OriginOil™

Second-Generation Dewatering & Extraction Technologies

National Algae Association

The Woodlands, TX, January 13 2011

A BREAKTHROUGH TECHNOLOGY TO TRANSFORM ALGAE INTO OIL

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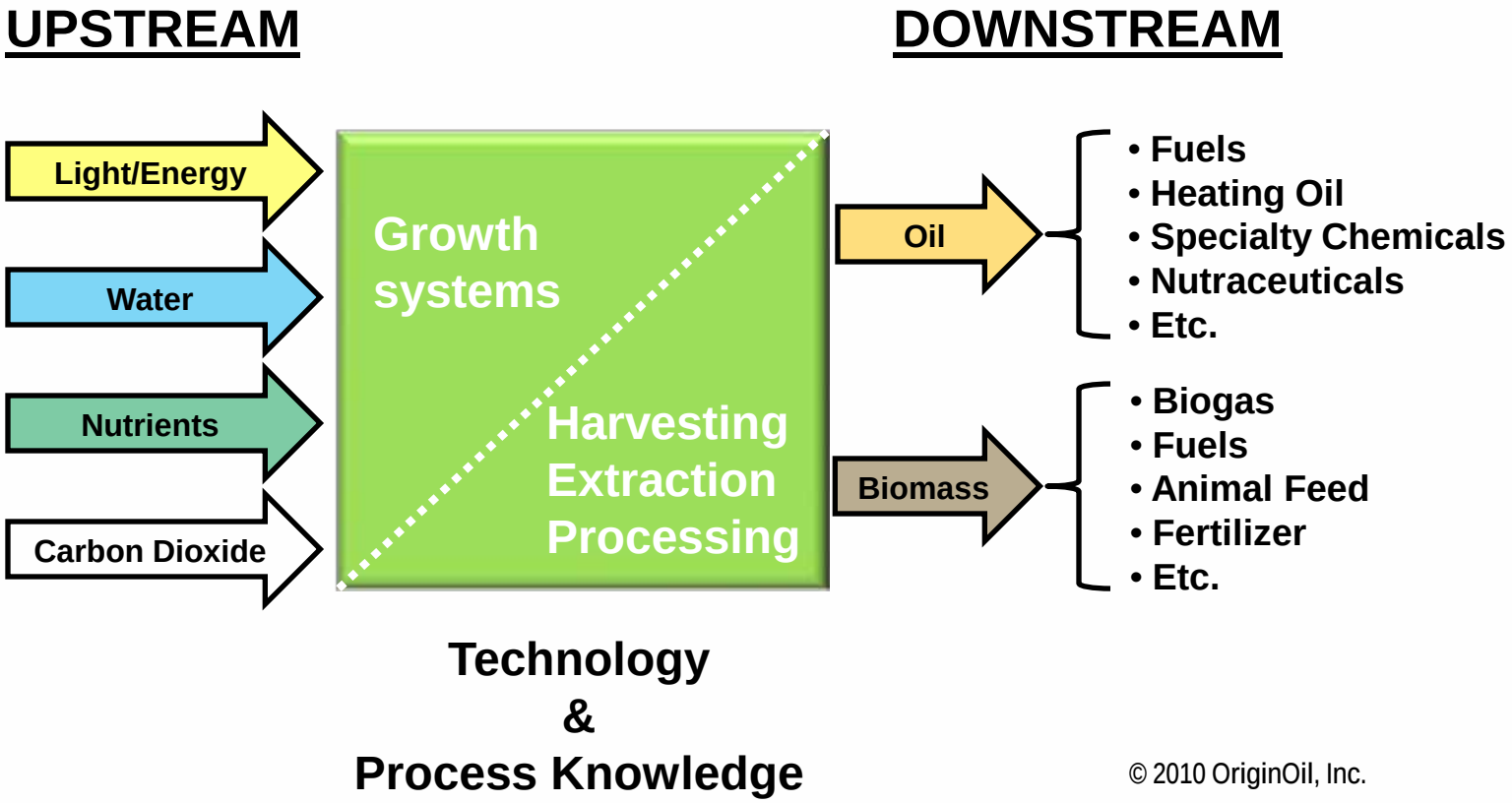
Matters discussed in this presentation contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. When used in this press release, the words "anticipate," "believe," "estimate," "may," "intend," "expect" and similar expressions identify such forward-looking statements. Actual results, performance or achievements could differ materially from those contemplated, expressed or implied by the forward-looking statements contained herein, and while expected, there is no guarantee that we will attain the aforementioned anticipated developmental milestones. These forward-looking statements are based largely on the expectations of the Company and are subject to a number of risks and uncertainties. These include, but are not limited to, risks and uncertainties associated with: the impact of economic, competitive and other factors affecting the Company and its operations, markets, product, and distributor performance, the impact on the national and local economies resulting from terrorist actions, and U.S. actions subsequently; and other factors detailed in reports filed by the Company.

