

Short description of the research project
**Influence of high temperature hold times on
the fatigue life of nickel-based superalloys**

The project is in its first stage

This project concerns the question of how thermo-mechanical cycling in combination with hold times at high temperatures governs the fatigue behaviour, i.e. the initiation and propagation of fatigue cracks, of gas turbine materials.

By considering the effect of the cyclic loading, time dependent inelastic deformations (creep) and environmental effects (oxidation etc.), enhanced models for life time predictions are to be set up, which are not only capable of describing the observed fatigue behaviour, but also simple enough to be used in real industrial applications.

The knowledge gained in the project will not only be directly usable in the design of more efficient gas turbines of today, but will also be important for the long run development towards an increased use of renewable fuels.

The project belongs to the research programme **TURBOKRAFT**, see www.turbokraft.se, and is run in collaboration with **SIEMENS Industrial Turbomachinery**, Finspång, and **Volvo Aero**, Trollhättan.