STEEL & TIMBER STRUCTURES

MAIN RESEARCH TRACKS

FATIGUE OF STEEL STRUCTURES
- Fatigue assessment of existing bridges
- Fatigue design with finite element
- Enhancement and fatigue life extension

LIGHTWEIGHT STEEL STRUCTURES
- Laser-welded steel sandwich decks
- Bridge girders with corrugated webs

FIBER-REINFORCED COMPOSITES IN CONSTRUCTION
- Strengthening and repair with FRP-composites
- FRP bridges & bridge decks
- Durability & long-term performance

MAJOR RECENT RESULTS

INNOVATIVE STEEL SANDWICH BRIDGE DECKS
We have developed a new light-weight and high-performance steel bridge decks using laser-welding technology. The deck plate which has a sandwich structure is meant to replace conventional orthotropic steel decks which are very costly to produce and have shown considerable durability and fatigue problems. We have produced large scale plates in both C- and stainless steels and verified the structural performance of these plates with various large- and small-scale testing.

FRP-COMPOSITES FOR STRENGTHENING STRUCTURES
Strengthening and upgrading of existing structures is an ongoing research track since 2003. We have developed and verified techniques and models for strengthening steel, timber, and concrete structures with bonded fiber reinforced composites. A method for applying prestressed FRP-laminates developed by the group has been applied on several real structures, both bridges and buildings.