

# Relation between the hardness and the Pulsed Eddy Current in the materials characterisation

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**Abstract :** The application of Pulsed eddy current (PEC) in the industrial domain is very weak compared to conventional eddy current. It is used in detection of the defects, particularly in the determination of corrosions. The information contained in the received signal gives the possibility to determine several parameters with the objective of analyzing material. The results explain the behaviour of the Pulsed Eddy Currents and their influences in various electromagnetic parameters. We have evaluated in particular the aptitudes and the performances of this technique in the determination of the materials characteristics. We have also studied the sensitivity of the defects by the pulsed method and we have showed the detection of the defects into the second and third layers. The application of NDT by PEC methods can characterize microstructure types, micro structural changes, and can be correlated to hardness changes. The objective of our work is to evaluate some metallurgic characteristics by non-destructive methods.

**Keywords :** NDT, Pulsed eddy current, electrical conductivity, magnetic permeability