



Contribution ID: 337 Contribution code: **S1 Physics Innovation**

Type: **Poster Presentation**

Development of Low-Cost Automatic Groundwater Level Measurement System Based on The Internet of Things

Monitoring of groundwater fluctuations is mandatory in order to evaluate the groundwater resources and develop groundwater management solutions. In particular, the area has intensively groundwater demand such as the upper Chao Phraya River basin. We have developed an automated groundwater level measurement system that integrates the real-time measurement system, automatic data transfer, data recorder and data processing. A pressure sensor probe was used to measure the groundwater pressure. Its real-time signal was transferred along a cable to a microcontroller box, which was installed at the base station module beside the borehole. The microcontroller box processed the data to be ground water level. Then the processing data will be sent wirelessly to the management central system through a telephone network, the IOT (Internet of Things). In general, a borehole is located in rural area with limited access to electricity. Therefore, the developed system was designed to use a small amount of electricity which is sufficiently generated by the solar cell system. The developed system cost approximately 20,000 baht (600 dollars) in total. By comparing the data of groundwater level from the developed system to the manual measurement system, it was found that the developed system provided an error of 1 %. Finally, we can conclude that the low-cost developed system provided real-time data with accuracy measurement. However, the groundwater level data from this developed system will be compared to the amount of precipitation in order to prepare a more accurate groundwater database.

Primary author: POLEE, Chalermpong (Thailand Institute of Nuclear Technology)

Co-authors: SAENKORAKOT, Chakrit; KAMDEE, Kiattipong; Dr JITPUKDEE, Manit (Kasetsart University); YONGPRAWAT, Monthon; UAPOONPHOL, Nichtima; CHANRUENG, Patchareeya; KHAWEERAT, Sasiphan

Presenter: POLEE, Chalermpong (Thailand Institute of Nuclear Technology)

Session Classification: Poster: S1 Physics innovation

Track Classification: Physics Innovation