CLAIMS

1. A method for inspecting structures formed of composite materials during the fabrication thereof comprising:

imaging multiple individual plies of a structure, whereby the locations and orientations of edge joints between adjacent courses of each ply are recorded;

ascertaining mutual offsets in the locations of mutually parallel ones of said edge joints in said multiple individual plies; and

providing an output indication when at least one mutual offset of said edge joints is less than a predetermined minimum offset.

2. A method for inspecting structures formed of composite materials during the fabrication thereof according to claim 1 and wherein:

said individual plies each extend in an X-Y plane and are stacked in a Z-direction, perpendicular to the X-Y plane of each of said individual plies; and

said mutual offsets are ascertained by comparing the location of each of said mutually parallel edge joints in the X-Y plane of each of said individual plies with the corresponding location of an edge joint which is mutually parallel thereto in the X-Y plane of another one of said individual plies.

3. A method for inspecting structures formed of composite materials during the fabrication thereof according to claim 1 and wherein:

said individual plies are non-planar; and

said mutual offsets are ascertained by comparing the location of each of said mutually parallel edge joints in each of said individual plies with the corresponding location of an edge joint which most closely corresponds thereto in location and orientation in another one of said individual plies.

4. A method for inspecting structures formed of composite materials during the fabrication thereof according to claim 1 and wherein said imaging multiple individual

plies of a structure takes place during fabrication of said structure, at least between laying down of each of said multiple individual plies.

5. A method for inspecting structures formed of composite materials during the fabrication thereof according to claim 1 and also comprising:

providing a three-dimensional image file of said structure which enables ascertaining the mutual offsets in the locations of mutually parallel ones of said edge joints in said multiple individual plies.

6. A method for inspecting structures formed of composite materials during the fabrication thereof comprising:

imaging multiple individual plies of a structure, whereby the locations and orientations of edge joints between adjacent courses of each ply are recorded, said individual plies each extending in an X-Y plane and being stacked in a Z-direction, perpendicular to the X-Y plane of each of said individual plies; ~~and~~

providing a three-dimensional image file of said structure which enables ascertaining mutual offsets in the locations of mutually parallel ones of said edge joints in said multiple individual plies; and

ascertaining said mutual offsets by comparing the location of each of said mutually parallel edge joints in the X-Y plane of each of said individual plies with the corresponding location of an edge joint which is mutually parallel thereto in the X-Y plane of another one of said individual plies.

7. A method for inspecting structures formed of composite materials during the fabrication thereof according to claim 6 and wherein:

~~said individual plies each extend in an X-Y plane and are stacked in a Z-direction, perpendicular to the X-Y plane of each of said individual plies; and~~

~~said mutual offsets may be ascertained by comparing the location of each of said mutually parallel edge joints in the X-Y plane of each of said individual plies with the corresponding location of an edge joint which is mutually parallel thereto in the X-Y plane of another one of said individual plies.~~

said imaging multiple individual plies of a structure takes place during fabrication of said structure at least between laying down of each of said multiple individual plies.

8. A method for inspecting structures formed of composite materials during the fabrication thereof comprising ~~according to claim 6 and wherein~~:

imaging multiple individual plies of a structure, whereby the locations and orientations of edge joints between adjacent courses of each ply are recorded, said individual plies being ~~are~~ non-planar; ~~and~~

providing a three-dimensional image file of said structure which enables ascertaining mutual offsets in the locations of mutually parallel ones of said edge joints in said multiple individual plies; and

ascertaining said mutual offsets ~~may be ascertained~~ by comparing the location of each of said mutually parallel edge joints in each of said individual plies with the corresponding location of an edge joint which most closely corresponds thereto in location and orientation in another one of said individual plies.

9. A method for inspecting structures formed of composite materials during the fabrication thereof according to claim 8~~6~~ and wherein said imaging multiple individual plies of a structure takes place during fabrication of said structure at least between laying down of each of said multiple individual plies.

