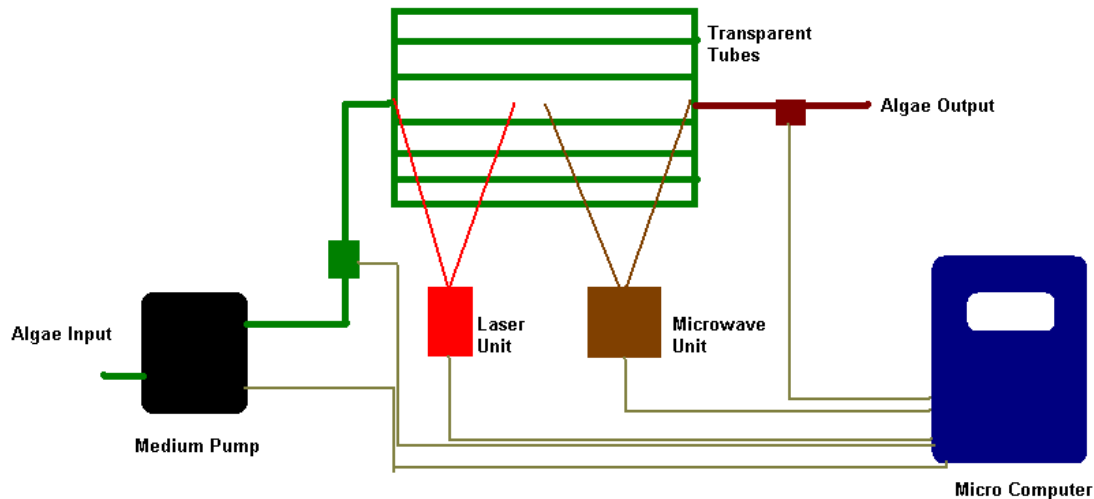




Stressor Device for *Haematococcus pluvialis* For Accumulating Astaxanthin Quick and Easy

Stressor Device stimulates astaxanthin accumulation in quick ONE step and continuous process. This device can stimulate astaxanthin accumulation / cystic formation in max 3 days without any additional chemicals and conditions.

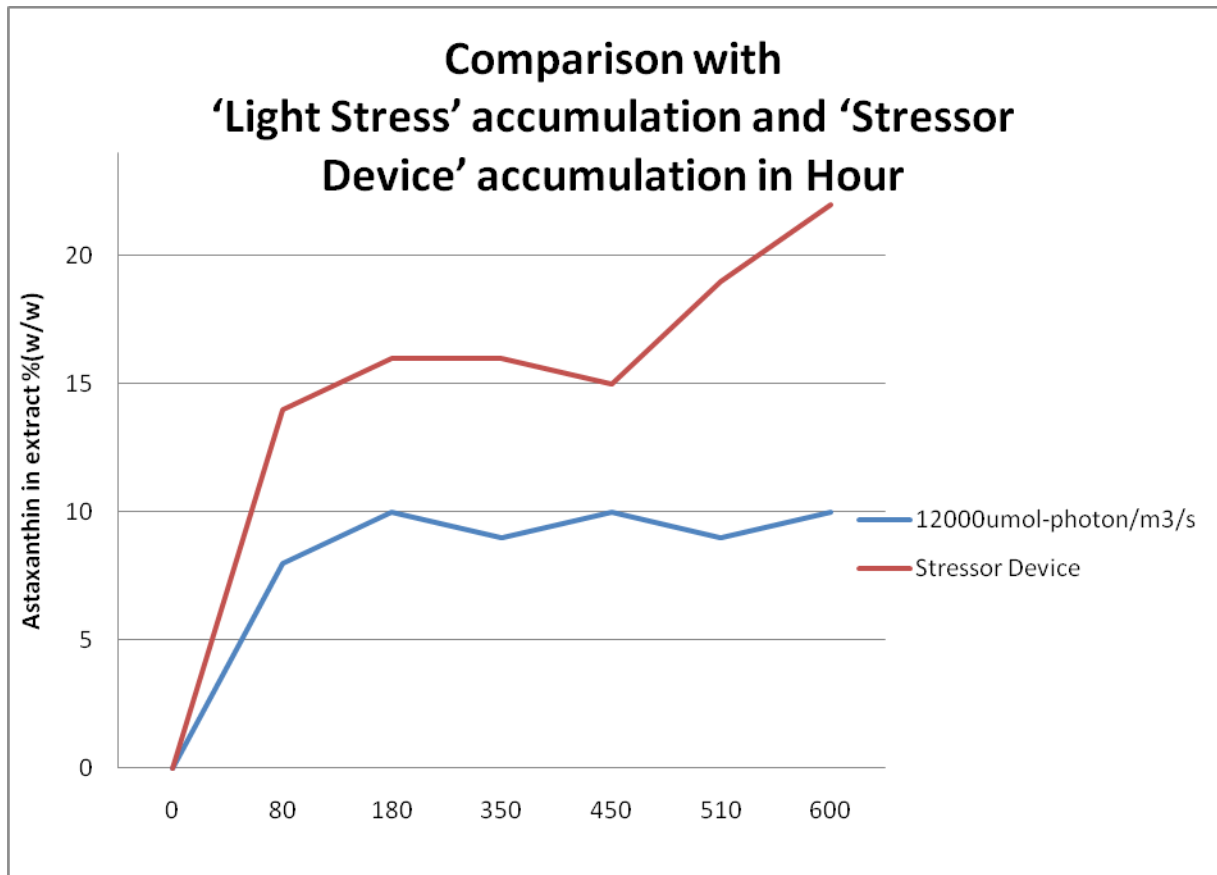
This patent pending device uses powerful laser for light stress and microwave device for radioactive radiance. This combination applies stress to *Haematococcus pluvialis* for high level astaxanthin accumulation.



Block Diagram

The system has 5 main units:

- 1- **Medium pump** is regulated by the information gathered from the orders sent by the computerized control panel.
- 2- **Tubular acrylic transparent panel** is collecting laser and microwave beams that come from laser and microwave transducers. Thus, laser and microwave beams can permeate to microalgae cells easily.
- 3- **Laser Transducer:** Led based high power laser system provides $80.000\text{umol-photon/m}^3/\text{s}$ to microalgae cells to generate high level light stress.
- 4- **Microwave Transducer:** High powered, 2.8Ghz microwave transducer provide radiation to generate high level cell stress.
- 5- **Microcomputer:** Detects chlorophyll level and by some sensors (temperature, chlorophyll level, astaxanthin level, etc) to tune medium circulation, laser power and microwave power.



According to Acetate stimulation, Stressor Device can provide %47 advantage.

According to high temperature stimulation, Stressor Device can provide %54 advantage.

According to salt stimulation, Stressor Device can provide %58 advantage.

According to light stimulation, Stressor Device can provide %59 advantage.



Model SD47: for 10m³ media/day.

Model SD49: for 50m³ media/day.

Model SD54: for 100m³ media/day.

Model SD78: for 500m³ media/day.

Model SD97: for 1000m³ media/day.