Drive computing

The traction motors are computed for the current at continuous work point (●, with a limit in blue dot-dashed line) or nominal current. Motors can be overloaded during a limited time, using the thermic inertia of metellic parts, without overheating of the most delicate parts (red hatching on the diagram). More the work point is distant from the coninuous regime, shorter is the time to reach the maximal heating of components.

At maximal duty ratio (~100%) of the chopper, the motors are at the limit of full field **(**- - - -). The voltage at motors group is approximately this of contact line. It is quasi constant. The equations are written for an established work point:

$$U_{lc} = k_m I_a V - R_a I_a \qquad Z = k_t I_a - I_0$$

$$Z = k_t \frac{U_{lc}}{k_m V - R_a} - I_0$$

At weakened field, the effort characteristic is a little lower (in green).

For the semiconductors devices, chopper in this case, ther is not thermic inertia. The chopper has to be computed for the maximal power. (♦ - - ♦).

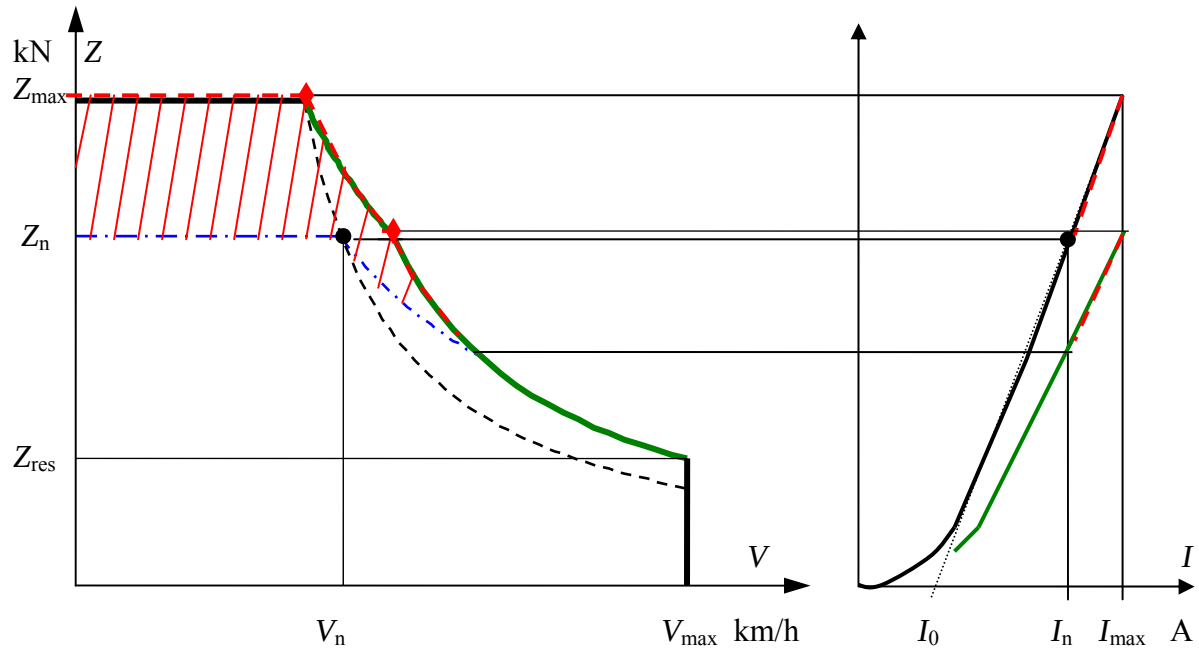

Fig. 4.97B Charactristics for a series motor supplied by a chopper.