MODEL ON ACCOMMODATION LADDER

AQUIFERS

ACUIFERO	NIVEL	ESTRATOS EN QUE SE ENCUENTRA	PROFUNDIDAD APROX. (bb dp)	CAUDAJ (m3/H)	CALIDAD DE AGUA
Epipuelche	Freática (libre) 1° napa	Pampeano y postpampeano	0 a 10 m	1	Contaminación bactereológica y química
	2° napa (semiconfinada)	Pampeano y postpampeano	10 a 30 m	1 a 40	Aguas duras, a veces con exceso de nitrato, contaminación bactereológica y con oligoelementos (Mn y Fe)
Puelche	3° napa (semiconfinada, multicapa)	Arenas Puelches	40 a 80 m	20 a 150	Muy buena calidad; con exceso de explotación aparecen nitratos y mayor salinidad. Salinidad menor a 2g/l
Hipopuelche	Varios niveles (confinados)	Formación Paraná o "verde"	70 a 150 m	60 a 150	Salina: más 3 g/l de sal
		Formación Olivos "rojos"	>100 m	–	Muy salina: 30 g/l de sal

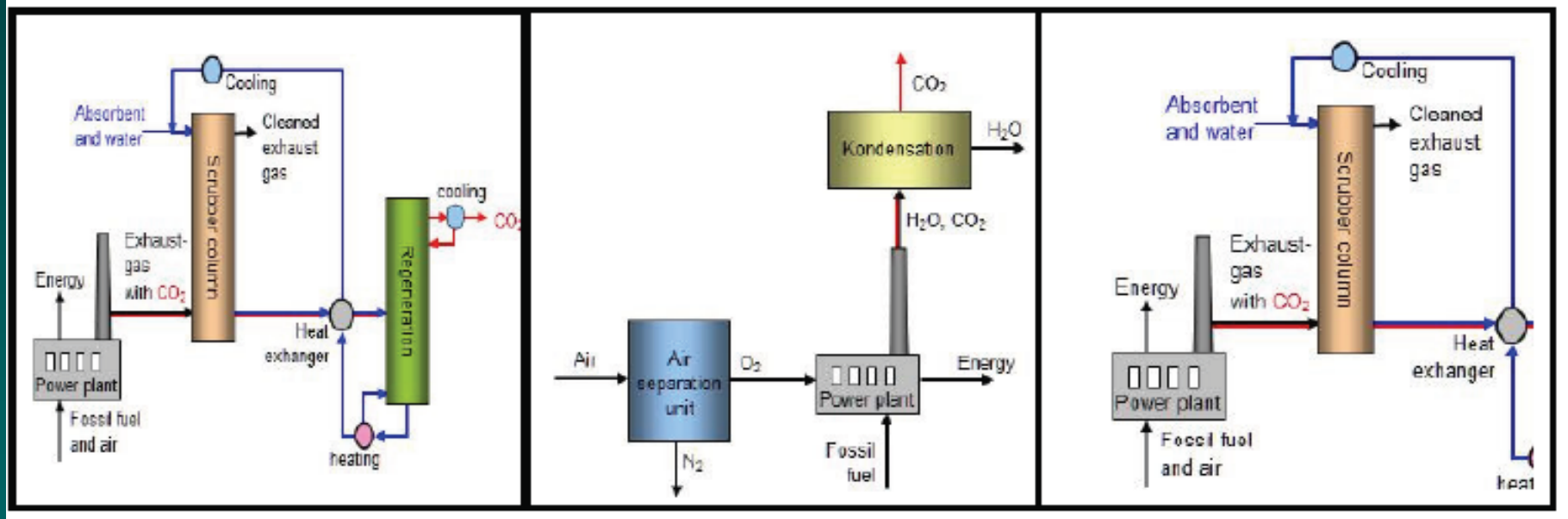
View of the power plant to supply CO_2 emissions

