lighter filler material (e.g., closed cell foam or other light polymer). Typically, the structural frame is surrounded by the outer shell material.

[0006] With some conventional technologies, the structural frame is assembled or manufactured first. Next, the outer shell (e.g., closed cell foam) is sprayed onto the frame to give a shape to the UAV. The excess outer shell material is cut away to make room for cables, engines, avionics, and other subassemblies. However, in some cases removing the excess outer shell material may be difficult and time consuming, thus decreasing the efficiency of the overall UAV manufacturing process.

[0007] Furthermore, the material of the frame and the material of the outer shell may have different coefficients of thermal expansion (CTE). As a result, the frame and the outer shell expand and contract at different rates as the temperature of the environment changes causing manufacturing and assembly defects. In time, different expansion rates may lead to bending of the frame, and, for a sufficiently high number of the temperature cycles, to material fatigue and fracturing of the frame.

[0008] Accordingly, there remains a need for the systems and methods for assembling UAVs having improved efficiency of the assembly and reduced stress on the structural frame.

SUMMARY OF INVENTION

[0008a] According to a first aspect of the present invention, there is provided an Unmanned Autonomous Vehicle (UAV), comprising:

an H-frame having a wing spar secured to two or more boom carriers, wherein the wing spar includes two or more mounting locations, wherein each of the two or more mounting locations of the wing spar is configured to secure a horizontal propulsion unit, and wherein the boom carriers include a plurality of mounting locations, wherein each of the plurality of mounting locations of the boom carriers is configured to secure a vertical propulsion unit;

a pre-formed wing shell attached to the H-frame; and

a pre-formed boom shell attached to a boom carrier.

[0008b] According to a second aspect of the present invention, there is provided an Unmanned Autonomous Vehicle (UAV), comprising:

a structural frame having a wing spar and boom carriers, and wherein the boom carriers are connected with clamps to the wing spar;

a pre-formed wing shell attached to the structural frame; and

a pre-formed boom shell attached to corresponding boom carrier.

DESCRIPTION OF THE DRAWINGS

[0009] The foregoing aspects and many of the attendant advantages of inventive technology will become more readily appreciated as the same become better understood by reference to the following detailed description, when taken in conjunction with the accompanying drawings, wherein:

[0010] FIGURE 1 is an isometric view of a UAV in accordance with an embodiment of the present technology;

[0011] FIGURE 2 is an isometric view of a frame of a UAV in accordance with an embodiment of the present technology;

[0012] FIGURE 3 is an isometric view of cable routing of a UAV in accordance with an embodiment of the present technology;

[0013] FIGURE 4 is a partial isometric view of a UAV in accordance with an embodiment of the present technology;

[0014] FIGURE 5 is a cross-sectional view 5-5 of the UAV shown in Figure 4;

[0015] FIGURE 5A is an exploded cross-sectional view 5-5 of the UAV shown in Figure 4;