IZADI-NANO2INDUSTRY

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

SOLID DEPOSITION OF NANOSTRUCTURED COATINGS

Euronanoforum 2017 Conference
June 21st 2017

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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
- **Reducing finishing** process steps (coating)

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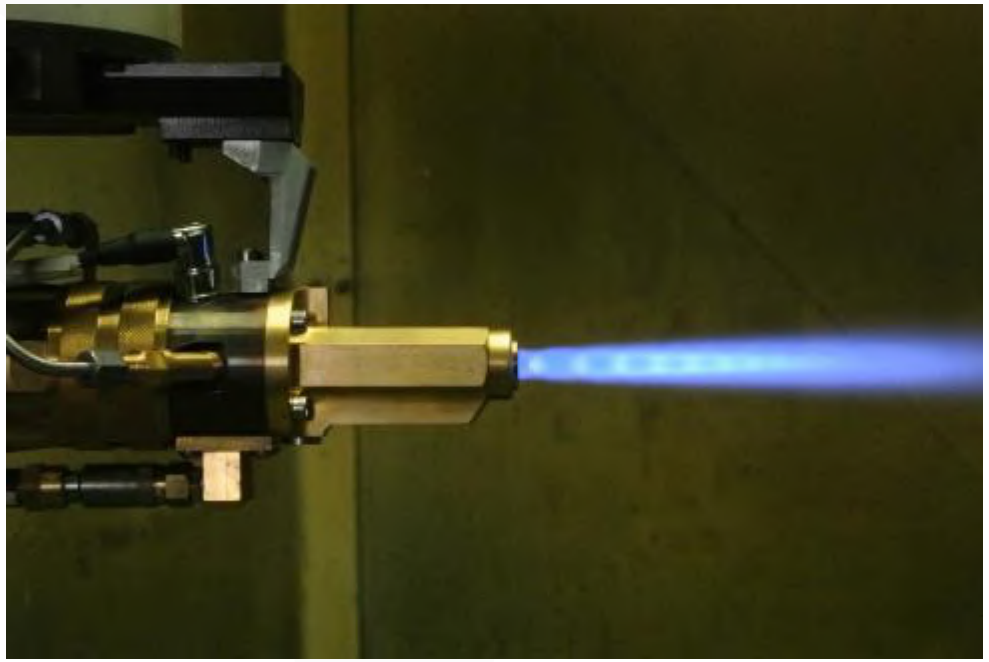
THE SOLUTION

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

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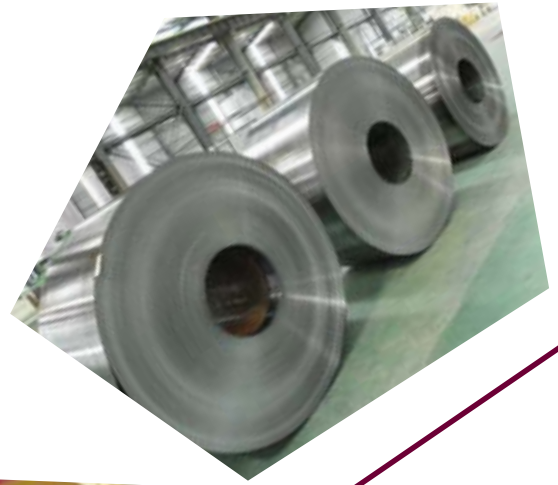
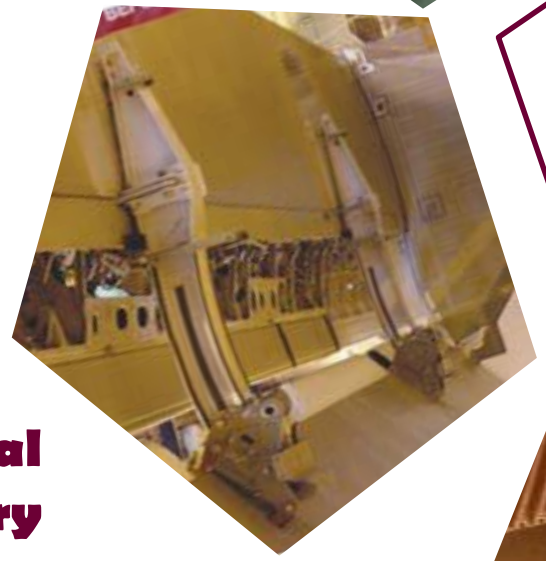
Fields of application: some examples



Metal Industry

Petrochemical Industry

HVO/AF
spraying system



Aeronautical Industry

Hydroturbine Industry

Paper Industry

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Applications in the Metal Industry

Metal sheet roll forming

HVOAF WCCoCr coatings

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

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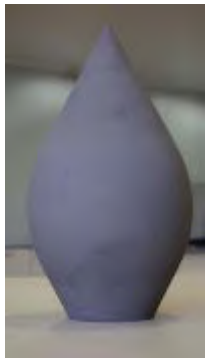
Applications in the Hydroturbine Industry- hydroelectric generation

