Claims

1. Power transfer system comprising a transfer pick-up circuit for inductively picking up power from a cable carrying an alternating supply current, comprising

- a first circuit comprising the secondary winding of a transformer for providing an inductive coupling to the cable and a first capacitive module connected in parallel to the transformer;

characterized by

the transfer pick-up circuit comprising

- a second circuit connected in parallel to the first circuit and comprising a second inductive module and means to transfer power to the load, the means being in series with the second inductive module.

2. Power transfer system according to claim 1, wherein

- the alternating supply current alternates at a cable frequency; and wherein

the first circuit has a first resonance in a first frequency range around a first resonance frequency below the cable frequency and the power transfer system is arranged such that when in use the second circuit forms an infinitely high impedance, the transformer is not saturated at the cable frequency.

3. Power transfer system according to claim 2, wherein

- the second circuit comprises a second capacitive module arranged in series with the second inductive module and parallel to the means and wherein

- the second capacitive module and the second inductive module are arranged for having a second resonance in a second frequency range around a second resonance frequency when in practise the load impedance is infinitely high and wherein the second resonance is arranged such that the impedance of the

transfer pick-up circuit is lower than the impedance of the first circuit at the cable frequency when in practise the load is infinitely high.

4. Power transfer system according to claim 3, wherein at the cable frequency the impedance of the second circuit is lower than the impedance of the first circuit when in practice the load impedance is infinitely high.

5. Power transfer system according to claim 3 or 4, wherein the means comprise a rectifier arranged to supply the load from the output side of a rectifier and a capacitive reservoir module connected to the output side of the rectifier arranged to be in parallel to the load.

6. Power transfer system according to claim 5, wherein the means comprise a third inductive module arranged to be in series with the load and the capacitive reservoir module.

7. Power transfer system according to any of the preceding claims comprising a source for providing the alternating supply current wherein the source is arranged to vary the cable frequency.

C L A I M S

1. Power transfer system comprising a transfer pick-up circuit (3) for inductively picking up power from a cable (2) carrying an alternating supply current, the alternating supply current alternates at a cable frequency, wherein said transfer pick-up circuit (3) comprising

- a first circuit (8) comprising the secondary winding (17) of a transformer for providing an inductive coupling to the cable (2) and a first capacitive module (7) connected in parallel to the transformer, wherein the first circuit (8) has a first resonance in a first frequency range around a first resonance frequency, and

- a second circuit (9) connected in parallel to the first circuit (8) and comprising a second inductive module (10) and means (16) to transfer power to a load (12), the means being in series with the second inductive module (10),

characterized it that the first circuit (8) and the second circuit (9) together form the transfer pick-up circuit that is resonant, and wherein the resonance frequency of the transfer pick-up circuit comprising a load (12) with nominal impedance, is closer to the cable frequency than the first resonance frequency.

2. Power transfer system according to claim 1, wherein an inductance of the secondary winding (17), a capacitance of the first capacitive module (7), and an inductance of the second inductive module (10) are chosen to arranged that the resonance frequency of the transfer pick-up circuit is close to the cable frequency when the load (12) is a short.

3. Power transfer system according to claim 1, wherein the first resonance frequency is below the cable frequency and the power transfer system is arranged such that when in use the second circuit (9) forms an infinitely

high impedance, the transformer is not saturated at the cable frequency.

4. Power transfer system according to claim 3, wherein

- the second circuit (9) comprises a second capacitive module (11) arranged in series with the second inductive module (10) and parallel to the means (16) and wherein

- the second capacitive module (11) and the second inductive module (10) are arranged for having a second resonance in a second frequency range around a second resonance frequency when in practise the load impedance is infinitely high and wherein the second resonance is arranged such that the impedance of the transfer pick-up circuit is lower than the impedance of the first circuit (8) at the cable frequency when in practise the load is infinitely high.

5. Power transfer system according to claim 4, wherein at the cable frequency the impedance of the second circuit (9) is lower than the impedance of the first circuit (8) when in practice the load impedance is infinitely high.

6. Power transfer system according to claim 4 or 5, wherein the means (16) comprise a rectifier (13) arranged to supply the load (12) from an output side of the rectifier (13) and a capacitive reservoir module (14) connected to the output side of the rectifier (13) arranged to be in parallel to the load (12).

7. Power transfer system according to claim 6, wherein the rectifier (13) is arranged in parallel to the second capacitive module (111, 112).

8. Power transfer system according to claim 6 or

7, wherein the means (16) comprise a third inductive module (15) arranged to be in series with the load (12) and the capacitive reservoir module (14).

9. Power transfer system according to claim 8, wherein the third inductive module (15) is connected to the output side of the rectifier (13).

10. Power transfer system according to claim 1, wherein the second inductive module (10), the first capacitive module (7) and the secondary winding (17) of the transformer together form a low pass filter for noise in the direction of the cable (2).

11. Power transfer system according to any of the preceding claims comprising a source (1) for providing the alternating supply current wherein the source is arranged to vary the cable frequency.