

To limit the current ripple caused by the chopper, the elementary choppers to drive the current are not simply mounted in parallel but interlaced. (SNCF : BB 7200).

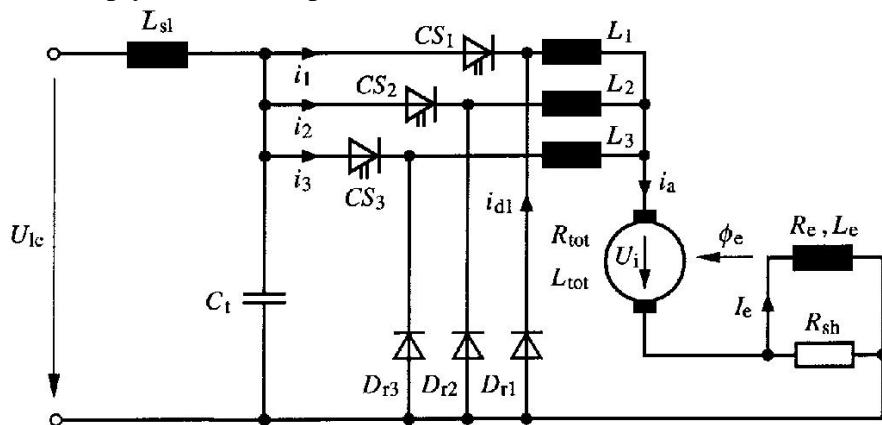


Fig. 4.102 Principle of the interlaced choppers.

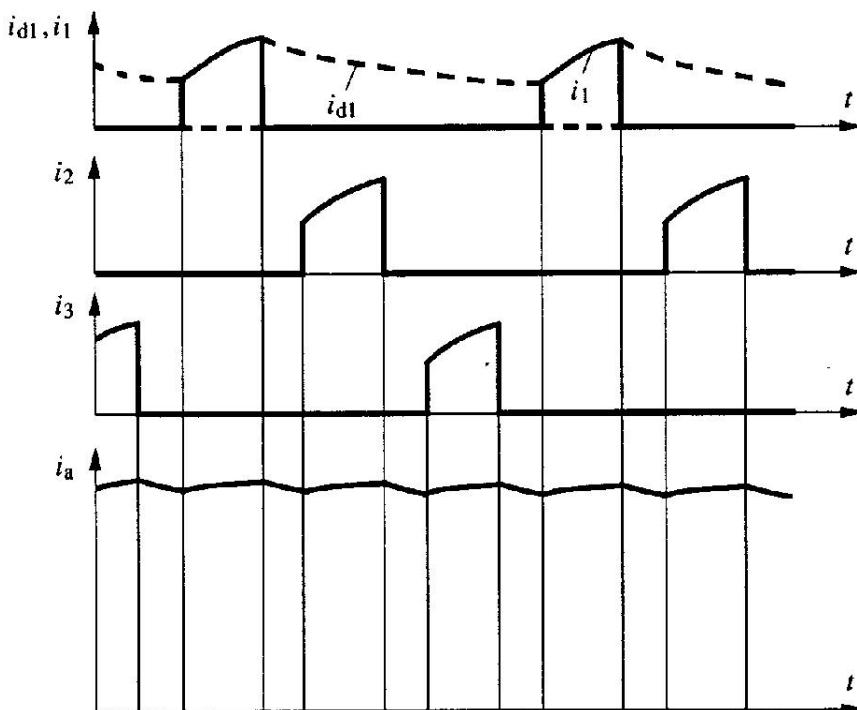


Fig. 4.103 Currents in the motor and in interlaced choppers.

The Vernier-chopper allows to reduce the torque-step at start-up with the minimal duty ratio. (SNCB : 27).

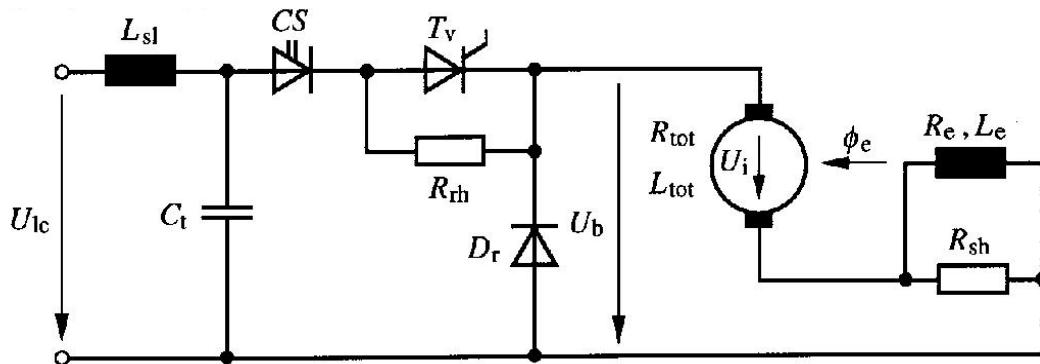


Fig. 4.104 Principle of Vernier-chopper.

If a vehicle rolls the most of time in the weakened field area, hybrid control was some time used: rheostatic control for the armature and separate excitation with series picture bay a chopper.

