Quality assurance and stability of High pressure calibration facility

**Jen-Tsung Luo, Tsai-wang Huang, Chung-Bang Chen, Hsueh-Ping Hsu, Chung-Yung Chen**

*Chinese Petroleum Corporation Company (CPC), Chia-yi, Taiwan, ROC*

*E-mail (corresponding author): 078786@cpc.com.tw*

Chinese Petroleum Corporation Company (CPC) is the primary supplier of Nature Gas (NG) in Taiwan, and the use of NG in 2015 is about 17 billion cubic meters, and 80% is used as eclectic power generation fuel to replace traditional coil fuel and nuclear power. To improve the accuracy and stability of NG measurement, the measurement flowmeter for power generation is replaced from traditional orifice flowmeter to multi path ultrasonic flowmeter (USM), and these business meter is calibrated at RMRI gas flowmeter calibration laboratory which use air as working flow, the calibration system is a close loop system with pressure from 10-60 bar and flowrate is from 100-4000m3/h. To ensure the high accuracy and excellent long terms stability of system, the uncertainty is necessary to be calculated. We use a USM calibrated at Pigsar Laboratory (Germany) as transfer meter to calibrate 4 working standard meter and use a turbine meter which was calibrated at Taiwan NMI as checking meter to ensure the result. This paper describes the uncertainty calculation including Ns, Nm, MF, CP, CT, Cz. The uncertainty error is most come from MF(meter factor) which including calibration trace, repeatability, pressure effect , numerous regulation, and long term stability.