



## EWS ALGAE A4

*“The Algae Appliance”*



### ***Process and Equipment Description***

#### ***Background***

Based on OriginOil's proprietary Electro Water Separation™ (EWS) technology, EWS Algae™ A4 (“the Algae Appliance™”), is an entry-level, low-cost algae harvester providing a low energy, chemical-free, continuous flow ‘wet harvest’ system to efficiently dewater, and concentrate the microalgae. The A4's flow rate is variable from 2 to 12 liters per minute (.5 to 3 GPM), with the ability to remove greater than 99% of the initial water volume at the harvesting stage.

The A4 will operate either continuously or intermittently on a wide variety of microalgae strains. The system is extremely well suited for testing aimed at the development of commercial scale processes.



## Features and Benefits

Features	Advantages	Benefits
<b>Processes algae water directly</b>	No pre-concentrating or dewatering required	Capital and operating savings
<b>Electrical pulsing process</b>	No chemicals needed	Organically pure algae concentrate, process water
<b>Low energy electromagnetic pulsing system</b>	Total energy less than 0.7 kWh per cubic meter	Operating savings, consumables minimized
<b>Integrated biomass concentrator</b>	Ability to remove up to 99% of the water from the algae	Uniform intermediate feedstock
<b>Sanitized concentrate</b>	Greatly extended shelf life	Product can be easily shipped offsite for processing
<b>High continuous throughput</b>	Scalable and efficient	Minimized infrastructure
<b>Skid-mounted modules</b>	Easy Installation	Mobile harvester fleet
<b>Distributed architecture</b>	Flexible topology	Easy to ramp up and reassign machines as needed

## Process Overview

The EWS Algae is typically located on premises at the algae growth facility.

When ready for harvesting, the dilute microalgae culture is fed directly from the growth systems into the EWS Algae without any prior pretreatment or concentration.

Each system is equipped with its own integrated control system that manages operational settings for flocculation of the algae cells and flotation and separation of the algae cells from the water.



As the raw algae passes through the EWS Algae, it is subjected to tuned electromagnetic pulses. The system operation consists of two stages:

- First stage: high-flow, low-energy, chemical-free flocculation.
- Second stage: ability to remove up to 99% of the water. (Optional devices are available to achieve higher solids concentration downstream from the EWS Algae.)

### ***Product Specifications***

- Flow rates variable based upon operator controlled settings:
  - Maximum flow rate of 12 LPM (3 GPM) – processing 18,000 liters per day in continuous harvest.
  - Sufficient for a 90,000 liter growth facility at 20% daily harvest, depending on algal strain, growth conditions, and growth methodology.
- Microalgae concentration: Wide flexibility from less than 125mg to 1g/liter dry weight and beyond.
- Dimensions: Length 188 cm, width 105 cm, height 148 cm (L 6'-2", W 3'-6", H 4'-4").
- Weight: 182 kg (400 pounds).
- Electrical requirements: 120/240 volts, 50/60 hertz.
- Power consumption: Approximately 0.7kWh per m<sup>3</sup>.

### ***Additional Product Features***

- Remote support by OriginOil technicians (requires support contract)
- Tunable to a wide range of fresh and saltwater microalgae species
- Mounted on a stainless steel table for ease of operation
- Applicable to all growth platforms.

### ***Higher Capacity Models***

If you are interested in harvesting up to 200 liters per minute, please see our EWS Algae A60 or EWS Algae A200.

OriginOil has also shipped harvesting systems rated up to 285 liters per minute. All systems above the Model 60 are custom-quoted at this time.



Breakthrough water cleanup technology for oil & gas,  
algae and other water-intensive industries

### **Warranty**

12 months following commissioning of the product. Please review the full warranty terms provided with our quotations.

### **Shipment**

6-8 Weeks from executed Purchase Order

### **System Support**

Training: one technician will be trained for four days at OriginOil labs at no charge.

Installation: one technician will install and commission the unit for up to four (4) days, and perform operator training for an additional four (4) days. Additional days available for an additional charge.

Remote Support: during the warranty period, response within one business day. Faster options are available.

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