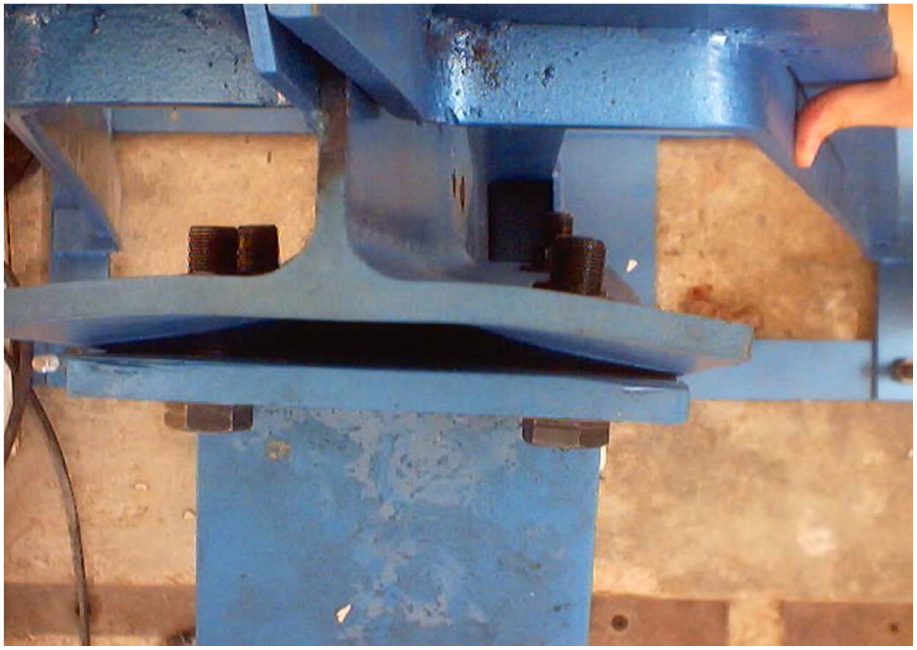
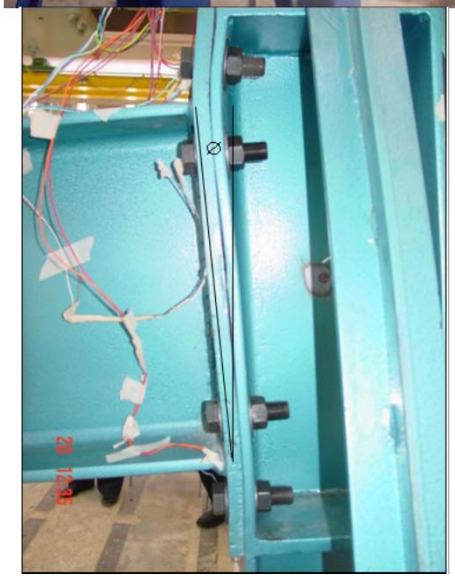
THERMOMECHANICAL NONLINEAR ANALYSIS OF BOLTED STEEL CONNECTIONS USING FINITE ELEMENTS AND CONTACT MECHANICS

Andreas Kalogeropoulos,
Georgios A. Drosopoulos,
Georgios E. Stavroulakis

Mechanical experiments

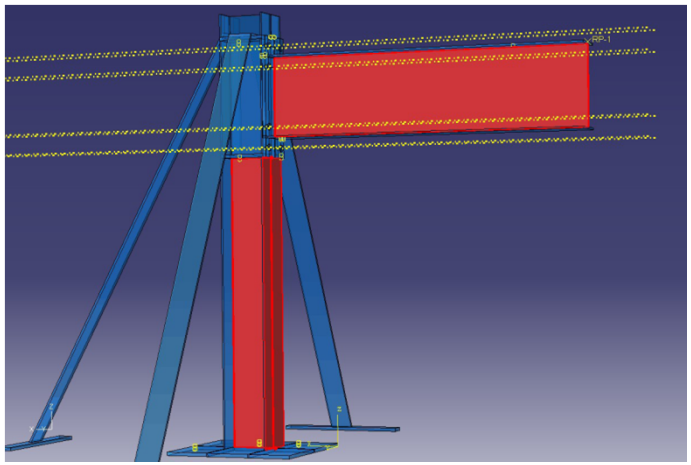




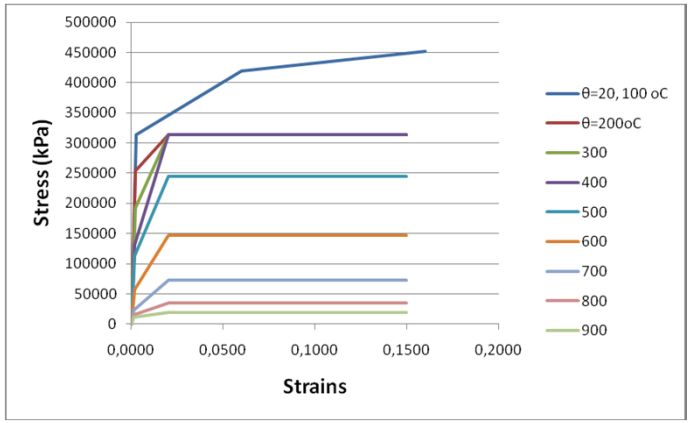
Interface opening as well as plastic deformation are clearly seen

