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Abstract

Metal burn is encountered very often in industrial practice. Different degree of metal burn leads to unlike damage to related parts. In order to monitor the burn degrees accurately, AE burn signals are studied and the total process is given in the following steps. Firstly, four different degrees of surface burn are generated in experiment, during which AE signals are collected. Secondly, frequency shift regulation is found. It is explained by the phase transition principle and utilized to distinguish the burn degrees. Then, Variational Mode Decomposition (VMD) method is applied to extract main frequency of AE burn signals. And the input parameters of VMD are selected by scale-space method and comparison of anti-noise performance. Finally, the four degrees of metal burn are recognized by feature