Contribution ID: **39** Type: **Non-electrical and electrical parameters measurement (temperature, pressure, current etc.)**

Automatic, multipoint, high precision system for temperature measurement.

Thursday, 4 July 2019 14:00 (10 minutes)

Goal:
In the nuclear processes main interest is the level of energy production. One of the methods of determining this value is a multi-point, high precision measurement of temperature change. The goal of this project is to design a measuring system that solves the problem described. Then the manual preparation of the measuring device, make a software for it and to perform a real temperature measurements. We use temperature high precision sensors type Pt 100, and LUMEL measurement modules. The set should be programmed for online working with the computer control. We will use the LabView environment for it. The set will be useful for calibration other less precision systems.

Description of the exercise:
1. Discussion of the issue of ADS reactors and temperature measurement.
2. Visiting of experimental site and the accelerators site.
3. Construction of an electronic measuring system (based on ready-made components) based on high precision PT100 platinum sensors and the RS-485 protocol.
4. Create Measuring system software (or upgrade of existing software) using the LabView environment.
5. Calibration of the measuring system.
6. Temperature measurements, normalization of results and their comparison with other results - practical analysis of the obtained results.
7. Preparation the own speech at the end of the student practice and for the conference after that, and preparation the publication together with the practice supervisor based on the obtained results.

Requirements for the students:
The subject is addressed to students interested in electronics, practical measuring systems and nuclear physics.
Basic knowledge of electronic layout.
Basic skills in using Excel program and the LabView environment.

Exercise for up to 4 students

Primary author: BIELEWICZ, Marcin (Nacional Centre for Nuclear Research)

Co-authors: ROSLON, Krystian (Warsaw University of Technology (PL)); PERYT, Marek (Warsaw University of Technology)

Presenter: BIELEWICZ, Marcin (Nacional Centre for Nuclear Research)

Session Classification: Presentations of topics

Track Classification: Team for the Future of NICA