

## **Institute of Thermal Power Engineering** Cracow University of Technology

([www.pk.edu.pl](http://www.pk.edu.pl), [www.imiue.mech.pk.edu.pl](http://www.imiue.mech.pk.edu.pl)) carries out the research in framework of: power thermal engineering, renewable sources of energy, non-conventional energy sources and nuclear power plants, especially in the field of inverse heat conduction problems, optimization of underground power cable installation, measurement of heat flux and heat transfer coefficient, ash fouling and slagging in steam boilers, large steam boilers dynamics modeling, numerical modeling of superheaters working under steady-state and unsteady conditions, thermal stresses calculations, structural analysis of power engineering equipment using Finite Element Method (FEM), monitoring of power boilers, determination of residual lifetime for pressure elements of boilers working under creep conditions, optimization of boilers start-ups and shut-downs, among others.

In addition to the statutory activities, Institute of Thermal Power Engineering cooperates with numerous industrial and scientific partners in the field of thermal and electrical energy production, distribution, and management.

Institute of Thermal Power Engineering conducts experimental research and industrial implementations in the field of heat transfer processes modeling and optimization, monitoring systems for power boilers combustion chambers, monitoring systems for thick walled pressurized elements, evaluation of the residual durability for the pressure elements operating under creep conditions, modeling of boiler superheaters dynamics, identification of actual working conditions (measurements: temperature, heat flux, heat transfer coefficient, thermal conductivity, thermal stresses, pollutant emissions), analysis and controlling of combustion processes.

Previous experience in EU co-funded projects realization:

- COST 538 - High-Temperature Plant Lifetime Extension, *Monitoring system for stress calculation and residual lifetime prediction* (2005 – 2008).
- TEWI IT Platform (Technology, Education and Research, Knowledge, Innovation), participation in EU grant funded within Operational Program, Action 2.3 - Innovative Economy, (2011-2013).

### **We look for:**

**Partners to participate in joint projects in following fields: heat exchangers modeling and optimization, numerical modeling and simulations of superheaters working under steady-state and transient conditions, implementation of the developed power boilers monitoring systems in coal-fired power plants, optimization of power boilers start-ups and shut-downs.**

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