10. A system for inspecting structures formed of composite materials during the fabrication thereof, the system comprising:

an imager operative to image multiple individual plies of a structure, whereby the locations and orientations of edge joints between adjacent courses of each ply are recorded;

an offset analyzer operative to ascertain mutual offsets in the locations of mutually parallel ones of said edge joints in said multiple individual plies; and

a minimum offset threshold exceedance indicator providing an output indication when at least one mutual offset of said edge joints is less than a predetermined minimum offset.

11. A system for inspecting structures formed of composite materials during the fabrication thereof according to claim 10 and wherein:

said individual plies each extend in an X-Y plane and are stacked in a Z-direction, perpendicular to the X-Y plane of each of said individual plies; and

said mutual offsets are ascertained by comparing the location of each of said mutually parallel edge joints in the X-Y plane of each of said individual plies with the corresponding location of an edge joint which is mutually parallel thereto in the X-Y plane of another one of said individual plies.

12. A system for inspecting structures formed of composite materials during the fabrication thereof according to claim 10 and wherein:

said individual plies are non-planar; and

said mutual offsets are ascertained by comparing the location of each of said mutually parallel edge joints in each of said individual plies with the corresponding location of an edge joint which most closely corresponds thereto in location and orientation in another one of said individual plies.

13. A system for inspecting structures formed of composite materials during the fabrication thereof according to claim 10 and wherein said imager is operative to image said multiple individual plies during fabrication of said structure at least between laying down of each of said multiple individual plies.

14. A system for inspecting structures formed of composite materials during the fabrication thereof according to claim 10 and also comprising:

an image file generator operative to provide a three-dimensional image file of said structure to said offset analyzer.

15. A system for inspecting structures formed of composite materials during the fabrication thereof, the system comprising:

an imager operative to image multiple individual plies of a structure, whereby the locations and orientations of edge joints between adjacent courses of each ply are recorded;

said individual plies each extending in an X-Y plane and being stacked in a Z-direction, perpendicular to the X-Y plane of each of said individual plies;

an offset analyzer operative to ascertain mutual offsets in the locations of mutually parallel ones of said edge joints in said multiple individual plies by comparing the location of each of said mutually parallel edge joints in the X-Y plane of each of said individual plies with the corresponding location of an edge joint which is mutually parallel thereto in the X-Y plane of another one of said individual plies; and

an image file generator operative to provide a three-dimensional image file of said structure to said offset analyzer.

16. A system for inspecting structures formed of composite materials during the fabrication thereof according to claim 15 and wherein: said imager is operative to image said multiple individual plies during fabrication of said structure at least between laying down of each of said multiple individual plies.

~~said individual plies each extend in an X-Y plane and are stacked in a Z-direction, perpendicular to the X-Y plane of each of said individual plies; and~~

~~said mutual offsets may be ascertained by comparing the location of each of said mutually parallel edge joints in the X-Y plane of each of said individual plies with the corresponding location of an edge joint which is mutually parallel thereto in the X-Y plane of another one of said individual plies.~~

17. A system for inspecting structures formed of composite materials during the fabrication thereof the system comprising ~~according to claim 15 and wherein~~:

an imager operative to image multiple individual plies of a structure, whereby the locations and orientations of edge joints between adjacent courses of each ply are recorded, said individual plies being ~~are~~ non-planar; ~~and~~

an offset analyzer operative to ascertain ~~said~~ mutual offsets ~~may be ascertained by comparing~~ in the location of ~~each of said~~ mutually parallel ones of said edge joints in ~~each of~~ said multiple individual plies by comparing the location of each of said mutually parallel edge joints in each of said individual plies with the corresponding location of an edge joint which most closely corresponds thereto in location and orientation in another one of said individual plies; and

an image file generator operative to provide a three-dimensional image file of said structure to said offset analyzer.

18. A system for inspecting structures formed of composite materials during the fabrication thereof according to claim 17~~15~~ and wherein said imager is operative to image said multiple individual plies during fabrication of said structure at least between laying down of each of said multiple individual plies.