COAL fired power plant

Design CO_2 pipeline route from the power plant to Oil Fox biodiesel facility

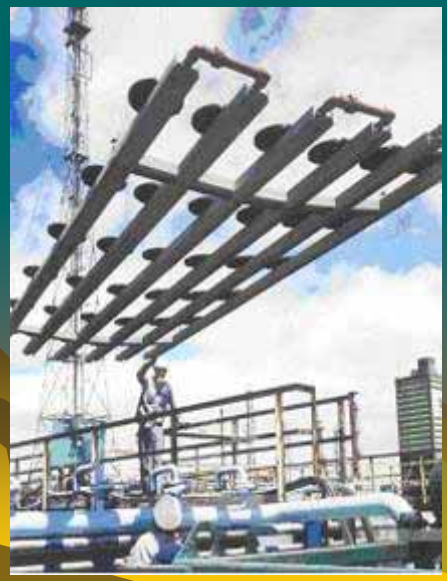
CO_2 Technology Review

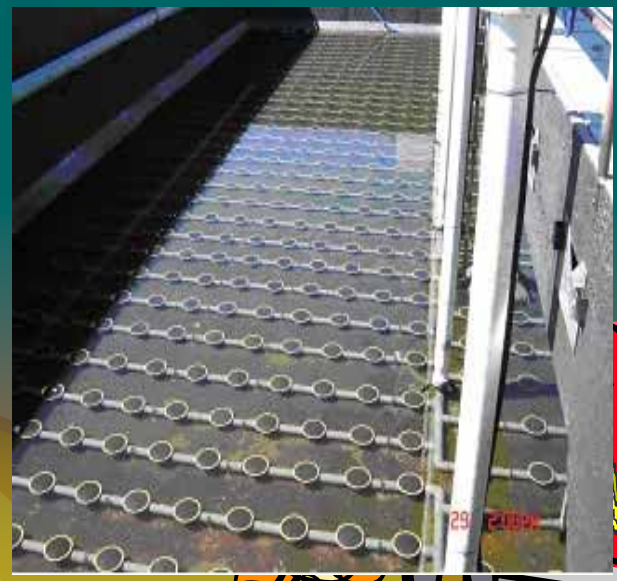
Planta Aminas | **Oxy Combustión** | **Lavado Flue gas**



CO_2 should NOT be bubble supplied directly, but rather previously "wash" it.

BUBBLE CO_2





Major algae-growing costs.

1) Energy.

2) CO_2 supply and piping.

3) Water treatment.

4) Maintenance

5) Oil extraction

6) Nutrient Supply

NUTRIENTS

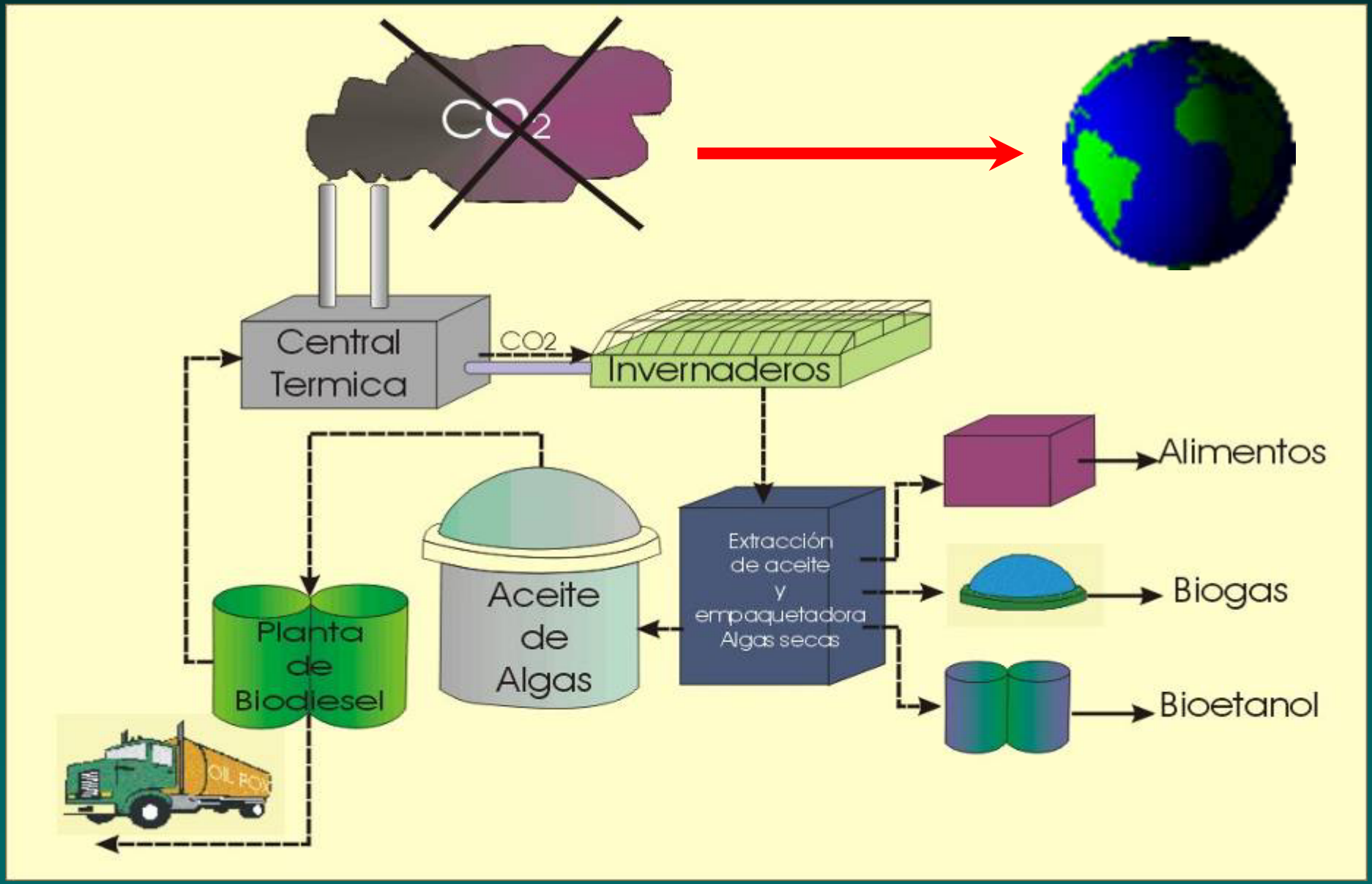
- A major cost not discussed in specialist reference works is nutrients. Unless this cost is kept under control, growing algae for biodiesel processing becomes unfeasible.
- Thus, Oil Fox uses the remnants of the anaerobic digestion of urban or animal waste to supply the salts and nutrients required to continue growing algae, while protecting the environment.
- Also, biogas resulting from biodigestion is supplied to our electrical generators feeding the agitator engines and supplying night light.
- By self-supplying both electricity & nutrients, costs are considerably reduced.

