

The development of small water flow facility at National Institute of Metrology, Thailand

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The flow and volume of liquid laboratory of the National Institute of Metrology, Thailand (NIMT) has developed the latest facility which covers the liquid flow measurement range from (10 –1,000) mL/h. This facility has been developed according to the need of high accuracy equipment in several of industries such as pharmaceutical products, fuel cell, semiconductor and medical devices. For accuracy purposes, the gravimetric method is decisively implemented as the main principle of the calibration rig. It comprises of three main parts; water supply system, weighing system and data acquisition system. Practically, the capability of the facility is confirmed via a transfer standard. With high accuracy and repeatability, the Coriolis mass flow controllers were selected as the transfer standard. The facility can provide the best capability of calibration, CMC, at 0.30% of reading. Moreover, the evidence of unofficial comparison between NIMT and Federal Institute of Metrology, METAS, Switzerland, has confirmed this capability via the degree of equivalence, E_n ratio. The E_n ratios represent that the comparison of the flow rates from (10 –1,000) mL/h between NIMT and METAS are agreed.

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