

## **Field tests, laboratory evaluation and modeling of slip joints**

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### **Abstract**

Despite many advantages, slip-joint connections are rarely used in engineering practice. The reasons for this are various, but it is apparent that the lack of design methods is an important one. Slip joint connection research is longlasting research that has been carried out in Department of Steel and Timber Structures at the Slovak University of Technology since 2007. Various problems have been solved mainly for engineering praxis. Paper is divided in to three parts:

Research is showing field tests of tranasmission line tower described in first part.

Second part handels experimental and numerical analysis of slip-joint connection on rounded tubes.

In third part is recent experimental and numerical analysis of slip-joint connection on 8-edged tube.

All presented cases are verified by FEM modeling and these theoretical results are compared to observations in situ or laboratory experiments.

Nowadays appeared practical requirement of describing slip joint connection subjected to bending and torsional loads (in Slovakia are proposed 400kV electrical power lines with the conical masts which segments are interconnected by slip joint connections). This is the reason why is this research considered highly applicable in engineering praxis.

### **References**

- [1] Recký J., Teoretické a konštrukčné problémy ocelových stožiarov. Dissertation thesis, Bratislava, Slovakia, 2013.
- [2] Nasúvané spoje ohráňovaných stožiarov. Dissertation thesis, Bratislava, Slovakia, 2017
- [3] STN EN 50341-1-2006: Overhead electrical lines exceeding AC 45 kV. Part 1: General requirements. Common specifications.