CLAIMS:

1. A method of monitoring and controlling temperature of a cargo in a refrigerated transportation cargo container comprising:

measuring a temperature of a plurality of portions of the cargo disposed in the cargo container via a plurality of temperature sensors directed at the portions of the cargo, to measure cargo temperature at a plurality of localized portions of the cargo;

comparing one or more of the measured cargo temperatures to a preselected cargo temperature threshold; and

changing operation of a refrigeration unit disposed at the cargo container in operable communication with the plurality of temperature sensors based on a result of the comparison.

2. The method of Claim 1, further comprising transmitting the measured cargo temperatures to a controller in operable communication with the plurality of temperature sensors and with the refrigeration unit, the controller configured to change operation of the refrigeration unit.

3. The method of Claim 1, further comprising:

computing an average cargo temperature from the measured cargo temperatures;

comparing the average cargo temperature to an average cargo temperature threshold; and

changing operation of the refrigeration unit based on a result of the comparison.

4. The method of Claim 1, wherein changing operation of the refrigeration unit comprises one or more of changing operation of a compressor, evaporator or fresh air inlet of the refrigeration unit.

5. The method of Claim 1, wherein the plurality of temperature sensors comprise at least one thermal camera or at least one laser temperature sensor.

6. The method of Claim 1, further comprising:

evaluating the measured cargo temperatures for localized cargo temperature variations;

correcting the localized cargo temperature variations by changing operation of the refrigeration unit.

7. The method of Claim 6, wherein changing operation of the refrigeration unit comprises one or more of changing operation of a compressor, evaporator, evaporator fans, condenser fan or fresh air inlet of the refrigeration unit.

8. The method of Claim 1, wherein the plurality of cargo temperature sensors measure the cargo temperature substantially continuously.

9. A transportation cargo container refrigeration system, comprising:

a plurality of cargo temperature sensors configured to determine a temperature of at least portions of a cargo by measuring a cargo temperature at a plurality of localized portions of the cargo;

a refrigeration unit; and

a controller operably connected to the refrigeration unit and the plurality of cargo temperature sensors to control operation of the refrigeration unit based on data received from the plurality of cargo temperature sensors.

10. The system of Claim 9, wherein the plurality of temperature sensors comprise at least one thermal camera or at least one laser temperature sensor.

11. The system of Claim 9, wherein the controller is configured to change operation of one or more components of the refrigeration unit.

12. The system of Claim 11, wherein the one or more components include refrigeration unit includes a compressor, evaporator, evaporator fans, condenser fan or fresh air inlet of the refrigeration unit.

13. The system of Claim 9, wherein the controller is configured to calculate an average cargo temperature from the data received from the plurality of cargo temperature sensors.

14. The system of Claim 9, wherein the plurality of temperature sensors are configured to measure the cargo temperature substantially continuously.

15. A refrigerated transportation cargo container comprising:

a transportation cargo container;

a refrigeration unit configured to cool the cargo container;

a plurality of cargo temperature sensors disposed in the cargo container to determine a temperature of the cargo by measuring a temperature of a plurality of localized portions of the cargo; and

a controller operably connected to the refrigeration unit and the plurality of noncontact cargo temperature sensors to control operation of the refrigeration unit based on data received from the plurality of cargo temperature sensors.

16. The cargo container of Claim 15, wherein the plurality of temperature sensors comprise at least one thermal camera or at least one laser temperature sensor.

17. The cargo container of Claim 15, wherein the controller is configured to change operation of one or more components of the refrigeration unit.

18. The cargo container of Claim 17, wherein the one or more components include refrigeration unit includes a compressor, evaporator, evaporator fans, condenser fan or fresh air inlet of the refrigeration unit.

19. The cargo container of Claim 15, wherein the controller is configured to calculate an average cargo temperature from the data received from the plurality of cargo temperature sensors.

20. The cargo container of Claim 15, wherein the plurality of temperature sensors are configured to measure the cargo temperature substantially continuously.

CLAIMS:

1. A method of monitoring and controlling temperature of a cargo in a refrigerated transportation cargo container comprising:

measuring a temperature of a plurality of portions of the cargo disposed in the cargo container via a plurality of temperature sensors directed at the portions of the cargo, to measure cargo temperature at a plurality of localized portions of the cargo;

computing an average cargo temperature from the measured cargo temperatures;

comparing the average cargo temperature to an average cargo temperature threshold;

comparing the local cargo temperature to a local cargo temperature threshold; and

changing operation of a refrigeration unit disposed at the cargo container in operable communication with the plurality of temperature sensors based on a result of these comparisons.

2. The method according to Claim 1, further comprising transmitting the measured cargo temperatures to a controller in operable communication with the plurality of temperature sensors and with the refrigeration unit, the controller configured to change operation of the refrigeration unit.

3. The method according to Claim 1, wherein changing operation of the refrigeration unit comprises one or more of changing operation of a compressor, evaporator or fresh air inlet of the refrigeration unit.

4. The method according to Claim 1, wherein the plurality of temperature sensors comprise at least one thermal camera or at least one laser temperature sensor.

5. The method according to Claim 1, wherein changing operation of the refrigeration unit comprises one or more of changing operation of a compressor, evaporator,

evaporator fans, condenser fan or fresh air inlet of the refrigeration unit.

6. The method according to Claim 1, wherein the plurality of cargo temperature sensors measure the cargo temperature substantially continuously.

7. A transportation cargo container refrigeration system, comprising:

a plurality of cargo temperature sensors configured to determine a temperature of at least portions of a cargo by measuring a cargo temperature at a plurality of localized portions of the cargo;

a refrigeration unit; and

a controller operably connected to the refrigeration unit and the plurality of cargo temperature sensors to control operation of the refrigeration unit based on data comparing:

the average cargo temperature to an average cargo temperature threshold; and

the local cargo temperature to a local cargo temperature threshold;

received from the plurality of cargo temperature sensors.

8. The system according to Claim 7, wherein the plurality of temperature sensors comprise at least one thermal camera or at least one laser temperature sensor.

9. The system according to Claim 7, wherein the controller is configured to change operation of one or more components of the refrigeration unit.

10. The system according to Claim 9, wherein the one or more components include refrigeration unit includes a compressor, evaporator, evaporator fans, condenser fan or fresh air inlet of the refrigeration unit.

11. The system according to Claim 7, wherein the plurality of temperature sensors are configured to measure the cargo temperature substantially continuously.

12. A refrigerated transportation cargo container comprising:

a transportation cargo container;

a refrigeration unit configured to cool the cargo container;

a plurality of cargo temperature sensors disposed in the cargo container to determine a temperature of the cargo by measuring a temperature of a plurality of localized portions of the cargo; and

a controller operably connected to the refrigeration unit and the plurality of noncontact cargo temperature sensors to control operation of the refrigeration unit based on data comparing:

the average cargo temperature to an average cargo temperature threshold; and

the local cargo temperature to a local cargo temperature threshold;

received from the plurality of cargo temperature sensors.

13. The cargo container according to Claim 12, wherein the plurality of temperature sensors comprise at least one thermal camera or at least one laser temperature sensor.

14. The cargo container according to Claim 12, wherein the controller is configured to change operation of one or more components of the refrigeration unit.

15. The cargo container according to Claim 14, wherein the one or more components include refrigeration unit includes a compressor, evaporator, evaporator fans, condenser fan or fresh air inlet of the refrigeration unit.

16. The cargo container according to Claim 12, wherein the plurality of temperature sensors are configured to measure the cargo temperature substantially continuously.