CLAIMS

1. An electric power supply method for a domestic network (3) placed on board a passenger cabin using equipment, called domestic equipment, requiring voltage levels of the terrestrial domestic type, characterized in that, with primary power sources (21, 22) being supplied over at least two primary networks (11, 12), the method comprises:

- connecting the primary networks (11, 12) in parallel to a single on-board domestic network (3) for powering said domestic equipment in the passenger cabin through conversion interfaces (41, 42; 40) for converting primary alternating current into domestic level voltage and frequency, with each primary network (11, 12) being coupled to the on-board domestic network (3) through at least one interface (41, 42; 40);

- parallelizing the conversion interfaces (41, 42; 40) by a measurement (80) of level data of electric parameters (L1) supplied by each conversion interface (41, 42; 40) for regulating (L2) sharing of the primary power sources (21, 22) according to their availability and supplying a consistent service level over the on-board domestic network (3);

- integrating each conversion interface (41, 42; 40) in a galvanic isolation electric transformer (73) splitting an avionics neutral point (10A) of the corresponding primary network (11, 12) and a neutral point (10F) of the on-board domestic network (3); and

- maintaining quality criteria of each primary network and for domestic quality of the on-board domestic network by filtering, compensating the level and correcting a power factor (D1, D2) in each conversion interface (41, 42; 40) linked upstream with each primary network (11, 12) and linked downstream with the on-board domestic network (3).

~~2. The electric power supply method as claimed in claim 1, wherein each conversion interface (41, 42; 40) integrates a galvanic isolation electric transformer (73) splitting an avionics neutral point (10A) of the corresponding~~

~~primary network (11, 12) and a neutral point (10F) of the on-board domestic network (3).~~

~~3~~2. The electric power supply method as claimed in claim ~~2~~1, wherein each conversion interface (41, 42; 40) comprises two functional stages (E1, E2), respectively upstream and downstream of the galvanic isolation electric transformer (73), with each functional stage (E1, E2) comprising two adaptation levels, one level (D1, D2) dedicated to maintaining quality criteria respectively associated with the primary network and the on-board domestic network, and one level (7; 71, 72) for voltage and/or frequency conversion associated with the galvanic isolation electric transformer (73).

~~4~~3. The electric power supply method as claimed in ~~any one of the preceding~~ claim~~s~~ 1 or 2, wherein a maximum extractable current intensity setpoint (I_M) is supplied to each conversion interface (41, 42; 40) on the basis of electric power data available on each primary electric power source (21, 22).

~~5~~4. The electric power supply method as claimed in any one of the preceding claims, wherein the level data of the electric parameters supplied by each conversion interface (41, 42; 40) are shared (T1) between the conversion interfaces (41, 42; 40) and this sharing regulates the contribution of each power source (21, 22) at each conversion interface (41, 42; 40) according to its availability.

~~6~~5. The electric power supply method as claimed in any one of claims 1 to ~~4~~3, wherein the level data of the electric parameters are centralized (6) in order to regulate the sharing of the primary power sources (21, 22) in order to provide a consistent and constant service level over the on-board domestic network (3).

~~7~~6. The electric power supply method as claimed in any one of claims 1 to ~~4~~3, wherein the level data of the electric parameters are processed (9) independently by each conversion interface (41, 42; 40) that regulates the transmission of power supplied by the corresponding source (21, 22).

~~8~~7. The electric power supply method as claimed in one of the preceding claims, wherein at least one auxiliary electric power supply is used to

supply electric power to the on-board domestic network (3) according to availability of electric power of the primary networks (11, 12).

