current correction idcorr(t).

The subtracting unit 32 is configured to receive the modified current reference iqrefmod(t) and the measured current iq(t) and to provide in output the current difference Aiq(t) between the modified current reference iqrefmod(t) and the current iq(t).

The subtracting unit 33 is configured to receive the modified current reference idrefmod(t) and the measured current id(t) and to provide in output the current difference Aid(t) between the modified reference current idrefmod and the current id.

The currents regulator stage 23 is configured to receive in input the current difference Aiq(t) and the current difference Aid(t) and to provide in output the signals Uq(t) and Ud (t) respectively based on Aiq(t) and Aid(t). Signals Uq(t) and Ud(t) are indicative of the duty cycles in q-d coordinate system. Signals Uq(t) and Ud(t) may also be indicative of the fraction of maximum voltage to be applied along each axis of the synchronous d-q reference frame.

The inverse-Park transform stage 24 is configured to receive in input the signals Uq(t) and Ud(t) and to produce the signals Ua(t) and υβ(i) indicative of the duty cycles values in the two-phase α, β Park-coordinate system. The signals Ua(t) and υβ(i) may also be indicative of the fraction of maximum voltage to be applied along each axis of the stationary α-β reference frame.

The inverse-Clarke convert stage 25 is configured to receive in input the signals Ua(t) and υβ(i) and to provide the switching signals Uu(t), Uv(t), Uw(t) to the inverter unit 5.

Figure 4 is a flow chart of an exemplary control method that may be implemented by means of the active voltage limiter unit 15 (shown in Figure 3).

In the exemplary embodiment, the active voltage limiter unit 15 is configured to implement the control method to control the current regulator system 14 in order to limit the voltage Vdc(t) of the DC-link capacitor 11 during a regeneration mode, within a predetermined voltage range.

In this respect, the control method implemented by the active voltage limiter unit 15 uses a control parameter/signal, indicated hereinafter as estimated “active