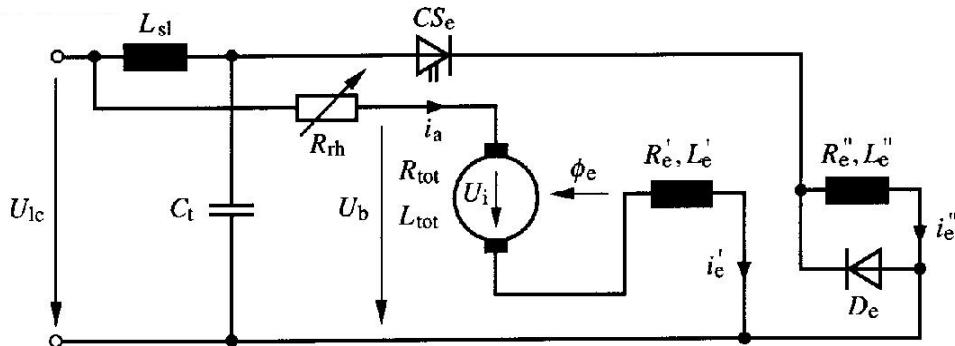


Fig. 4.105 Hybrid control: principle in traction (JNR : 215).

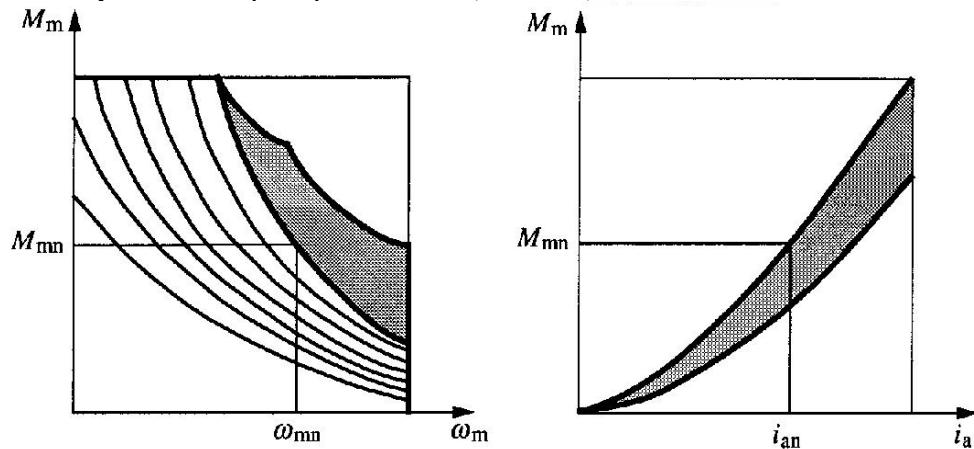


Fig. 4.106 Hybrid control: characteristics in traction.

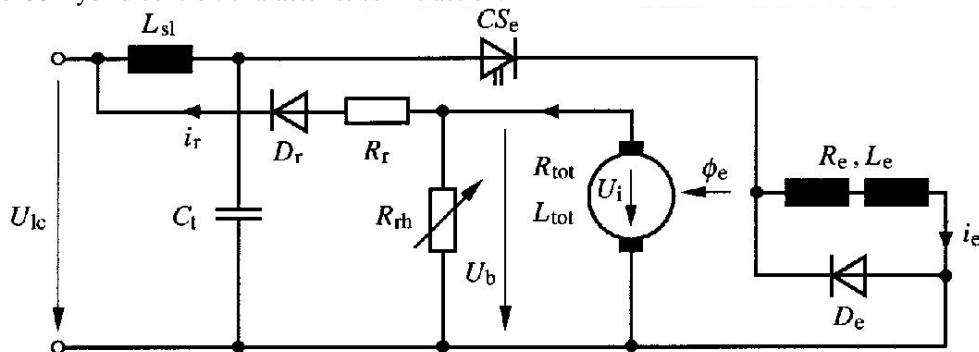


Fig. 4.108 Hybrid control: principle in braking (BOB: ABeh 4/4 II).

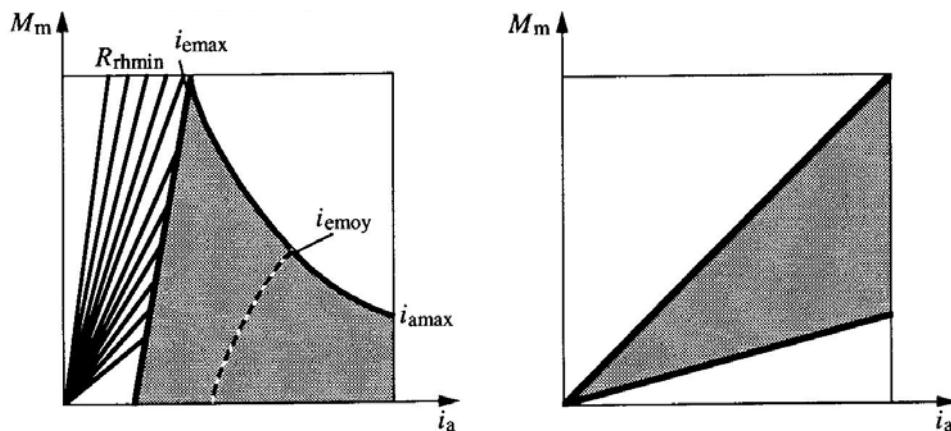


Fig. 4.111 Hybrid control: characteristics in braking.