ALGAE EXTRACTION TODAY

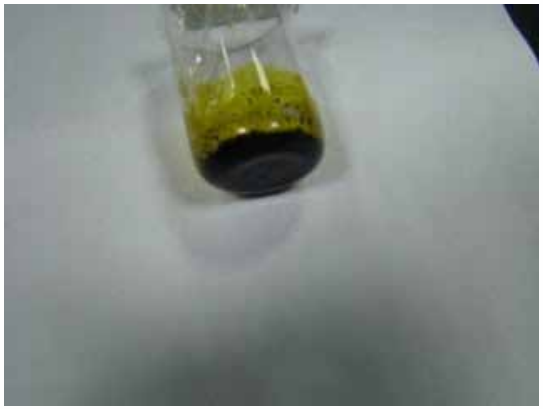
Techniques and Challenges

Algae Production Model



Technology
&
Process Knowledge

What is Algae Oil?



Levels of:
Chlorophyll?
Phospholipids?
FFA's?
Metals?
Residual solvent?

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What is Algae Oil?

Total Lipids ≠ Oil

Total Lipids: Substances that dissolve in organic solvents but not in water (e.g., phospholipids, glycolipids, triacylglycerol, sterols, wax, chlorophyll, carotenoids)

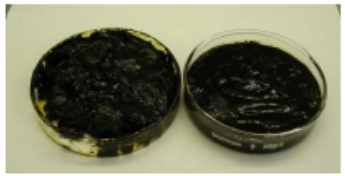
'Oil'/storage neutral lipids: Triacylglycerol, hydrocarbons

- Neutral lipids (i.e., triacylglycerol)
- Neutral lipids to total lipids Ratio

Algae biomass

Algae oil?

Pretreated & refined oils



Gums

Source in part: Hu and Sommerfeld: NREL-AFOSR Workshop, January 30, 2008)

Recovering Oil: A Twofold Challenge

- Algae Grow Suspended in Large Amounts of Water
  - Cells have similar specific gravity to water
  - Algae in suspension neither sink nor float
  - Wet biomass retains interstitial water, which acts as a lubricant
  - Harvesting oil requires solids separation
  - Dewatering is energy and capital intensive
- Cell Walls are Difficult to “Crack”
  - Algae have a tough exterior to protect internal lipids
  - Cell wall has a high elasticity modulus
  - Cell rupture through mechanical friction and steam explosion requires dry biomass
  - Mechanical extraction is energy and capital intensive
  - Chemical extraction requires toxic, hazardous solvents

Conventional Approach

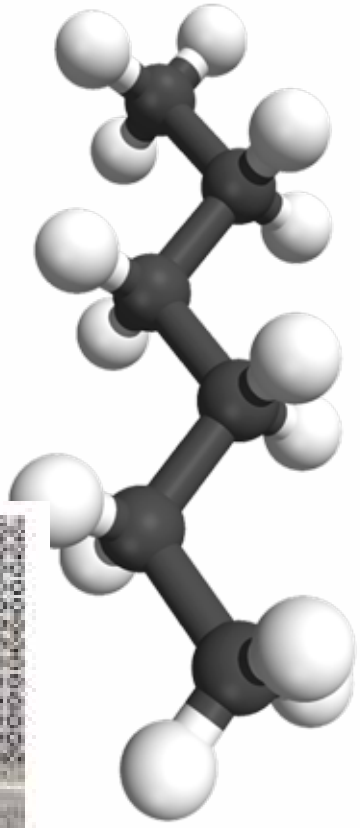
§ Current State of the Art is a 3-Stage Process:

