

## The Pitch Diameter of Pipe Taper Thread Measurement and Uncertainty Using Three-Wire Probe

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**Abstract :** The pipe taper thread measurement and uncertainty normally used the four-wire probe according to the JIS B 0262. Besides, according to the EA-10/10 standard, the pipe thread could be measured using the three-wire probe. This research proposed to use the three-wire probe measuring the pitch diameter of the pipe taper thread. The measuring accessory component was designed and made, then, assembled to one side of the ULM 828 CiM machine. Therefore, this machine could be used to measure and calibrate both the pipe thread and the pipe taper thread. The equations and the expanded uncertainty for pitch diameter measurement were formulated. After the experiment, the results showed that the pipe taper thread had the pitch diameter equal to 19.165 mm and the expanded uncertainty equal to 1.88 $\mu$ m. Then, the experiment results were compared to the results from the National Institute of Metrology Thailand. The equivalence ratio from the comparison showed that both results were related. Thus, the proposed method of using the three-wire probe measured the pitch diameter of the pipe taper thread was acceptable.

**Keywords :** pipe taper thread, three-wire probe, measure and calibration, the universal length measuring machine

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