Experiments conducted at JUST by Prof. K.M. Abdalla and his team

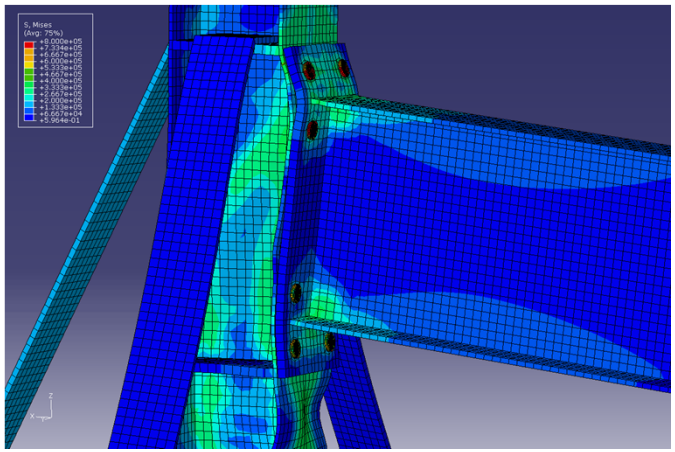
Finite Element Modeling



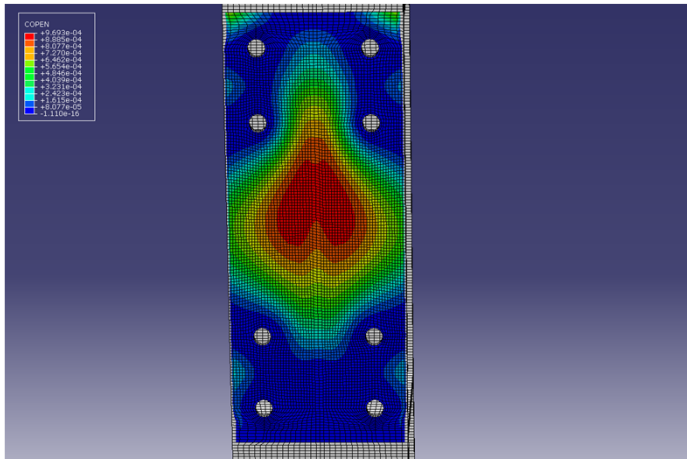
Thermal loading



Thermal dependance of constitutive laws

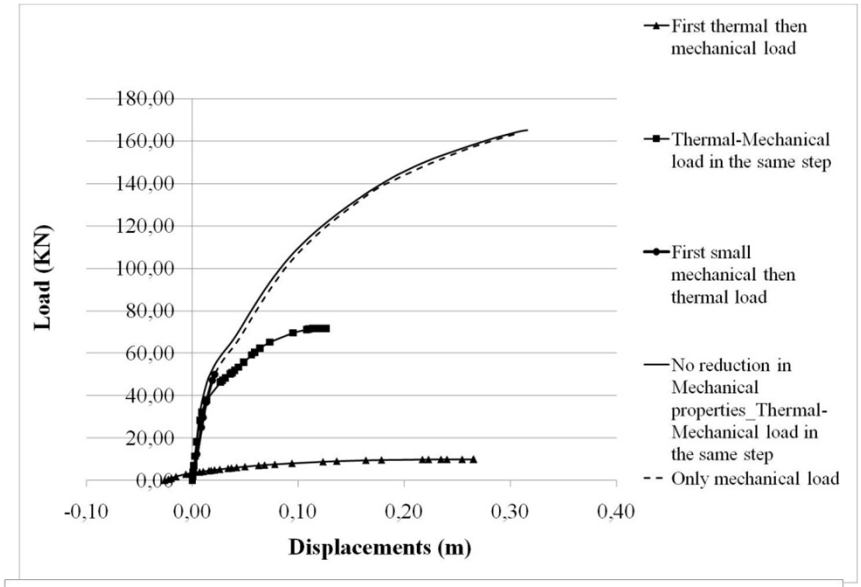


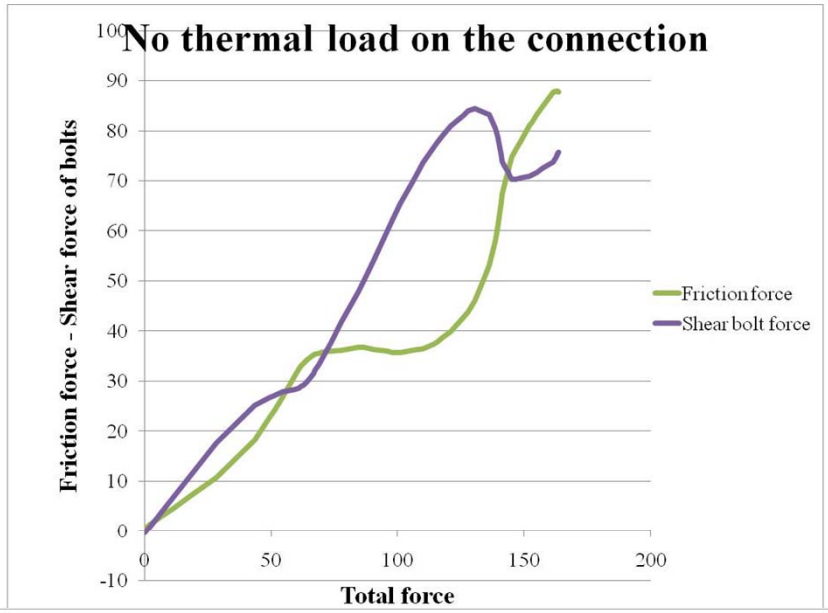
