Selected Surface Treatment Technologies towards Production and Maintenance of Modern Transport Parts

Tongjai Chookajorn[a,*] **and Sirikarn Sattawitchayapit**[a]
[a]*National Metal and Materials Technology Center (MTEC),*
National Science and Technology Development Agency (NSTDA),
Pathum Thani, 12120, Thailand
*tongjai.cho@mtec.or.th

Keywords: Modern transportation, surface treatment, electroplating, shot peening

Surface finishing has been utilized in many transportation parts to achieve the desired aesthetics and reliability needed over the part's service life. For applications in modern transportation, lightweighting is crucial in improving fuel economy and increasing the performance of a vehicle. Several surface treatment techniques have been shown to be beneficial for friction modification and enhanced protection against corrosion and wear, while using the same or lower material weight. Here, selected surface treatment technologies for the production and maintenance of modern transport parts with the focus on increasing part durability without introducing excess weight will be discussed. Examples include bottom-up approaches such as deposition of durable coatings on lightweight parts by electroplating. In addition, top-down approaches such as shot peening will be shown to increase the wear resistance by introducing compressive residual stress to the existing material such as rail steel.