

WHAT IS CLAIMED IS:

1. A power supply line for connecting a superconducting consumer system to a current delivery point, which is at a higher temperature than the consumer system,
5 comprising:

a carrier with first and second connectors respectively disposed on first and second ends of the carrier, the carrier comprising at least one elongated plate that includes a low heat-conducting material, wherein a top side of the plate forms a flush surface with top sides of the connectors; and

10 a plurality of band-shaped, mechanically and electrically parallel high-temperature superconductors (HTSL) arranged parallel adjacent to one another on the carrier, each band-shaped high-temperature superconductor comprising a normally conducting current path.

15 2. The power supply line according to claim 1, wherein the carrier further comprises a second plate, the band-shaped HTSL being arranged between the plate and the second plate.

20 3. The power supply line according to claim 1, the first and second connectors are electrically conducting and are mechanically connected to the plate such that the band-shaped HTSL are in electrical contact with the first and second connectors.

25 4. The power supply line according to claim 3, wherein at least one of the first and second connectors comprises a BCS or HTSL material.

5. The power supply line according to claim 3, wherein the electric contact between the band-shaped HTSL and at least one of the first and second connector is a solder joint.

30 6. The power supply line according to claim 1, wherein the power supply line is connected on a warmer end to a first cooling device that keeps the warmer end at a

temperature in the range of about 50 to 100 K, and on a cooler end to a second cooling device that keeps the warmer end at a temperature of < 35 K.

5 7. The power supply line according to claim 1, wherein the power supply line is connected on a warmer end to a first cooling device that keeps the warmer end at a temperature in the range of about 50 to 100 K, and on a cooler end to a second cooling device that keeps the warmer end at a temperature of < 12 K.

10 8. The power supply line according to claim 1, wherein each of the band-shaped HTSL comprises a multifilament conductor produced according to the PIT process.

9. The power supply line according to claim 1, wherein the band-shaped HTSL are thin-layer coated conductors.

15 10. The power supply line according to claim 1, wherein the power supply line is coated at least on one side with a polymerizing plastic.

20 11. The power supply line according to claim 10, wherein the polymerizing plastic includes at least one of: PE, PU, and PP.

12. The power supply line according to claim 1, wherein the normally conducting current path comprises a band-shaped HTSL including a metal or a metal alloy with a heat conductivity that decreases with decreasing temperature.

25 13. The power supply line according to claim 1, wherein the normally conducting current path comprises a band-shaped HTSL including a metal or a metal alloy.