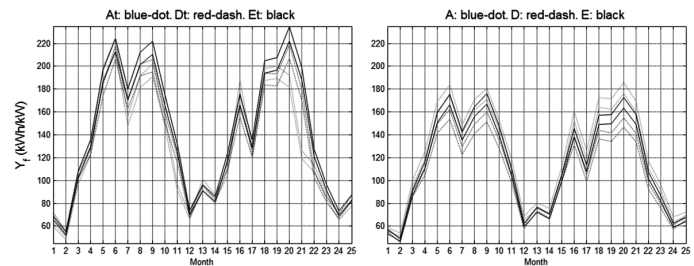


01DC075 Long-Term Monitoring of Photovoltaic Plants

A. Carullo⁷, F. Ferraris⁷, A. Vallan⁷, F. Spertino⁸, F. Attivissimo⁹

This paper deals with a data-acquisition system that has been specifically developed for a long-term monitoring of ten different photovoltaic plants. The main goals consist in estimating the drift of the plant components, mainly photovoltaic modules and power inverters, and comparing the performance of the ten plants, which are based on different technologies and architectures. Owing to these goals, the traceability-assurance of the obtained measurements is mandatory, hence the data-acquisition system has been designed to be easily calibrated and, if necessary, adjusted to compensate for measuring-chain drifts. In addition, the measurement uncertainty, which has to be suitable to distinguish the behaviour of the different PV plants, has to be stated for each of the estimated parameters. A brief description of the data-acquisition system is provided and its measurement capabilities are highlighted in terms of measured quantities and expected uncertainty. Results that refer to a period of two years are also reported.

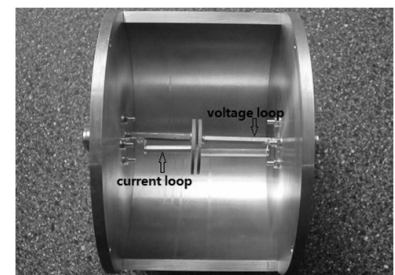
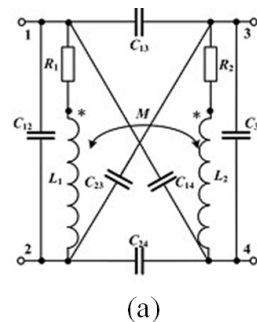


Final yield Y_f of the plants At, Dt and Et (left side), A, D and E (right side) in the period from December 2010 to December 2012.

01DC096 Design and Measurement of the nH Level Mutual Inductor

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A nH level mutual inductor has been designed and used as the standard impedance for measuring the equivalent inductance of current shunts. A method has also proposed to measure the mutual inductance against the ac voltage standard and current standard at frequencies up to 200 kHz.



Structure and the equivalent circuit of the mutual inductor