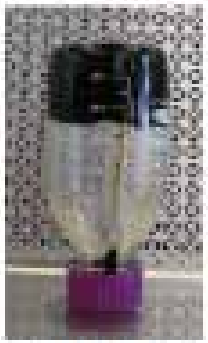
Options Include:	**Options Include:**	**Options Include**
Chemical Flocculation	Steam Drying	Expellers/Presses
Decanters/Centrifuges	Fluid Bed	Solvent Extraction
Hydrocyclones	Microwave	Supercritical CO_2

Conventional Systems Feature a Combination of Technologies

Extraction: Solvents

- Chemicals including benzene, ether and hexane are used to degrade cell walls
- Oil dissolves into solvent and is recovered through distillation
- Can be used in conjunction with mechanical extraction
- Advantages
  - Relatively inexpensive
  - Effective at releasing up to 95% oil
- Limitations
  - Requires the use of hazardous chemical solvents
  - Not selective – extracts unwanted components into oil
  - Contamination of meal (extracted biomass)
  - Hexane requires two year permitting process (U.S.)





Algae oil?

ALGAE TO FUELS

A BREAKTHROUGH TECHNOLOGY TO TRANSFORM ALGAE INTO OIL

Algae to Liquid Transportation Fuels

§ Essentially a 3-Stage Process:

UPSTREAM
Production/Growth

Steps Include:

Strain selection
GMO?
Pond/PBR design
CO2 addition
Nutrients
Productivity
Oil content/yield
Crop protection

MIDSTREAM
Recovery/upgrading

Steps Include:

Harvesting
Dewatering
Oil extraction/production
Oil pre-refining
Nutrient recycle

DOWNSTREAM
Refining

Steps Include

Refining
Fuels
Chemicals

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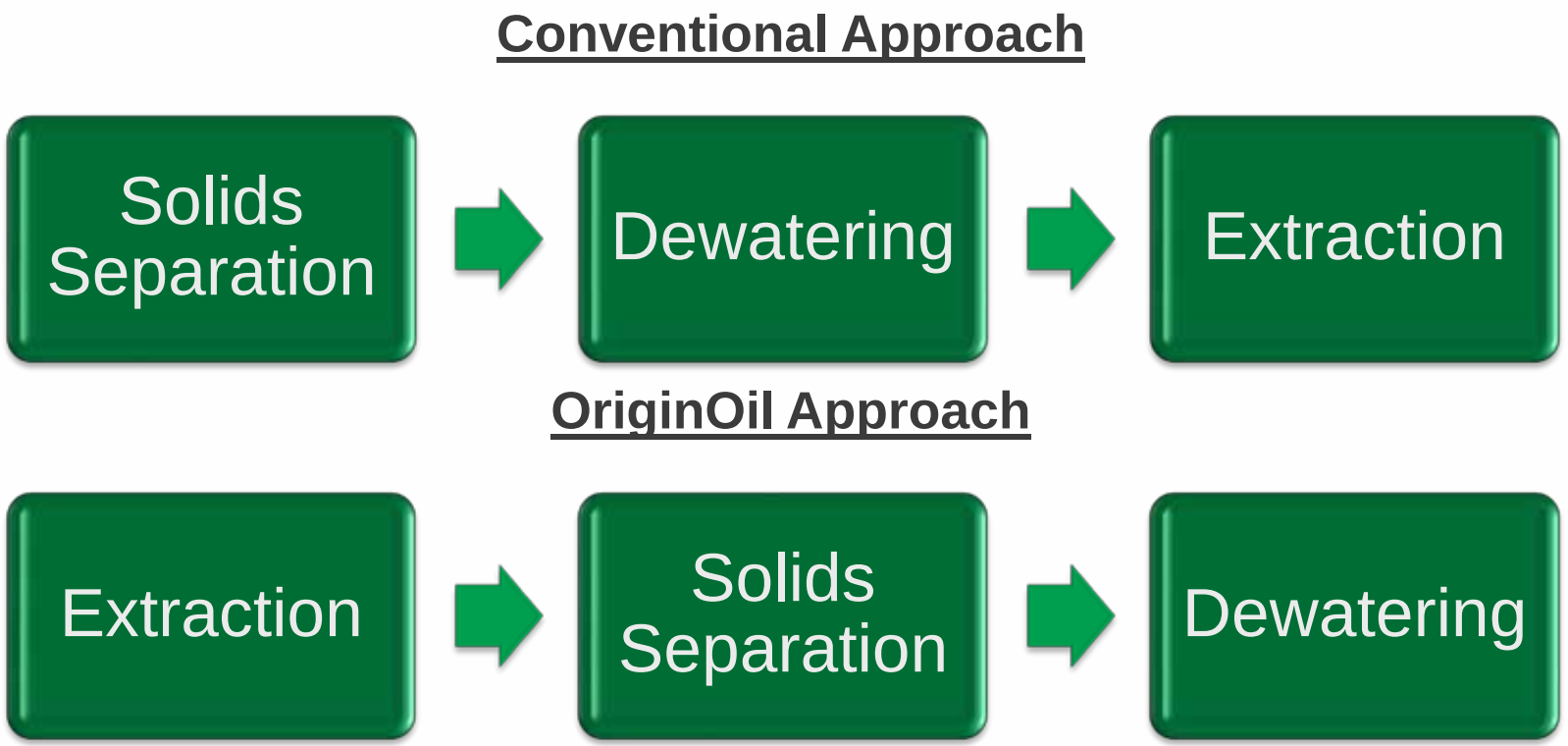
The OriginOil Difference



