Claims

1. An energy conversion device for a vehicle, in particular a rail vehicle (10), which has in at least one mode a unit operating as a generator unit (34) and having at least one synchronous machine (20), and which has at least one energy diverting unit (38) that is provided for the purpose of diverting at least some of the electrical energy generated by the generator unit (34), and at least one resistor unit (40), wherein
the energy diverting unit (38) has at least one control unit (44) that is provided for the purpose of selecting operating modes from a plurality of operating modes, in each of which the resistor unit (40) provides a different resistance value,
the energy conversion device further comprising,
a detecting unit (52) for detecting at least one kinematic parameter (K) of the vehicle, wherein the control unit (44) is provided for the purpose of selecting operating modes from the plurality of operating modes in dependence on the detected kinematic parameter (K),
wherein
the kinematic parameter (K) is representative of a velocity (V) of the vehicle, and
further wherein
the control unit (44) is provided for the purpose of switching over from a first operating mode to a second operating mode in the event of a transition from a high-speed range to a medium-speed range, for the purpose of reducing the resistance value.

2. The energy conversion device as claimed in claim 1, characterized by

a power supply unit (22) in which there is arranged the resistor unit (40), and which, in a drive mode, supplies electrical power to the unit.

3. The energy conversion device as claimed in one of the preceding claims,
characterized by
at least one current converter unit (32.1, 32.2) that is connected to provide power between the generator unit (34) and the resistor unit (40), wherein the resistor unit (40) is connected up to a DC link (30) that may be fed from the at least one current converter unit (32.1, 32.2).

4. The energy conversion device as claimed in claim 3,
characterized by
a control device (50) that controls the at least one current converter unit (32.1, 32.2) such that operation thereof in the operating modes includes at least one blocking of switching valves of the current converter unit (32.1, 32.2).

5. The energy conversion device as claimed in one of the preceding claims,
characterized in that
the resistor unit (40) has a set of resistance arrangements (R1, R2) and at least one switching device (46) that is in operative connection with at least one of the resistance arrangements (R1, R2), wherein a switchover between the operating modes includes at least one actuation of the switching device (46).

6. The energy conversion device as claimed in claim 5,
characterized in that,

using the switching device (46) and when selecting an operating mode from the plurality of operating modes, the control unit (44) is provided for the purpose of activating or deactivating a parallel circuit of resistance arrangements (R1, R2) of the set.

7. The energy conversion device as claimed in claim 5 or 6, characterized in that
the control unit (44) is provided for the purpose of activating a first and a second resistance arrangement (R1, R2) alternately, in at least one operating mode of the plurality of operating modes, using the switching device (46).

8. A vehicle, in particular a rail vehicle (10), having an energy conversion device (36) as claimed in one of the preceding claims.

9. The vehicle as claimed in claim 8,
characterized by
taking the form of a rail vehicle (10) that is provided for high-speed operation over at least 300 km/h, in particular for high-speed operation over at least 350 km/h.

10. A method for converting electrical energy that is generated in at least one mode, by a unit that has at least one synchronous machine (20) and operates as a generator unit (34), wherein at least some of the electrical energy generated is diverted via an energy diverting unit (38), and wherein the energy diverting unit (38) has at least one resistor unit (40),
wherein
a control unit (44) of the energy diverting unit (38) switches over from a first operating mode, in which the resistor unit

(40) provides a first resistance value, to a second operating mode, in which the resistor unit (40) provides a second, different resistance value,
wherein
the method is carried out in a vehicle, in particular a rail vehicle (10), and
further wherein
in the event of a transition from a high-speed range to a medium-speed range the second resistance value is selected to be smaller than the first resistance value.