



## Eco and Durable Plasma Surface Treatment Technology for Silicone Rubber Products



## Problem

- 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

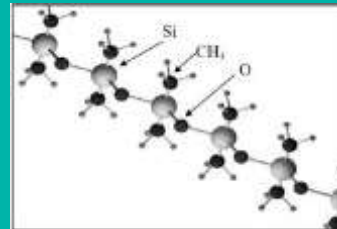
- Environmental friendly
  - Waterless and no VOCs
  - No harmful chemicals
- Single process
  - surface **cleaning**
  - **neutralization** of surface charge
- Long lasting
  - Durable products
  - Not long lasting
- Scalable design
  - Low running costs



50HKPC®

## Technical Details

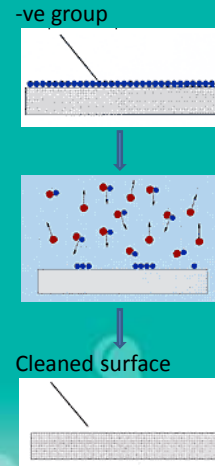
- Silicone surface is negatively charge due to the **negative oxygen groups**
- **Dust** particles are **positive charge**
- Dust particles and silicone surface are **attracted by electrostatic force**, therefore difficult to clean



50HKPC®

## 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**



50 HKPC®

## 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



50 HKPC®

## Achievements

- Original Design Manufacturing Equipment
  - PRC Utility Model Patent granted (patent no.: CN202279857U & CN202297756U)



## Achievements



【本報記者曾麗虹報導】生產力促進局與香港廠商研發出抗菌、不沾塗的物料表面處理技術，可用於眼鏡製造上，解決日漸流行的環保物料砂膠鼻托問題。該技術亦可應用於醫療器具、手機等較高價值的品上，為產品增值。

生產力促進局材料及製造科技部高級顧問盧廣賢指出：「受靜電影響，一般砂膠鼻托容易積塵，將等離子處理技術用於砂膠上，就可有助除去靜電。」他指寬寬多以化學塗層作解決方法，但這種傳統工藝及清潔塗層壽命很短，只有約3個月。

**應用等離子處理技術**

剛研發的等離子表面處理技術則適用於較複雜的產品，為產品增加附加值。如眼鏡框、手機錶帶等，亦可用於醫療設備，令設備運作得更順暢，並已獲得多個國際合作。

【本報記者曾麗虹報導】生產力促進局與香港廠商研發出抗菌、不沾塗的物料表面處理技術，可用於眼鏡製造上，解決日漸流行的環保物料砂膠鼻托問題。該技術亦可應用於醫療器具、手機等較高價值的品上，為產品增值。

生產力促進局材料及製造科技部高級顧問盧廣賢指出：「受靜電影響，一般砂膠鼻托容易積塵，將等離子處理技術用於砂膠上，就可有助除去靜電。」他指寬寬多以化學塗層作解決方法，但這種傳統工藝及清潔塗層壽命很短，只有約3個月。

**應用等離子處理技術**

剛研發的等離子表面處理技術則適用於較複雜的產品，為產品增加附加值。如眼鏡框、手機錶帶等，亦可用於醫療設備，令設備運作得更順暢，並已獲得多個國際合作。



# Achievements

## Rapid Surface Process for Silicone Products

- High throughput
- Long lasting anti-dust properties
- Superior touch feeling, cleanability, durability
- Environmental friendly
- Low running cost

Hong Kong Awards for Industries  
[Production Machinery/Equipment]  
Certificate of Merit (2014)



50 HKPC®

## 45rd International Exhibition of Inventions Geneva (2017) - Gold Medal



50 HKPC®  
10

## Manufacture Experience

- Fully tested in small scale manufacturing for a number of client
- 2 production equipment operating for 2 years
- Applications:  
Medical Devices, Wearable products/devices, healthcare products, cosmetic products, baby care products. and foodware/kitchenware



50 HKPC®

## Potential Products



50 HKPC®