



MICRO ARC OXIDATION COATING TECHNOLOGY

Centre for Engineered Coatings

International Advanced Research Centre for Powder Metallurgy and New Materials

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Overview

Micro Arc Oxidation (MAO) also known as Plasma Electrolytic Oxidation (PEO) is an electro-chemical and electro-thermal oxidation in an alkaline electrolyte where the surface oxidation is driven by the supply of high voltage (up to 600 V) pulsed AC power.

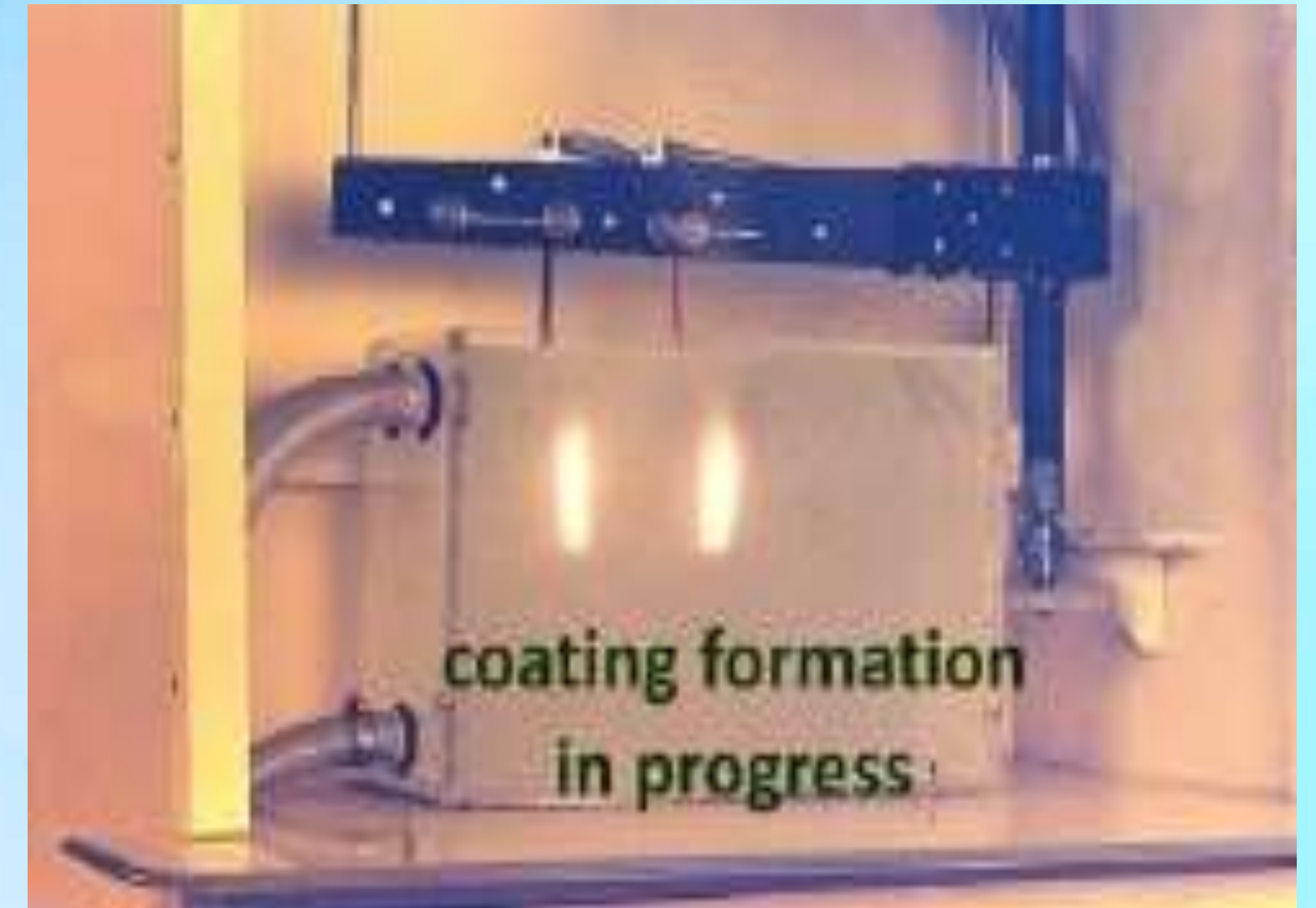
MAO is a novel and environmental friendly way of creating dense, ultra-hard (peak hardness up to 1800 HV) ceramic composite coatings for enhancing the wear, corrosion, electrical and thermal protection of Al alloys.

Key Features

- Eco-friendly and economically viable
- Custom-built technology systems are available in large power supply ranges between 50 to 500 kVA
- Coating composition can be refined by adding additives to the electrolyte depending upon the requirements of various components
- 5-40 times life enhancement
- Easy-to-coat difficult to access regions

Applications

Taking advantage of enhanced fatigue strength in addition to the wear, corrosion, thermal and electrical protection, numerous applications ranging from automotive, aerospace, electrical, electronics, wire drawing and textile industry are the potential segments



Chemical Stirrers



Automotive Pistons



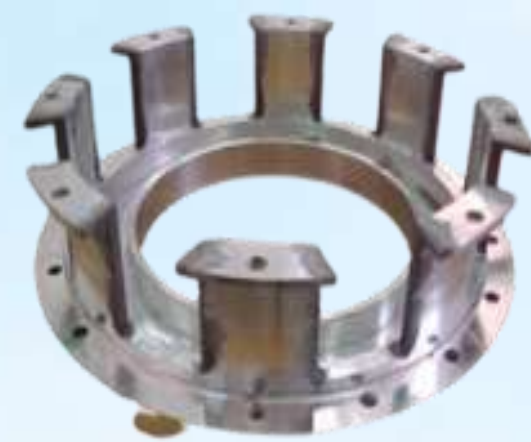
Spindle Pots



Stepped Cone Pulleys



Wire Drawing Pulleys



Clutch Housing



Rollers



Extrusion Parts

Technology Status

- Prototype models of academic and industry scale systems were already fabricated, tested and demonstrated on a variety of applications, installed at customer locations.
- Application development for various industry segments is currently in progress to promote more technology transfers to the Indian industries and universities.

*Intellectual Property Development Indices

IPDI	1	2	3	4	5	6	7	8	9	10
Activities	Basic concepts and understanding of underlying scientific principles	Shortlisting possible applications	Research to prove technical feasibility for targeted application	Coupon level testing in stimulated conditions	Check repeatability/ consistency at coupon level	Prototype testing in real-life conditions	Check repeatability/ consistency at prototype level	Reassessing feasibility (IP, competition technology, commercial)	Initiate technology transfer	Support in stabilizing production
Status										