EURO PHYSICAL ACOUSTICS SA
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EA 2007-02F
Degradation analysis by acoustic emission of a fretting contact :
EUROCORR 2007 – du 09 au 13 septembre 2007 – Freibourg im Breisgau,

Degradation analysis by acoustic emission of a fretting contact

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Abstract

The purpose of this document is to present of acoustic emission (AE) during a fretting test in order to better characterize and understand wear damage mechanisms. Indeed, a part of the energy released during fretting process is converted into mechanical energy and elastic waves propagating through the sample, which are detectable with appropriate AE technique. The characterization of global AE data is performed by spectral and multiparametric analysis, enhanced by statistic processing. AE signal analysis successfully shows the presence of three distinct phases in the contact. A strong correlation is established between the displacement and the acoustic emission energy. These measurements give a tool to study processes occurring between two surfaces contact.

Keywords: fretting, free displacement conditions, titanium alloy, coating, acoustic emission.