10.5 The influence of motor vehicle and its master.

The effet of the current asked by the traction engine on the voltage at contact line was seen at section 10.2. According to UIC instructions, variations are admitted on contact line between –30 % and +20 % around nominal voltage.

In modern vehicles controlled by computers, these instructions are integrated in the program to prevent any current request if the voltage is at minimal value and any current injection when it is at maximal value. Around the nominal value the maximal power is allowed and the power requested by the driver is applied on equipment.

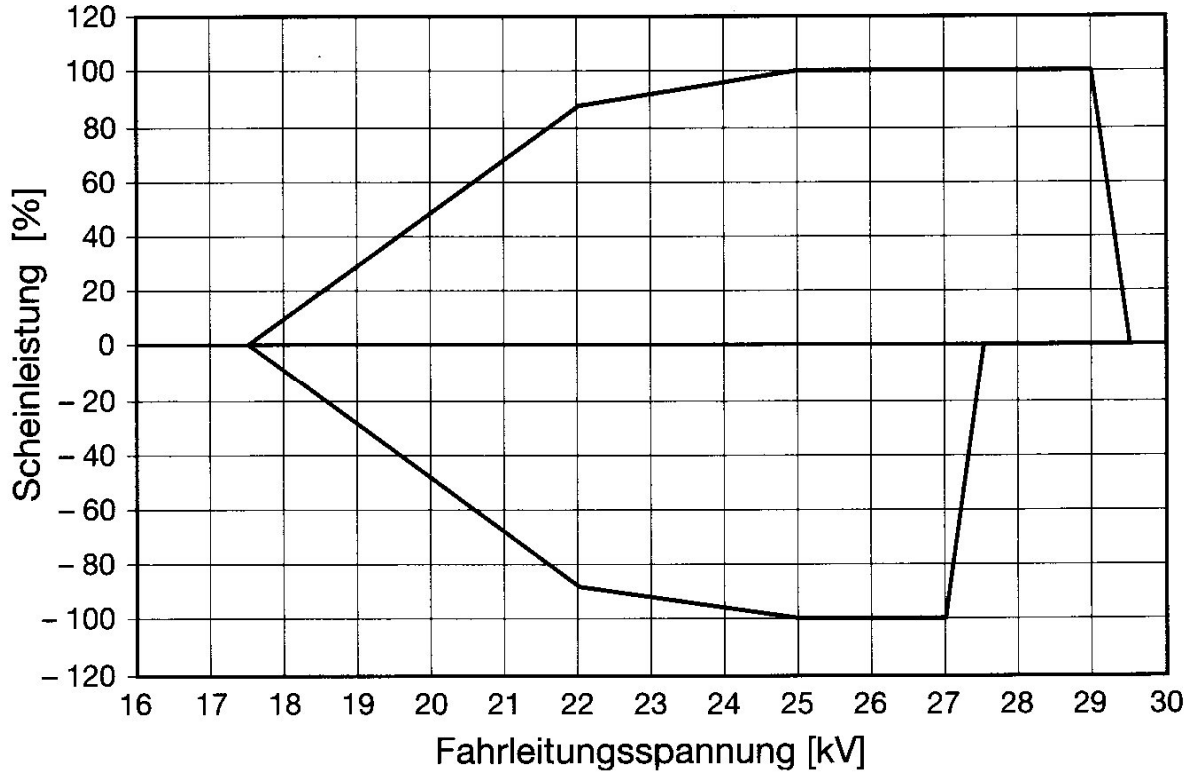

Fig. 10.83 Limitation of power in function of the voltage at contact line, example at 25 kV.

The figure 10.83 presents an example, this is only a principle: the form is established in function of the network features where the engine has to circulate. The limitation has to be applied progressively: function without discontinuity. For a direct current line, the principle is the same. It is sure to have sufficient power for auxiliaries (in particular brake devices, see chap. 6) unless the voltage has totally disappeared.

For a single phase line, it must be acted on the power factor to remain inner the limits. Around the nominal value, a factor of 1 is chosen, or a reactive power of 0 %. This can only be obtained with modern pulsation inverters on the network side, where the power factor is adjustable.

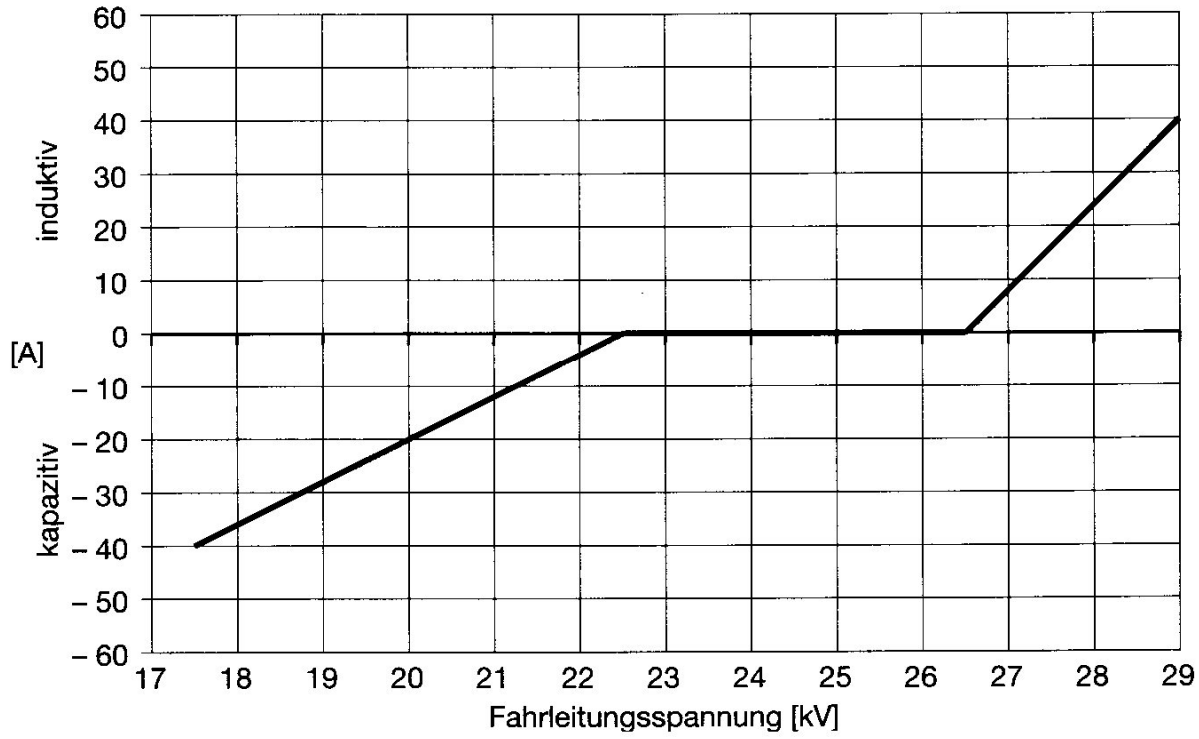

Fig 10.84 Imposition of reactive power in function of the voltage at contact line, example at 25 kV.