CLAIMS

1. A control system for growing algae having:

a controller for controlling a plurality of LED lights; and

one or more sensors to provide data on the growth of the algae in a liquid growing medium, wherein:

the controller is adapted to control the spectrum and intensity of the LED lights;

the controller is adapted to control a flickering frequency of the LED lights in a range of 2ms to 5,000ms;

the controller includes a communication module adapted to communicate with a remote device;

the controller is adapted to send data on the flickering frequency of the LED lights to the remote device;

the controller is adapted to receive data from the one or more sensors and send the data from the one or more sensors to the remote device;

the one or more sensors includes a cell count sensor that measures the quantity of algae cells in a defined volume of the liquid growing medium;

the remote device correlates data from the one or more sensors with data on the spectrum, intensity and flickering frequency of the LED lights;

the remote device correlates desired traits of the algae being grown with the data on the spectrum, intensity and flickering frequency of the LED lights;

the remote device correlates desired traits of the algae being grown with the data from the one or more sensors;

the remote device is adapted to optimise the spectrum and intensity of the LED lights based on the data from the one or more sensors;

the remote device uses artificial intelligence to determine the spectrum, intensity and flickering frequency of the LED lights that correspond to desirable data from the one or more sensors;

the remote device will set the spectrum, intensity values and flickering frequency in the controller to the determined spectrum, intensity and flickering frequency of the LED lights; and

the remote device is adapted to communicate additional settings to the control system, the additional settings including one or more of flow rate of growing medium,

temperature of growing medium, amount of CO_2 added, amount of O_2 added, and or the type and or amount of nutrients added.

2. The control system of claim 1, wherein the control system includes the remote device.

3. The control system of claim 1 or claim 2, wherein the controller is adapted to control each of the plurality of LED lights individually.

4. The control system of any one of the preceding claims, wherein the controller is adapted to control the flickering frequency in a range of 10ms to 100ms.

5. The control system of any one of the preceding claims, wherein the one or more sensors includes: a temperature sensor which senses a temperature of the liquid growing medium; a gas sensor adapted to sense dissolved gas in the growing medium; a sensor to determine algae growth; a pH sensor to measure the pH of the growing medium; a salinity sensor for measuring the salinity of the growing medium; a nitrate sensor for measuring the concentration of nitrates in the growing medium; and or a cell health sensor for providing data on the health of algae cells.

6. The control system of claim 5, wherein the one or more gas sensors is a carbon dioxide sensor and or an oxygen sensor.

7. The control system of any one of the preceding claims, wherein the controller controls one or more pumps, valves, solenoids, heaters, or the like, to control the flow rate of growing medium, temperature of growing medium, amount of CO_2 added, amount of O_2 added, and or the type and or amount of nutrients added, according to settings received from the remote device.

8. A method of controlling the growing of algae, the method including the steps of:

controlling with a control system the spectrum and intensity of a plurality of LED lights for growing algae in a liquid growing medium;

controlling with the control system a flickering frequency of the plurality of LED lights in a range of 2ms to 5,000ms;

controlling with the control system additional settings including one or more of flow rate of growing medium, temperature of growing medium, amount of CO_2 added, amount of O_2 added, and or the type and or amount of nutrients added;

monitoring with one or more sensors traits of the algae;

transmitting from the control system to a remote device the spectrum and intensity settings of the plurality of LED lights and correlating sensor data for the traits of the algae;

correlating on the remote device traits of the algae with the spectrum and intensity of the plurality of LED lights, the flow rate of growing medium, temperature of growing medium, amount of CO2 added, amount of O2 added, and or the type and or amount of nutrients added;

using the remote device to change the spectrum and intensity of the plurality of LED lights while continuing to monitor with the one or more sensors traits of the algae; and

using the remote device to control the spectrum and intensity settings of the plurality of LED lights to correspond to a desired trait of the algae;

wherein artificial intelligence of the remote device is used to change one or more of the spectrum and or intensity settings of the plurality of LED lights, flow rate of growing medium, temperature of growing medium, amount of CO_2 added, amount of O_2 added, and or the type and or amount of nutrients added to optimise the traits of the algae; and

wherein the one or more sensors includes a cell count sensor that measures the quantity of algae cells in a defined volume of the liquid growing medium, and the desired trait is increased cell count or increased cell density.

9. The method of claim 8, wherein the control system includes a controller and the controller is adapted to control each of the plurality of LED lights individually.

10. The method of claim 9, wherein the controller is adapted to control the flickering frequency in a range of 10ms to 100ms.

11. The method of any one of claims 8 to 10, wherein the one or more sensors includes: a temperature sensor which senses a temperature of the liquid growing medium; a gas sensor adapted to sense dissolved gas in the growing medium; a sensor to determine algae growth, a pH sensor to measure the pH of the growing medium, a salinity sensor for measuring the salinity of the growing medium; a nitrate sensor for measuring the concentration of nitrates in the growing medium; and or a cell health sensor for providing data on the health of algae cells.

12. The method of claim 11, wherein the one or more gas sensors is a carbon dioxide sensor and or an oxygen sensor.

13. The method of any one of claims 8 to 12, wherein the controller controls one or more pumps, valves, solenoids, heaters, or the like, to control the flow rate of growing medium, temperature of growing medium, amount of CO_2 added, amount of O_2 added, and or the type and or amount of nutrients added, according to settings received from the remote device.