%
Business Model

Sell of licenses to end-user / OEMs

- Partnership with thermal spray equipment suppliers
  - We provide the main equipment
  - Peripheral equipment to be provided by the thermal spray equipment suppliers
- Partnership with fine feedstock powders suppliers

Other approaches will be considered depending on each individual case
The Team

Early Adopter

Thermal Spray Equipment Suppliers

Technology Provider

Nanostructured Powders Producer
Be with us

Improve your coating processes with our novel more efficient technology

Customers in industrial sectors different than the hydraulic motor sector
THANK YOU!

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