Radical Shift vs. Incremental Gains

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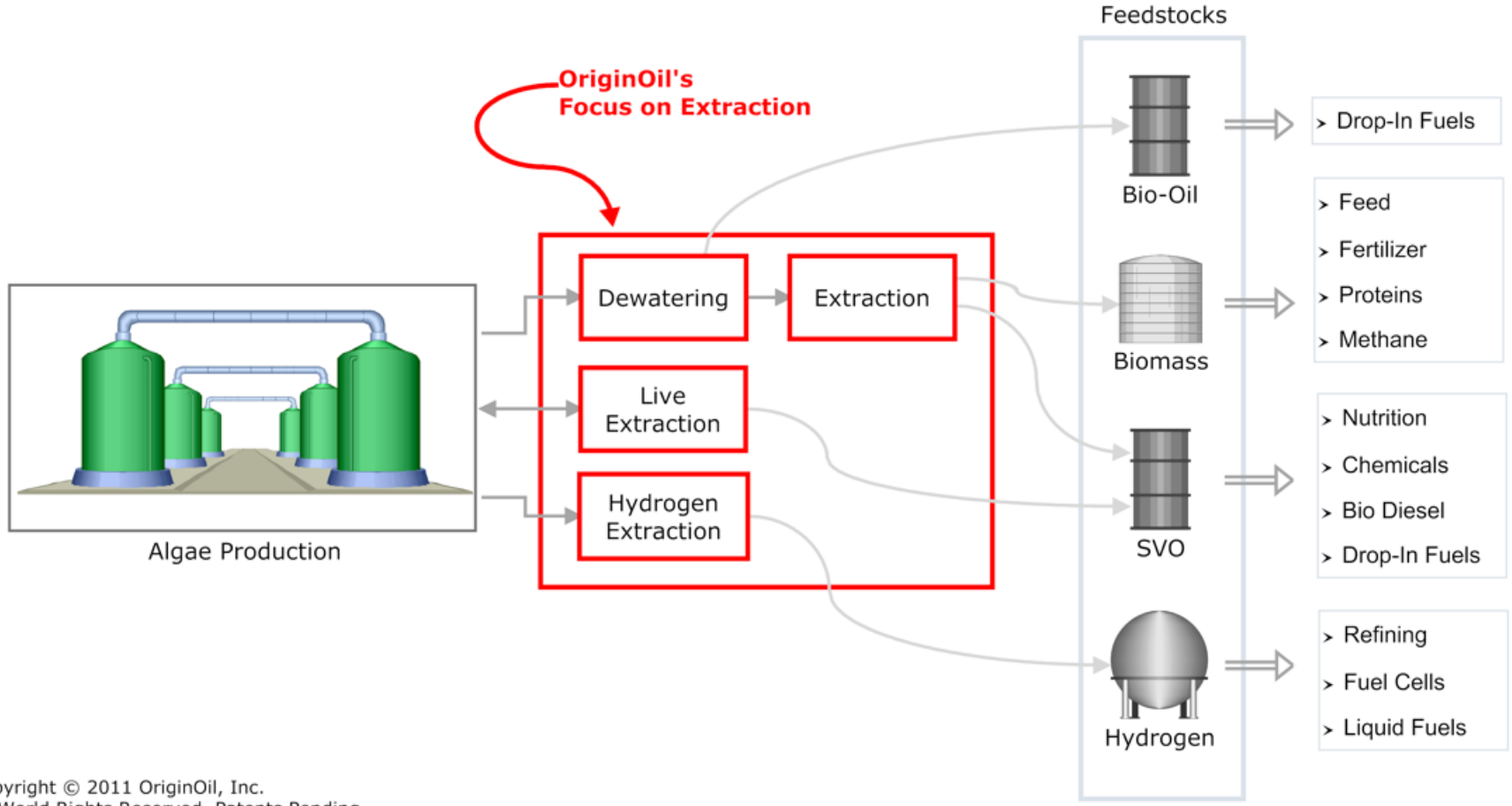
ORIGINOIL TECHNOLOGY

