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Contact Temperature of Sliding Surfaces in AISI 316 Austenitic Stainless Steel During PIN on Disk Dry Wear Testing

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Abstract : This study looked into contact surface temperature during a pin-on-disk test. Friction and wear between sliding surfaces raised the temperature differential between the contact surface and ambient temperatures Tdiff. Tdiff was significantly influenced by wear test variables. Tdiff rose with the increase of sliding speed and applied load while dropped with the increase in ambient temperature. The highest Tdiff was 289°C during the tests at room temperature and 2.5 m/s sliding speed, while the minimum was only 24 °C during the tests at 400°C and 0.5 m/s. However, the maximum contact temperature Tmax was found during tests conducted at high ambient temperatures. The Tmax was estimated based on the theoretical equation. The comparison of experimental and theoretical Tmax data revealed good agreement.

Keywords : pin on disk test, contact temperature, wear, sliding surface, friction, ambient temperature
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