

Electromagnetic compatibility and protection of electric energy meters from strong magnetic fields

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Abstract-

Power theft through electric energy meters tampering causes significant revenue losses. One of the meter tampering method involves manipulation using strong magnetic fields to distort the process of energy calculation by saturation of current transformers' cores. This paper presents an approach towards effective shielding of the power meters' sensitive elements from external magnetic fields. The theory of magnetic materials and the methods to calculate magnetic fields in the presence of these materials are used to develop a refined protective shield.

Index Terms- Current transformer; Electricity non-technical losses; Magnetic field; Power meter; Pulse transformer; Shielding

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