Eco and Durable Plasma Surface Treatment Technology for Silicone Rubber Products

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SMD: Surface Technology

Problem to be Addressed

- Market driven to multi-functional product
- Customers looking for products with longer sustainability

How we can help you

- Tailor-made functional coating solution offering
- R & D on new material for functional coating
- Consultancy service on manufacturing systems for surface coating

What We Have Done

Tailor-made coating
- Vacuum IP Plating
- Plasma Treatment
- Electrochromic(EC) Glass

New material R&D
- HKPC
- HKPC

Surface coating systems
- Anti-fouling coating and coating systems
Problem for Silicone Rubber Product

- Silicone has good thermal and bio-compatibilities
- Prone to electrostatic adhesion of dust
- Conversional methods uses paints to protect
  - Volatile Organic Compounds (VOCs)
  - Not long lasting
- Limited usage because of the poor cosmetic appearance
Our Solution

- Environmental friendly
  - Waterless and no VOCs
  - No harmful chemicals
- Single process
  - surface cleaning
  - neutralization of surface charge
- Long lasting
  - Durable products
- Superior touch feeling and cleanability
- Scalable design
  - High Throughput
  - Low running costs
 Silicone surface is negatively charge due to the negative oxygen groups.

Dust particles are positive charge.

Dust particles and silicone surface are attracted by electrostatic force, therefore difficult to clean.
Technical details

• Surface modification of silicone rubber surfaces

• Negatively charged silicone surface is cleaned and removed by the plasma action

• Energy of the reactive plasma remove surface oxygen group

Cleaned surface
Benefits

- Environmental friendly (waterless and no VOCs)
- Long lasting anti-dust and anti-statics properties
- Superior touch feeling, cleanability and durability
- Scalable design for different products sizes and manufacture scale
- Low operational cost
- Demo video: https://youtu.be/oqHb0GduDvo
Achievements

- Original Design Manufacturing Equipment
  - PRC Utility Model Patent granted (patent no.: CN202279857U & CN202297756U)
- 45th International Exhibition of Inventions Geneva (Swiss) – Gold Award
- Hong Kong Awards for Industries – Certificate of Merit
Experience for Manufacturing

• Fully tested in small scale manufacturing for a number of clients.
• 2 production equipment operating for 2 years.
• Applications:
  Medical Devices, Wearable products/devices, healthcare products, cosmetic products, baby care products, and cookware.
Potential Applications
HKPC Services

- Sample Trial
- Tailor-made recipe development
- Tailor-made manufacturing system
- Current manufacturing status assessment, system modification/upgrade
- Government funding application/support
Thank You