

Pengaruh komposisi penguat carbon nanotube terhadap peningkatan ketahanan aus dan self-lubrication cylinder liner berbasis pelapisan CNT-Al<sub>2</sub>O<sub>3</sub>+13% TiO<sub>2</sub> nanokomposit dengan metode cold spraying = Effect of carbon nanotube composition strengthening and matrix types to improving wear resistance and self lubrication coating cylinder liner and piston ring with CNT-Al<sub>2</sub>O<sub>3</sub> + 13% TiO<sub>2</sub> coating by cold spraying

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Abstrak

Carbon nanotube (CNT) Alumina + 13%TiO<sub>2</sub> nanokomposit dengan fraksi volume CNT berbeda untuk mengetahui pengaruh distribusi CNT dalam matriks keramik. Perilaku self-lubrication pada pelapisan permukaan di cylinder liner yang diamati. Alumina 13% TiO<sub>2</sub> + CNT nanokomposit dengan kandungan CNT Maksimum 4 % yang dilakukan dengan metode cold spraying pada pelapisan permukaan cylinder liner. Nanokomposit dibuat dengan komposisi berbeda dengan metode pencampuran planetary ball mill. Pengaruh ketahanan aus, friction dan self lubrication akan di analisa dengan Vickers microhardness, surface roughness, pengujian keausan ogoshi sebelum lubrikasi dan setelah lubrikasi, dan fourir transform infrared spectrometer.

Hasil yang didapatkan ketahanan aus meningkat seiring penambahan CNT. Ketahanan aus dan mikrohardness berdasarkan penambahan CNT dihitung dalam penelitian ini. SEM - EDX digunakan untuk mengamati permukaan yang dilapisi CNT ? Alumina 13% TiO<sub>2</sub> nanokomposit. Semua hasil menunjukkan metode cold spraying dan planetary ball mill secara signifikan meningkatkan distribusi CNT pada matriks alumina 13% TiO<sub>2</sub> sehingga meningkatkan ketahanan aus dan memberikan efek self lubricant pada nanokomposit.

.....Carbon nanotubes (CNTs) Alumina + 13% TiO<sub>2</sub> nanocomposite with a different volume fraction of CNT's to determine the effect of CNT distribution in the ceramic matrix. The behavior of self-lubrication on the surface coating on the cylinder liner was observed. Alumina 13% TiO<sub>2</sub> + CNT nanocomposite containing CNTs Maximum 4% which was conducted by cold spraying on the surface of the cylinder liner coating. Nanocomposite prepared with different compositions with a planetary ball mill mixing method. Effect of wear resistance, friction and self lubrication will be analyzed with a Vickers microhardness, surface roughness, ogoshi wear testing was used before and after lubrication lubrication, and fourir transform infrared spectrometer.

The results obtained wear resistance increases with the addition of CNTs. Wear resistance and mikrohardness by the addition of CNTs calculated in this study. SEM - EDX was used to observe the surface of the coated CNT - Alumina 13% TiO<sub>2</sub> nanocomposite. All results show the method of spraying cold and planetary ball mill significantly improve the distribution of CNTs in the alumina matrix 13% TiO<sub>2</sub> thereby increasing wear resistance and self-lubricant effect on the nanocomposite.