CLAIMS

What is claimed is:

1. A method of detecting defects in an object based on active thermography, the method comprising:

heating a surface of the object at a plurality of localized regions thereof, each of the plurality of localized regions being heated for a period of time sufficient to reach thermal equilibrium;

selecting at least one of the plurality of localized regions as a reference region;

selecting at least another one of the plurality of localized regions as a comparison region;

comparing a thermal response at the comparison region to a thermal response at the reference region due to said heating; and

determining whether the object has a defect based on the comparison.

2. The method according to claim 1, wherein said comparing comprises computing a first value based a change in temperature detected at the comparison region and a change in temperature detected at the reference region due to said heating, and whether the object has a defect is determined based on the first value.

3. The method according to claim 2, wherein the first value is computed based on a ratio of the change in temperature detected at the comparison region and the change in temperature detected at the reference region due to said heating.

4. The method according to claim 3, wherein said determining whether the object has a defect comprises determining whether the first value is within a tolerance range from a predetermined value, and wherein the object is determined to have a defect if the first value is outside of the tolerance range.

5. The method according to claim 4, wherein the predetermined value is 1.

6. The method according to any one of claims 1 to 3, further comprises computing a second value based on a heat input at the comparison region and a heat input at the reference region due to said heating.

7. The method according to claim 6, wherein the second value is computed based on a ratio of the heat input at the comparison region and the heat input at the reference region due to said heating.

8. The method according to claim 6 or 7, further comprises computing a third value based on the first value and the second value, wherein said determining whether the object has a defect comprises determining whether the third value is within a tolerance range from a predetermined value, and wherein the object is determined to have a defect if the third value is outside of the tolerance range.

9. The method according to claim 8, wherein the third value is computed based on a ratio of the first value and the second value.

10 The method according to claim 8 or 9, wherein the predetermined value is 1.

11. The method according to claim 10, wherein the tolerance range is about ±0.005 to ±0.015 from the predetermined value.

12. The method according to any one of claims 1 to 11, wherein the plurality of localized regions is a plurality of spots on the surface of the object.

13. A system for detecting defects in an object based on active thermography, the system comprising:

one or more heat sources configured to heat a surface of the object at a plurality of localized regions thereof such that each of the plurality of localized regions is heated for a period of time sufficient to reach thermal equilibrium;

a selection module configured to select at least one of the plurality of localized regions as a reference region and select at least another one of the plurality of localized regions as a comparison region;

a comparison module configured to compare a thermal response at the comparison region to a thermal response at the reference region due to said heating; and

a decision module configure to determine whether the object has a defect based on the comparison by the comparison module.

14. The system according to claim 13, wherein the comparison module is configured to compute a first value based a change in temperature detected at the comparison region and a change in temperature detected at the reference region due to said heating, and whether the object has a defect is determined based on the first value.

15. The system according to claim 14, wherein the comparison module is further configured to compute a second value based on a heat input at the comparison region and a heat input at the reference region due to said heating.

16. The system according to claim 15, wherein the comparison module is further configured to compute a third value based on the first value and the second value, wherein the decision module is configured to determine whether the object has a defect by determining whether the third value is within a tolerance range from a predetermined value, and wherein the object is determined to have a defect when the third value is outside of the tolerance range.

17. The system according to claim 16, wherein the predetermined value is 1 and the tolerance range is about ± 0.003 to ± 0.015 from the predetermined value.

18. The system according to any one of claims 13 to 17, wherein the heat source is configured to heat the surface at one side of the object at a plurality of localized regions thereof.

19. The system according to any one of claims 13 to 17, comprising a plurality of heat sources configure for heating the surface of the object at a plurality of sides thereof.

20. A computer program product, embodied in a computer-readable storage medium, comprising instructions executable by a computer processor to perform the method of detecting defects in an object based on active thermography according to any one of claims 1 to 12.