OriginOil to Focus on Its Industry Leading Algae Extraction Technology

Extraction is a critical bottleneck in commercial algae production. At time of harvest, algae live in a great volume of water. Conventional extraction, adequate for specialty products, such as pharmaceuticals, is far too energy-intensive for large-scale uses such as fuel and chemicals. A scalable and proven solution to the extraction challenge is vital to the future of the fast-growing algae industry.



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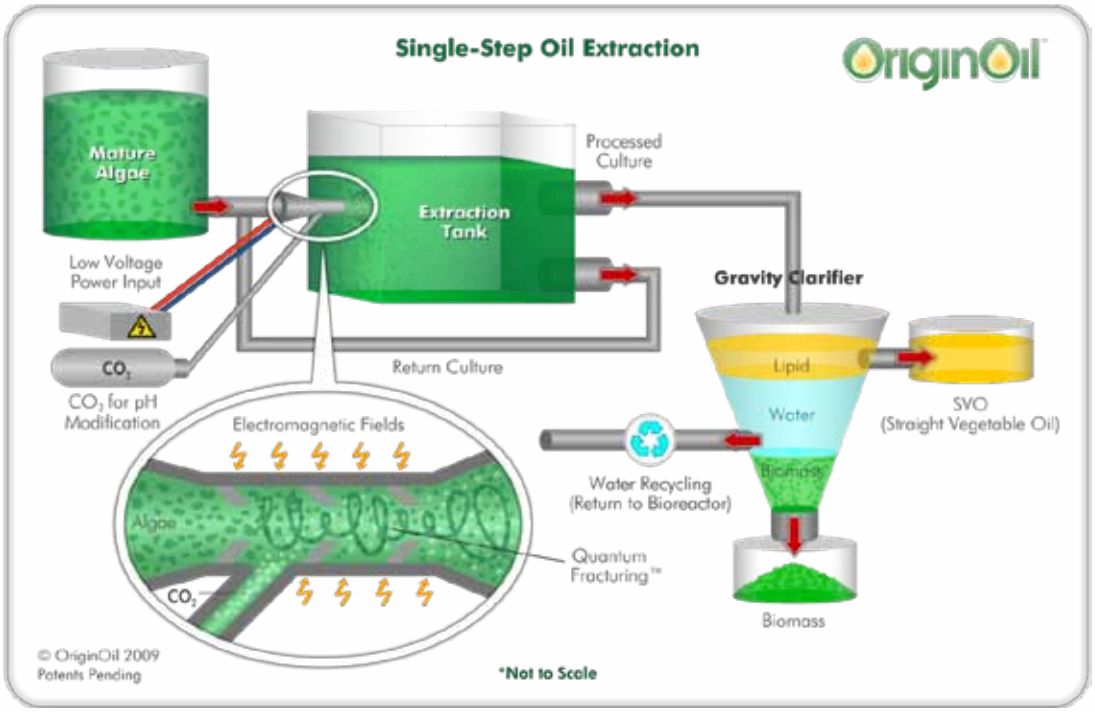
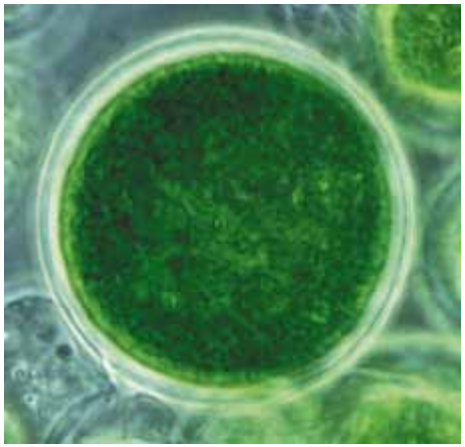
OriginOil Single-Step Extraction™



