

## Romanian Academy The „Aurel Vlaicu” Prize awarded in 2019 Anghel CERNESCU, PhD & Ion DUMITRU, PhD

“Aurel Vlaicu” Award of Romanian Academy to Anghel Cernescu and Ion Dumitru for a research monograph entitled „*Fatigue of overhead power lines conductors*”.

The monograph is part of a research tradition of the Politehnica University of Timisoara in the field of mechanical strength of overhead power line conductors and cables. The book addresses a new field regarding the fatigue life of the conductors in the presence of variable amplitude loadings generated by the wind vibrations. Thus, designers, electric conductor manufacturers and those exploiting the overhead power lines are provided with a basic material for understanding and deepening the fatigue phenomenon generated by wind vibrations. The high scientific level of this book is based on considerable amount of bibliographic data, the latest computing methods and a vast experience of the authors. The cracking and fracture mechanisms of the wires in the contact area between the conductor and the clamping support are described through the notions of fretting fatigue. Also, a

series of theoretical and experimental contributions are presented in the book with the purpose of implementing within the Mechanics and Strength of Materials lab the new techniques for fatigue life evaluation of overhead power line conductors. Based on the proposed experimental method, the authors have conducted the first fatigue analysis of a 13 m long conductor (122-AL1/20-ST1A) in the presence of variable amplitude loads that simulate wind vibrations.

### Fatigue of overhead power lines conductors

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