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The High Temperature Damage of DV–2 Turbine Blade Made from Ni–Base Superalloy

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Abstract : High-pressure turbine (HPT) blades of DV–2 jet engines are made from Ni–base superalloy, a former Soviet Union production, specified as ŽS6K. For improving its high-temperature resistance are blades covered with Al–Si diffusion layer. A regular operation temperature of HPT blades vary from 705°C to 750°C depending on jet engine regime. An over-crossing working temperature range causes degradation of protective alitize layer as well as base material–gamma matrix and gamma prime particles what decreases turbine blade lifetime. High-temperature degradation has mainly diffusion mechanism and causes coarsening of strengthening phase gamma prime and protective alitize layer thickness growing. All changes have a significant influence on high-temperature properties of base material.

Keywords : alitize layer, gamma prime phase, high-temperature degradation, Ni–base superalloy ŽS6K, turbine blade
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