- In one step, Quantum Fracturing™ combines with electromagnetism and pH modification to break down cell walls.
- Algae oil rises to the top for skimming and refining, while the remaining biomass settles to the bottom for further processing as fuel and other valuable products.

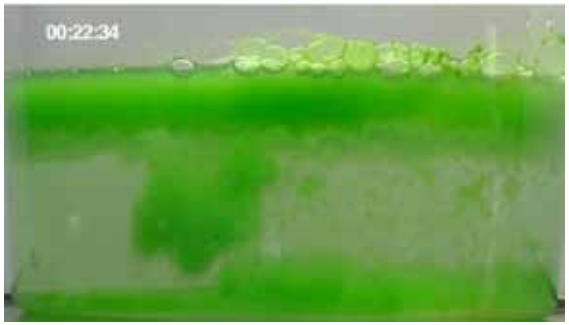
Single-Step Extraction Process Details

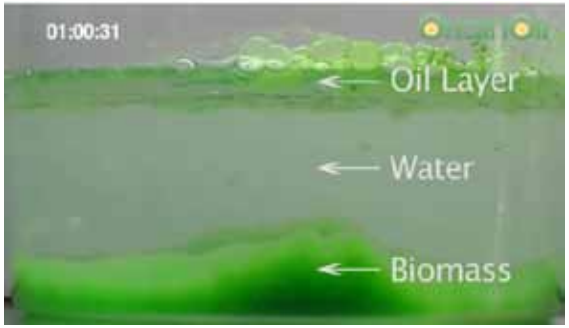
- CO_2 Injection
  - Lowers pH to optimize electromagnetic delivery
  - Chemically assists in cell degradation
- Quantum Fracturing
  - Creates fluid fracturing effect
  - Mechanically distresses algae cells
- Electromagnetic Field
  - Highly tuned EMP ruptures algae cells
  - Causes cells to release internal lipids
- Additional Key Process Innovations
  - Multiple patents pending



Gravity Settling

- Single Step Extraction separates oil from biomass
- Processed culture is transferred to a gravity clarifier
  - Oil rises to the top
  - Biomass sinks to the bottom
- Oil is skimmed for downstream polishing
- Biomass is drained for further drying (if necessary)
- Water is recycled to the bioreactor or pond





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Single Step Extraction Benefits

- No initial dewatering required
- Significant energy savings
- No caustic chemicals
- Tunable to a wide range of feedstock
- Small footprint
- Easy installation
- Applicable to all growth platforms
- Fast throughput – highly scalable
- Greatly-reduced Capital Expenditure
- Oil quality
- Electro-flocculation (aka Electro-coagulation)

Max ONE - (Mobile Algae eXtraction lab)

On the road in New Mexico

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MBD Energy Bio-Capture (Australia)

