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**Influence of humidity on the endurance of silver-plated electrical contacts subjected to fretting wear**

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*Abstract*—The use of connectors in electrical devices for automotive has significantly increased during the last decades. These connectors need to keep a low and stable electrical contact resistance (ECR) otherwise disconnects may occur, inducing critical failures. Close to the engine, these connectors are subjected to vibrations inducing fretting in the contact (i.e. wear damage induced by small oscillating sliding).

This phenomenon induces surface wear and the formation of oxide debris (third body) which, being trapped within the interface, can drastically increase the electrical contact resistance.

The aim of this study is to investigate the effects of the relative humidity (RH) on the fretting wear rate and the Electrical Contact Resistance (ECR) of a silver plated electrical contact. The analyses show that an increase of RH tends to increase the ECR fretting endurance  $N_c$  related

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