Claims

1. A cooling system for contact cooling of a beverage container, the system comprising:
- a cooling element;
- a cooling contact body thermally conductively connected to the cooling element and arranged to be in thermally conductive contact with the container;
- a sensor module arranged to provide a sensor signal having a sensor value indicative of a contact area between the cooling contact body and the container;
- a processing unit arranged to control operation of the cooling element in response to the sensor signal.

2. The cooling system according to claim 1, wherein the processing unit is arranged to control the cooling element to be operative in a switched mode, wherein a first time interval during which the cooling element is instructed to operate is dependent on the sensor value.

3. The cooling system according to claim 2, wherein the processing unit is arranged to increase the first time interval with a decreasing contact area as indicated by the sensor value.

4. The cooling system according to any of the preceding claims, wherein the processing unit is arranged to
- operate the cooling element at a first level to withdraw thermal energy from the cooling contact surface body until a first requirement has been met;

- operate the cooling element at a second level lower than the first level or switch off the cooling element until a second requirement has been met;

wherein:

- the amount of energy provided to the cooling element at the first level is increased as the contact area indicated by the sensor value decreases; and
- the amount of energy provided to the cooling element at the first level is decreased as the contact area indicated by the sensor value increases.

5. The cooling system according to any of the preceding claims, wherein:

- the sensor module comprises a temperature sensor arranged for sensing temperature of at least one of the container and the cooling contact body; and
- the processing unit is arranged to control operation of the cooling element based on change of the sensor value over time.

6. The cooling system according to claim 5, wherein the processing unit is arranged to:

- operate the cooling element at a first level to withdraw thermal energy from the cooling contact surface body until a first requirement has been met;
- operate the cooling element at a second level lower than the first level or switch off the cooling element until a second requirement has been met;
- determine a time period between operation of the cooling element at the second level or switching off the cooling element and reaching the second requirement;

- determining the first requirement based on the determined time period.

7. The cooling system according to claim 6, wherein the first requirement is at least one of:
- an amount of energy provided to the cooling element;
- an amount of time;
- a temperature sensed by the sensor module.

8. The cooling system according to claim 6 or 7, wherein the second requirement is at least one of:
- an amount of time;
- temperature.

9. The cooling system according to any of the claims 6 to 8, wherein:
- the first requirement is a time period during which the cooling element is operated;
- the second requirement is a temperature;
- the time period as the first requirement is increased as the determined time period decreases; and
- the time period as the first requirement is decreased as the determined time period increases.

10. The cooling system according to any of the preceding claims, further comprising an ambient temperature sensor for determining a temperature of ambient air around the cooling system.

11. The cooling system according to any of the preceding claims, wherein the sensor module comprises a contact sensor arranged to

provide a signal having a value indicative of a contact area between the container and the cooling contact body.

12. The cooling system according to claim 11, wherein the contact sensor is at least one of:

- a conductivity measurement sensor;
- a pressure sensor.

13. A beverage dispensing system comprising a cooling system according to any one of the previous claims

14. A method of cooling a liquid in a container by contact cooling, wherein:

- a container containing liquid is received against a contact surface of a cooling system;
- a cooling energy transfer rate between the contact surface and the container is determined; and
- the cooling energy supply to the cooling system is controlled by a control unit of the cooling system based on said cooling energy transfer rate.

15. The method of cooling according to claim 14, wherein the cooling energy transfer rate is determined by:

- cooling the contact surface over a first period of time, and
- temporarily terminating cooling of the contact surface over a second period, and measuring the temperature of the container with at least one first sensor, wherein the duration of the second period is measured between terminating cooling and reaching a predetermined temperature of the container measured with said first sensor,

wherein the cooling energy transfer rate is defined as the said duration of the second period.

16. The method of cooling according to claim 15, further comprising:

- repeating the first and second step at least once;
- wherein for each second period a cooling energy transfer rate is defined;

wherein consecutive cooling energy transfer rates are compared and:

- if the cooling energy transfer rate over at least two previous second periods increases, i.e. the duration of the second period is increasing, decreasing supply of cooling energy to the cooling system for the following first period; whereas
- if the cooling energy transfer rate over at least two previous second periods decreases, i.e. the duration of the second period is decreasing, increasing supply of cooling energy to the cooling system for the following first period.

17. The method of cooling according to any one of claims 14 - 16, wherein the temperature of the container is measured using a temperature sensor in contact with an outer surface of the container, preferably with a contact sensor thermally isolated from the contact surface.

18. The method of cooling according to any one of claims 14 - 17, wherein a remaining volume of liquid in the container is measured or calculated and the supply of cooling energy to the cooling system is controlled based on said remaining volume of liquid, at least below a threshold value for said remaining volume.

19. The method of cooling according to any one of claims 14 - 18, wherein supply of cooling energy to the cooling system is controlled such that a convection flow of liquid in the container is initiated and/or maintained by subsequent cooling and non-cooling of the contact surface.

20. A computer readable medium, comprising instructions which, when executed by an electronic processing unit, enables:

the electronic processing unit to control the cooling element of the cooling system according to any one claims 1 - 12 comprising the electronic processing unit,

to control the cooling element of the beverage dispensing system of claim 13 comprising the electronic processing unit; or

to cause the electronic processing unit to carry out the method according to any one of claims 14 - 19.