~~9~~8. An electric power supply network architecture (10, 100) for a vehicle cabin using equipment, called domestic equipment, requiring voltage levels of the terrestrial domestic type, wherein at least two primary networks (11, 12) for distributing electric power are each powered by an electric generator (21, 22), characterized in that the primary networks (11, 12) are connected in parallel to a single cabin domestic network (3) for powering said domestic equipment via converter units (41, 42; 40), with at least one converter unit (41, 42; 40) per primary network (11, 12), in that sensors (80) for measuring voltage, current intensity, frequency and power factor are arranged at the output of each converter unit (41, 42; 40) and the measurements are transmitted (L1) to a regulating means (6; 9) for sharing a power supply of the cabin domestic network (3) according to the power available in each primary network (11, 12), in that each converter unit (41, 42; 40) comprises an upstream power processing stage (E1) and a downstream power processing stage (E2), each integrating an anti-disturbance device (D1, D2) for filtering, compensating and protecting the electric network, respectively linked (B1, B2) with the corresponding primary network (11, 12) and linked (B3, B4) with the cabin domestic network (3), and in that the anti-disturbance devices (D1, D2) are coupled to a set (7) of adaptors (71, 72) for adapting the voltage and frequency of domestic levels distributed in the power processing stages (E1, E2), said set of adaptors (7) also integrating a neutral line splitter (73) between the primary networks (11, 12) and the cabin domestic network (3).

~~10~~9. The network architecture as claimed in claim ~~9~~8, wherein each set of adaptors comprises, in the upstream processing stage (E1), a frequency modulator (71) linked downstream with the anti-disturbance device (D1) via a primary power transmission bus (B1, B2) and, in the downstream processing stage (E2), a voltage converter (72) linked upstream with the anti-disturbance device (D2) via a power transmission cabin bus (B3, B4).

~~11~~10. The network architecture as claimed in claim ~~10~~9, wherein a galvanic isolating transformer (73) couples the voltage and frequency adaptors

(71, 72) and acts as a splitter between neutral lines (N_P, N_C) of the primary bus (B1, B2), on the one hand, and of the power transmission cabin bus (B3, B4), on the other hand, the neutral lines (N_P, N_C) being respectively connected to an avionics neutral point (10A) of the primary network (11, 12) and to a floating neutral point (10F) of the cabin domestic network (3).

~~12~~11. The network architecture as claimed in any one of claims ~~9~~ 8 to ~~11~~10, wherein the regulating means (T1, 9; 6; 9) for sharing the power supply of the cabin domestic network (3) is selected between:

- an interconnection (T1) between local data processing and regulation control units (9), integrated in each converter unit (41, 42; 40) and connected in a servo-control loop (L1, L2) to the measurement sensors and to the power transmission buses (B1, B2; B3, B4) of said converter unit (41, 42; 40);

- a centralized data processing and regulation control unit (6) connected (T2) to the measurement sensors (80) of all the converter units (41, 42; 40); and

- local management by each local data processing and regulation control unit (9) linked (L1, L2) with the measurement sensors of the corresponding converter unit (41, 42; 40).

~~13~~12. The network architecture as claimed in any one of claims ~~9~~ 8 to ~~12~~11, wherein each anti-disturbance device (D1, D2) comprises inductive and/or capacitive type filters and at least one power factor corrector.

~~14~~13. The network architecture as claimed in any one of claims ~~9~~ 8 to ~~13~~12, wherein the regulating means (T1, 9; 6; 9) controls contactors (8a, 8b) distributed upstream and downstream of each converter unit (41, 42; 40) over the corresponding buses (B1, B2; B3, B4), as well as circuit breakers (8c) of the anti-disturbance devices (D1, D2) of each converter unit (41, 42; 40).

~~15~~14. The network architecture as claimed in any one of claims ~~9~~ 8 to ~~14~~13, wherein, in the upstream processing stage (E1), the adaptor (71) is a frequency modulator and, in the downstream processing stage (E2), the adaptor (72) is a voltage converter.

~~16~~15. An aircraft equipped with a network architecture as claimed in any one of claims ~~9~~ 8 and ~~15~~14, wherein each electric generator (21, 22) is coupled to a propulsion engine.