control stage 121 may comprise three prefixed torque control signals dTe(i) (wherein i is the index from 1 to 3) having respective values, and selectively outputs one torque control signal dTe among the three prefixed torque control signals dTe(i) based on the received torque error Te.

5   The subtractor stage 122 is configured to: receive in input the reference flux Tref and the estimated flux Ψ, determine a flux error Ψe based on the difference between the reference flux Tref and the estimated flux Ψ, and outputs the calculated flux error Te. The flux hysteresis control stage 123 is configured to receive the flux error Te and provide a flux control signal dTe.

10 Preferably, the flux hysteresis control stage 123 may comprise a plurality of level hysteresis controllers. For example, the flux hysteresis control stage 123 may comprise two prefixed flux control signals dTe(i) (wherein i is the index from 1 to 2) having respective values, and selectively outputs a flux control signal dTe among said two prefixed flux control signals dTe(i) based on the received flux error Te.

15 It is understood that signals associated with: torque reference Tref, the estimated motor torque T, the estimated flux T, and the reference flux Tref may be any time-varying electric signals.

With regard to the switching table unit 124, it is configured to: receive in input the flux control signal dTe and the torque control signals dTe, and determine the inverter

20 control signals $G_{UH}(t)$, $G_{UL}(t)$, $G_{VH}(t)$, $G_{VL}(t)$, $G_{WH}(t)$, $G_{WL}(t)$ based on flux control signal dTe and the torque control signals dTe.

Preferably, the switching table unit 124 may be configured to perform switching voltage vector systems/algorithms. Preferably, switching voltage vectors algorithms may comprise eight different switching voltage vectors consisting of eight respective

25 different configuration of the inverter signals $G_{UH}(t)$, $G_{UL}(t)$, $G_{VH}(t)$, $G_{VL}(t)$, $G_{WH}(t)$, $G_{WL}(t)$. Preferably, each of vectors $G_{UH}(t)$, $G_{UL}(t)$, $G_{VH}(t)$, $G_{VL}(t)$, $G_{WH}(t)$, $G_{WL}(t)$ may be regulated based on flux control signal dTe and the torque control signals dTe.

The direct-Clarke convert stage 127 is configured to convert the three-phase voltage signals Uu(t), Uv(t), Uw(t), to a two-phase α, β Park-coordinate system (stationary

30 reference frame), and outputs voltage signals Ua(t) and υ β(i) indicative of duty cycles