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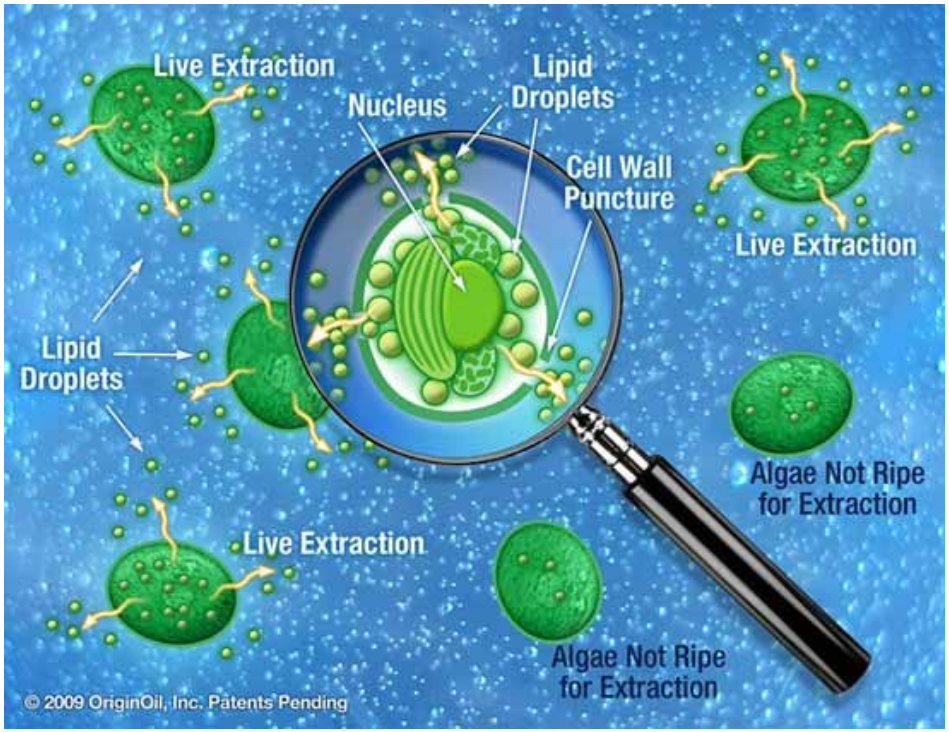
Live Extraction™



- Continuous ‘milking’ process works by stimulating the algae cells electrically.
- Algae oil is extracted continuously, algae remains alive.
- Combines with daily harvest for improved productivity, refreshed cell cultures.
- Does not use expensive consumables, not limited to one strain.
- Now being scaled up to OriginOil’s intermediate 200-gallon tank size.

OriginOil Achieves Hydrogen Production Comparable to Photovoltaics

Los Angeles, CA, November 8, 2010

- Demonstrated reproducibly hydrogen energy corresponding to a solar energy conversion efficiency of about 12% continuously for several hours on a partially clouded day

- The sole energy input was the Sun

- By comparison, commercial solar cells achieve conversion efficiencies between 6 and 20% but the Hydrogen Harvester™ is still embryonic – and hydrogen can be readily stored

- The research breakthrough points to a highly scalable and renewable source of hydrogen that can be deployed as an additional system output in algae production settings

Hydrogen has often been called the perfect fuel. Its major reserve on earth (water) is inexhaustible, meaning that we will never run out of hydrogen. If produced cleanly, efficiently and affordably from renewable resources, hydrogen is the ultimate green energy solution: it produces no air pollutants or greenhouse gases when used in fuel cells and the only pollutants generated when burned in internal combustion engines are nitrogen oxides (NOx).

In one hour, enough sunlight strikes the Earth to provide the entire planet's energy needs for one year.

The Benefits of Hydrogen

In addition to generating hydrogen as a clean energy source in it's own right, the co-generation of hydrogen at algae production facilities is a critical development for the realization of a completely integrated algal biorefinery.

Refining algae into "drop-in" fuels compatible with existing infrastructure, such as renewable diesel and jet fuel, typically requires hydrogen for the hydrotreating process. Hydrogen Harvester technology can eliminate the need for hydrogen pipelines, and dependence on existing refineries that are typically far removed from locations that are best for algae growth.

Recovering hydrogen also provides the necessary ingredients for electricity generation using fuel cells. The energy can be used to offset the electricity requirements of algae cultivation, harvesting and downstream processing.

Status and Next Steps

- Single-Step Extraction:
  - Early 2010, launched pilot scale lab system (3-5gpm algae culture)
  - Mid-2010, launched mobile algae extraction system (ALGAEMAX) – on-site demos to interested algae companies.
  - First commercial sale to MBD Energy, Australia: Installed in November 2010.
  - Larger-scale deployments anticipated in 2011.
  - Ongoing discussions with OEMs.
- Live Extraction:
  - Currently scaling up to 200-gallon tank system.
  - Testing productivity singly and in tandem with daily harvest and Single-Step Extraction.
- Hydrogen Harvester:
  - Second patent application in preparation.
  - Solar energy conversion efficiency (to hydrogen) of about 12%.
  - Laboratory scale (1 gallon), optimization in progress, external validation planned.

THANK YOU!

Brian Goodall

Chief Technology Officer

QUESTIONS?

INTEREST?

partners@originoil.com