Unilateral effects due to mechanical loads

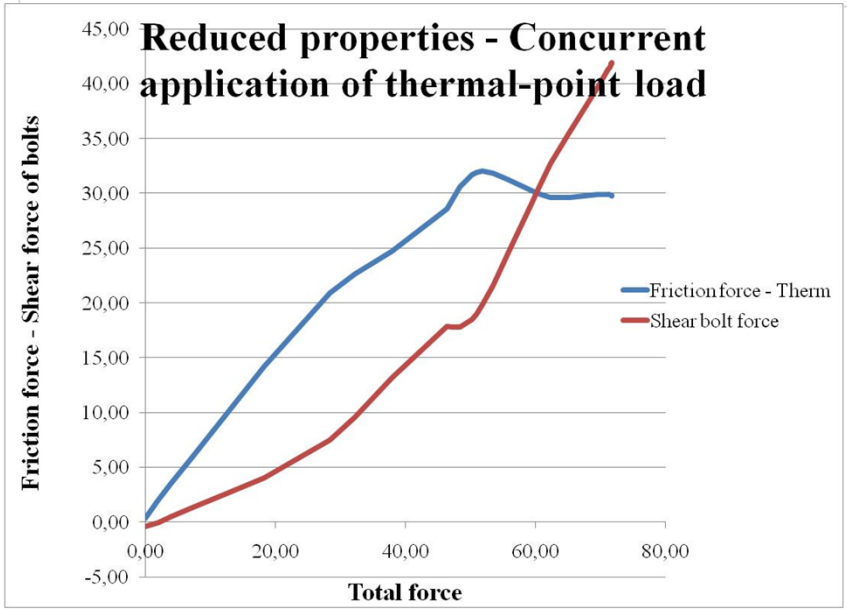


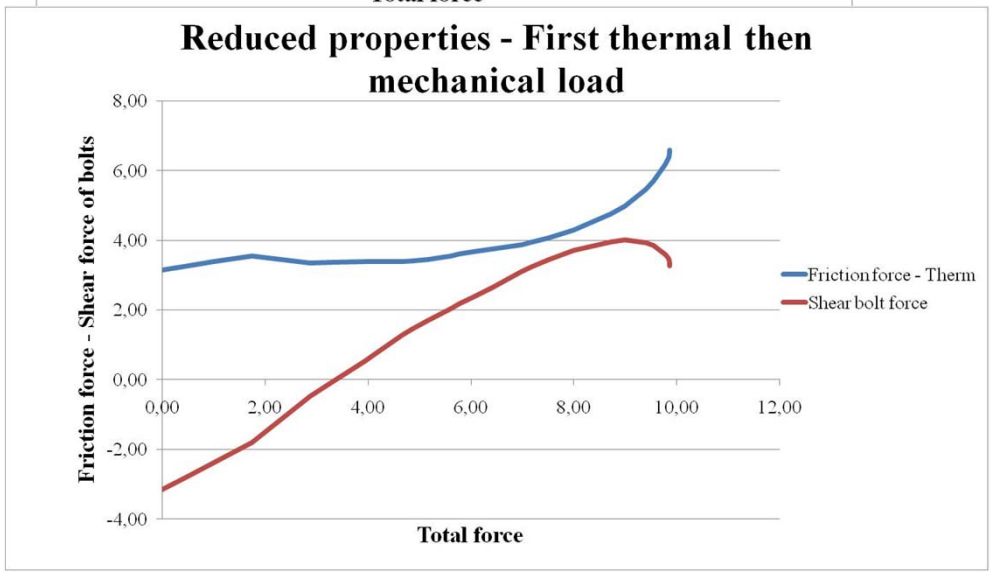
Unilateral opening due to thermal loading

Results









Comparison of various diagrams: load-displacement curves, influence of heating on the friction_force – shear_bolt_force equilibrium