Study of Strong Electromagnetic-thermal Coupling Behavior in Induction Motor

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Abstract – In this paper after recalling the electromagnetic and thermal formulations in time harmonic of a three-phase asynchronous motor, we propose to study its electromagnetic-thermal behavior in the event that the motor is healthy and in the event that there is a fault. Therefore, it is quite natural to focus on the intervention of the coupling of the two physical phenomena in question. We used the direct coupling model (strong coupling), especially take into account the variation of physical properties (electric conductivity) in respect of temperature also the heat source in respect of electric filed and electric conductivity using the finite element method.