CLAIMS

1. A gas turbine engine installation comprising an electrical system arranged to transfer electrical signals around the engine installation, the electrical system comprising:

an electrical harness raft (200/345) comprising multiple electrical conductors (210/345A) embedded in a rigid material (220), the electrical harness raft forming a first engine installation component;

a second engine installation component (200/325) comprising electrical conductors; and

at least one flexible cable (261, 326) connected between the electrical harness raft and the second engine installation component so as to electrically connect electrical conductors of the electrical harness raft with electrical conductors of the second engine installation component.

2. A gas turbine engine installation according to claim 1, wherein the rigid material is a rigid composite material.

3. A gas turbine engine installation according to claim 1 or claim 2, wherein the second engine component is a second electrical harness raft (200A-200D) comprising electrical conductors embedded in a rigid material.

4. A gas turbine engine installation according to claim 1 or claim 2, wherein the second engine component is an electronic control unit (325).

5. A gas turbine engine installation according to any one of the preceding claims, wherein:

the gas turbine engine installation comprises a bypass flow duct (22) formed between an engine core and an engine fan casing; and

the electrical harness raft (345) forms at least a part of a radially extending splitter (340) that extends across the bypass flow duct.

6. A gas turbine engine installation according to any one of the preceding claims, wherein at least one of the electrical conductors comprises an electrically conductive wire.

7. A gas turbine engine installation according to any one of the preceding claims, wherein at least some of the electrical conductors are provided in a flexible printed circuit (250) as electrically conductive tracks (252) in a flexible substrate (255).

8. A gas turbine engine installation according to any one of the preceding claims, wherein the or each flexible cable comprises at least one of: a flexible printed circuit (250) having electrically conductive tracks (252) in a substrate (255); and an electrically insulated conductive wire.

9. A gas turbine engine installation according to any one of the preceding claims, wherein the electrical harness raft has embedded therein at least one electrical connector (270B), the or each electrical connector being in electrical contact with at least one of the electrical conductors embedded in the rigid material and having terminals for connection with a complimentary connector.

10. A gas turbine engine installation according to claim 9, wherein the flexible cable comprises a complimentary connector (270A) that is connected to the corresponding electrical connector embedded in the electrical harness raft.

11. A gas turbine engine installation according to any one of the preceding claims, further comprising at least one fluid pipe (300) mounted on an electrical harness raft and/or at least one electronic control unit (320) mounted on an electrical harness raft, the electronic control unit optionally being electrically connected to one or more electrical conductors in the electrical harness raft on which it is mounted using complimentary electrical connectors (330A, 330B) provided in the electronic control unit and the corresponding electrical harness raft.

12. A gas turbine engine installation according to any one of the preceding claims, further comprising at least one anti-vibration mount (400) through which at least one electrical harness raft is attached to the rest of the gas turbine installation.

13. A gas turbine engine installation according to any one of the preceding claims, further comprising a fan casing (28) on which at least one electrical harness raft is mounted.

14. A gas turbine engine installation according to claim 13 comprising at least two electrical harness rafts, wherein at least two of the electrical harness rafts are shaped to correspond to a portion of an outer surface of the fan casing to which they are mounted, such that the fan casing is at least partially surrounded by electrical harness rafts.

15. A method of assembling a gas turbine engine installation comprising:

installing an electrical harness raft (200/345) having multiple electrical conductors (210/345A) arranged to transfer electrical signals around the engine embedded in a rigid material (220); and

connecting a flexible cable (261/326) between the electrical harness raft and another engine installation component (200, 325) comprising electrical conductors, so as to electrically connect electrical conductors of the electrical harness raft with electrical conductors of the other engine installation component.

CLAIMS

1. A gas turbine engine installation comprising an electrical system arranged to transfer electrical signals around the engine installation, the electrical system comprising:

an electrical harness raft (200/345) comprising multiple electrical conductors (210/345A) embedded in a rigid material (220), the electrical harness raft forming a first engine installation component;

a second engine installation component (200/325) comprising electrical conductors; and

at least one flexible cable (261, 326) connected between the electrical harness raft and the second engine installation component so as to electrically connect electrical conductors of the electrical harness raft with electrical conductors of the second engine installation component.

2. A gas turbine engine installation according to claim 1, wherein the rigid material is a rigid composite material.

3. A gas turbine engine installation according to claim 1 or claim 2, wherein the second engine component is a second electrical harness raft (200A-200D) comprising electrical conductors embedded in a rigid material.

4. A gas turbine engine installation according to claim 1 or claim 2, wherein the second engine component is an electronic control unit (325).

5. A gas turbine engine installation according to any one of the preceding claims, wherein:

the gas turbine engine installation comprises a bypass flow duct (22) formed between an engine core and an engine fan casing; and

the electrical harness raft (345) forms at least a part of a radially extending splitter (340) that extends across the bypass flow duct.

6. A gas turbine engine installation according to any one of the preceding claims, wherein at least one of the electrical conductors comprises an electrically conductive wire.

7. A gas turbine engine installation according to any one of the preceding claims, wherein at least some of the electrical conductors are provided in a flexible printed circuit (250) as electrically conductive tracks (252) in a flexible substrate (255), the flexible printed circuit (250) being flexible before being embedded in the rigid material.

8. A gas turbine engine installation according to any one of the preceding claims, wherein the or each flexible cable comprises at least one of: a flexible printed circuit (250) having electrically conductive tracks (252) in a substrate (255); and an electrically insulated conductive wire.

9. A gas turbine engine installation according to any one of the preceding claims, wherein the electrical harness raft has embedded therein at least one electrical connector (270B), the or each electrical connector being in electrical contact with at least one of the electrical conductors embedded in the rigid material and having terminals for connection with a complimentary connector.

10. A gas turbine engine installation according to claim 9, wherein the flexible cable comprises a complimentary connector (270A) that is connected to the corresponding electrical connector embedded in the electrical harness raft.

11. A gas turbine engine installation according to any one of the preceding claims, further comprising at least one fluid pipe (300) mounted on an electrical harness raft and/or at least one electronic control unit (320) mounted on an electrical harness raft, the electronic control unit optionally being electrically connected to one or more electrical conductors in the electrical harness raft on which it is mounted using complimentary electrical connectors (330A, 330B) provided in the electronic control unit and the corresponding electrical harness raft.

12. A gas turbine engine installation according to any one of the preceding claims, further comprising at least one anti-vibration mount (400) through which at

least one electrical harness raft is attached to the rest of the gas turbine installation.

13. A gas turbine engine installation according to any one of the preceding claims, further comprising a fan casing (28) on which at least one electrical harness raft is mounted.

14. A gas turbine engine installation according to claim 13 comprising at least two electrical harness rafts, wherein at least two of the electrical harness rafts are shaped to correspond to a portion of an outer surface of the fan casing to which they are mounted, such that the fan casing is at least partially surrounded by electrical harness rafts.

15. A method of assembling a gas turbine engine installation comprising:

installing an electrical harness raft (200/345) having multiple electrical conductors (210/345A) arranged to transfer electrical signals around the engine embedded in a rigid material (220); and

connecting a flexible cable (261/326) between the electrical harness raft and another engine installation component (200, 325) comprising electrical conductors, so as to electrically connect electrical conductors of the electrical harness raft with electrical conductors of the other engine installation component.