



**FACULTY:** ENVIRONMENTAL AND THERMAL POWER ENGINEERING

**COURSE TITLE:** Steam Boilers

**Number of contact hours:** 45

**Duration:** 1 semester

**ECTS credits:** 5

**Programme description:** The course comprises lectures and workshops. It contains the characteristics of the construction and operation of steam boilers, as well as the flow and heat conditions in the power boiler. Specific problems discussed during lectures and workshops will cover:

- general classification of boilers
- operating conditions and construction of a steam boiler
- heat balance of the combustion chamber
- methods of calculation of the furnace
- fluidised bed boilers
- power boilers (typical constructions of power boilers, boilers with supercritical parameters of steam)
- materials used for elements of steam boilers for subcritical and supercritical parameters of steam
- design of a selected element of a steam boiler

Students will gain new skills and competences. They will have knowledge about the construction and operation of steam boilers and the flow and heat conditions in the power boiler. They will be able to make a heat balance of the equipment used in the power boiler.

**Course type:** lectures (30), workshops (15),

**Literature:**

1. J. Taler (Editor), Procesy cieplne i przepływowe w dużych kotłach energetycznych. Modelowanie i monitoring [Thermal and flow processes in large power boilers. Modelling and monitoring], Wydawnictwo Naukowe PWN, Warszawa 2011.
2. Kuznetsov NW, Nitor WW, Dubovski IE, Karasina ES. Thermal Calculations of Steam Boilers. Standard Method (in Russian), Energy, Moscow, 1973.
3. Pawlik M, Strzelczyk F (2009) Power Plants. WNT Warsaw (in Polish)



4. Prabir Basu, Circulating Fluidized Bed Boilers Design, Operation and Maintenance, Springer International Publishing Switzerland 2015
5. S.C.Stultz and J.B.Kitto (Editors), Steam its generation and use, 40th edition, Babcock and Wilcox a McDermott company, Barberton, Ohio, USA 1992.
6. Kumar Rayaprolu, Boilers a Practical Reference, CRC Press Taylor and Francis Group, USA 2013.

**Assessment method:** test, joint group projects

**Lecturer:** Marcin Trojan

**Contact person:** marcin.trojan@pk.edu.pl