WHAT IS CLAIMED IS:

1. An automated welding system comprising:

a mounting platform;

a welding tool;

an imaging device configured to acquire data associated with an object; and

a controller configured to:

receive the acquired data from the imaging device, the acquired data including an acquired image of the object;

retrieve, from a readable storage medium, stored master model data associated with the object, the stored master model data including a master model image of the object that includes a master model area associated with a feature of the object;

compare the acquired image to the master model image;

identify, based on the comparison, pixels associated with the master model area in the acquired image;

mask the pixels associated with the master model area in the acquired image;

determine, based on the comparison, an area to be welded in the acquired image, wherein the masked pixels associated with the master model area in the acquired image are excluded from the area to be welded; and

generate control instructions for controlling at least one of said mounting platform and said welding tool to weld the area to be welded.

2. The automated welding system of claim 1, wherein said controller is further configured to generate control instructions for controlling at least one of a position and an orientation of at least one of said mounting platform and said welding tool.

3. The automated welding system of claim 1, wherein in comparing the acquired image to

the master model image, the controller is configured to compare each pixel in the acquired image to a corresponding pixel in the master model image.

4. The automated welding system of claim 1, further comprising a structure configured to receive and secure the object, the structure comprising at least one of a heating apparatus, an insulating material, a shielding medium, a viewing window, a temperature sensor, and a lighting system.

5. The automated welding system of claim 4, wherein said controller is further configured to generate a control instruction for controlling a heating apparatus operable to control an internal temperature of said structure.

6. The automated welding system of claim 5, wherein the control instruction for controlling the internal temperature of said structure comprises an instruction to maintain the internal temperature of said structure at a predetermined temperature range.

7. The automated welding system of claim 1, wherein said mounting platform includes at least one joint that facilitates motion of said mounting platform.

8. The automated welding system of claim 1, wherein the object is an airfoil and the feature is a cooling hole.

9. An article of manufacture including a non-transitory, tangible, computer readable storage medium having instructions stored thereon that, in response to execution by a controller configured for providing control instructions to at least one of a mounting platform and a welding tool, cause said controller to perform operations comprising:

receiving, by said controller, acquired data of an object from an imaging device, the acquired data including an acquired image of the object;

retrieving, by said controller, stored master model data associated with the object, the stored master model data including a master model image of the object that includes a master model area associated with a feature of the object;

comparing, by said controller, the acquired image to the stored master model image;

identifying, by said controller and based on the comparison, pixels associated with the master model area in the acquired image; masking, by said controller, the pixels associated with the master model area in the acquired image;

determining, by said controller and based on the comparison, an area to be welded in the acquired image, wherein the masked pixels associated with the master model area in the acquired image are excluded from the area to be welded; and

generating, by said controller, control instructions for controlling at least one of said mounting platform and said welding tool to weld the area to be welded.

10. The article of claim 9, further comprising a structure configured to receive the object and permit welding operations to be conducted on the object at a predetermined temperature range.

11. The article of claim 10, wherein the instructions further cause said controller to perform operations comprising generating, by said controller, a control instruction for controlling a heating apparatus operable to control an internal temperature of said structure.

12. The article of claim 11, wherein the control instruction for controlling the heating apparatus of said structure is an instruction to maintain the internal temperature of said structure within a predetermined temperature range.

13. The article of claim 9, wherein the instructions further cause said controller to perform operations comprising generating control instructions for controlling at least one of a position and an orientation of at least one of said mounting platform and said welding tool.

14. The article of claim 9, further comprising a mounting platform for mounting the object,

wherein said mounting platform includes at least one joint that facilitates motion of said mounting platform.

15. The article of claim 9, wherein the object is an airfoil and the feature is a cooling hole.

16. A method for operating a welding system, said method comprising:

receiving, by a controller configured to control operation of the welding system, acquired data of an object from an imaging device, the acquired data including an acquired image of the object;

retrieving, by said controller, stored master model data associated with the object, wherein the stored model data is in a readable storage medium, the stored master model data including a master model image of the object that includes a master model area associated with a feature of the object;

comparing, by said controller, the acquired image to the master model image;

identifying, by said controller and based on the comparison, pixels associated with the master model area in the acquired image;

masking, by said controller, the pixels associated with the master model area in the acquired image;

determining, by said controller and based on the comparison, an area to be welded in the acquired image, wherein the masked pixels associated with the master model area in the acquired image are excluded from the area to be welded; and

generating, by said controller, control instructions for controlling at least one of said mounting platform and said welding tool to weld the area to be welded.

17. The method of claim 16, further comprising generating, by said controller, control instructions for controlling at least one of a position and an orientation of at least one of said mounting platform and said welding tool.

18. The method of claim 16, further comprising receiving the object within a structure.

19. The method of claim 18, further comprising generating, by the controller, a control instruction for controlling a heating apparatus operable to control an internal temperature of the structure.

20. The method of claim 16, wherein the object is an airfoil and the feature is a cooling hole.