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Evaluation of Mechanical Behavior of Gas Turbine Blade at High Temperature

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Abstract : Gas turbine blade is important part of power plant, so it is necessary to evaluate gas turbine reliability. For better heat efficiency, inlet temperature of gas turbine has been elevated more and more so gas turbine blade is exposed to high-temperature environment. Then, higher inlet temperature affects mechanical behavior of the gas turbine blade, so it is necessary that evaluation of mechanical property of gas turbine blade at high-temperature environment. In this study, tensile test and fatigue test were performed at various high temperature, and fatigue life was predicted by Coffin-Manson equation at each temperature. The experimental results showed that gas turbine blade has a lower elastic modulus and shorter fatigue life at higher temperature.

Keywords : gas turbine blade, tensile test, fatigue life, stress-strain
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