CLAIMS

WHAT IS CLAIMED IS:

1. A robotic assembly for detecting damage to equipment, the robotic assembly comprising:

a platform;

a drive assembly;

a local computing device to control the drive assembly to move the platform and navigate the platform through an environment from a first location away from the equipment to a second location containing the equipment based on instructions received from a remote computing device and signals from an environmental capture device, the platform being an autonomous platform and configured to aid in autonomous navigation and to observe a thermal response of a gas turbine engine during a cooling transition occurring between an elevated temperature and a lesser temperature by moving the environmental capture device relative to the gas turbine engine, wherein the elevated temperature occurs based on a prior gas turbine engine operation, and wherein the cooling transition is caused by forced cooling on an exterior surface of the gas turbine engine; and

one or more computing devices configured to:

from information generated by the environmental capture device, determine one or more thermal gradients in the equipment during the cooling transition;

compare the one or more thermal gradients with predetermined thermal gradient margins;

determine when the thermal gradients exceed the predetermined thermal gradient margins; and

generate an action when the thermal gradients are outside of the predetermined thermal gradient margin.

2. The robotic assembly of claim 1, wherein the environmental capture device comprises a thermal imaging camera.

3. The robotic assembly of claim 1, wherein, in response to the generated action, the one or more computing devices is further configured to cause the robotic assembly to further inspect an area of the equipment corresponding to a location where the thermal gradients exceeded the predetermined thermal gradient margin.

4. The robotic assembly of claim 1, wherein the robotic assembly is configured to move through the environment while the environmental capture device observes the thermal response.

5. The robotic assembly of claim 1, wherein the elevated temperature is at least 300˚F.

6. The robotic assembly of claim 1, wherein the predetermined thermal gradient margins are at least partially-autonomously adjusted by the one or more computing devices in response to aggregate data compiled by comparing thermal gradients with predetermined cooling gradient margins on a fleet of equipment.

7. The robotic assembly of claim 11, wherein the forced cooling occurs after landing.

8. The robotic assembly of claim 1, wherein the predetermined thermal gradient margins are based on a prior scan of the equipment.

9. The robotic assembly of claim 1, wherein the predetermined thermal gradient margins are based on a present scan of the equipment.

10. The robotic assembly of claim 1, wherein the predetermined thermal gradient margins are based on a theoretical predetermined thermal gradient of the equipment.

11. The robotic assembly of claim 1, wherein the local computing device is disposed locally on the robotic assembly.

12. The robotic assembly of claim 1, wherein the local computing device is contained within the environment.

13. The robotic assembly of claim 1, wherein the local computing device is contained near the second location.

14. The robotic assembly of claim 1, wherein the remote computing device is contained within the environment.

15. The robotic assembly of claim 1, wherein the remote computing device is contained near the second location.

16. The robotic assembly of claim 1, wherein the remote computing device is contained in an off-site location away from the environment.