Kaplan turbines

HVOAF WCCoCr coatings



Pelton turbines – Needle control

HVOAF WCCoCr coatings

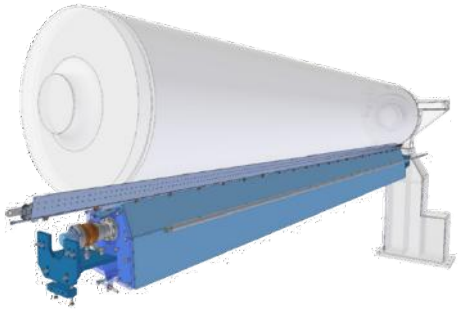
Main Benefit

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

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Applications in the Petrochemical Industry

Ball valves

HVOAF WCCoCr coatings

Main Benefit:

Best wear resistance for improved durability

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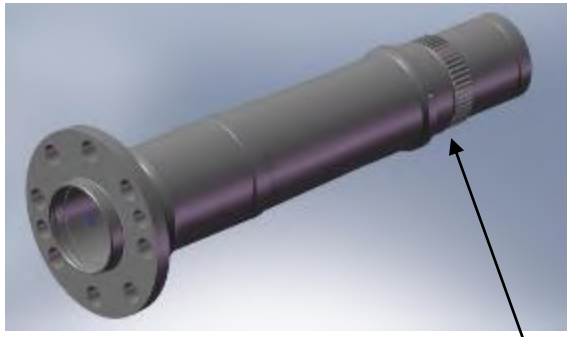
Applications in the Aeronautical Industry



Flap tracks

HVOAF WCCoCr

Main Benefit:

Durability of flaps with harder wear resistant coatings

Turbine shaft

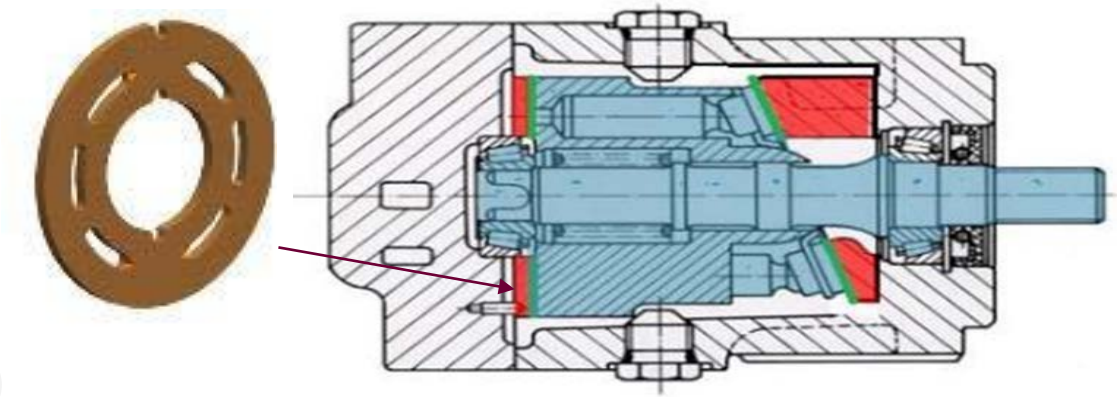
HVOAF WCCoCr

Main Benefit:

Improved fretting-fatigue resistance of coated component

Validated solution - HYDRAULIC MOTOR SECTOR

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



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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%

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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

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The Team

Early Adopter

Bonfiglioli
Forever Forward

Thermal Spray Equipment Suppliers

Technology Provider

tecnalia Inspiring Business

Nanostructured Powders Producer

Nanoval Technologies

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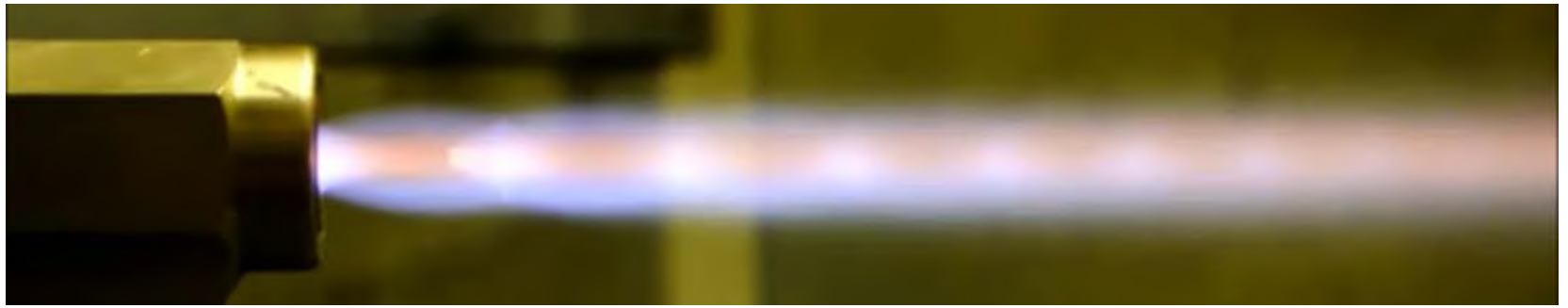
Be with us

Improve your coating processes with our novel more efficient technology



Customers in industrial sectors different than the hydraulic motor sector

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