Our cost assessment included an assessment of oil extraction costs. This is essential to ascertain yield.

Seven different methods have been trialled to date.

(Supercritical oil extraction method)

Project Flowchart



Potential Deliverables

- ***FOOD*** (nutrition supplements such as proteins, minerals, vitamins, etc.)
- ***BIODIESEL*** (obtained out of algae oil)
- ***BIOGAS*** (resulting from the anaerobic algae digestion)
- ***BIOETHANOL*** (resulting from the aerobic digestion of cellulose in algae walls)
- ***REDUCED CO_2 EMISSIONS*** (CO_2 is fed to algae with the resulting carbon credits)

Our goal is to process 240,000 TN/year of algae oil. High nutrient costs increased our monthly production cost to almost USD3 million at the expected price of USD200/tn of oil. Efforts are being made to reduce nutrient costs with a view to grow "fat" (instead of "healthy") algae.

FUTURE ALGAE-BASED BIODIESEL FACILITY

One of the few developing projects in the world including a large scale facility (processing 60,000 TN algae-based biodiesel) to be commissioned in 30 days. No land utilisation or threats to local forests.

http://www.oilfox.com.ar/

Our facility under construction

INITIAL COSTS...

INITIAL INVESTMENT			
ITEM	**COST**	**QUANTITY**	**COST**
99M X 10M GREEN HOUSE	$ 8.795,03	2000	$ 17.590.060,00
TRANSPARENT NYLON ROOF	$ 0,59	2520000	$ 1.486.800,00
WHITE NYLON FOR POND FLOOR	$ 1,04	2376000	$ 2.471.040,00
CENTRIFUGE ALGAE DEWATERING PUMP	$ 10.000,00	120	$ 1.200.000,00
CEMENT WALLS	$ 4,00	600000	$ 2.400.000,00
WATER RECIRCULATING SYST.	$ 740,00	2000	$ 1.480.000,00
LIGHTING SYSTEM			
LAMPS & TRANSFORMERS	$ 12,59	20000	$ 251.800,00
LAMP HOUSING	$ 50,00	20000	$ 1.000.000,00
ELECTRICAL INSTALATION	$ 3.000,00	200	$ 600.000,00
CO2 AIR PUMPS	$ 198,00	2000	$ 396.000,00
CO2 GENERATOR			
C02 INJECTION SYSTEM	$ 300,00	2000	$ 600.000,00

... Continued from previous slide

OIL EXTRACTION SYSTEM	$ 280.000,00	20	$ 5.600.000,00
LAND X HA	$ 7.500,00	300	$ 2.250.000,00
BOILER INSTALLATION		2000	$ 0,00
BOILER	$ 20.000,00	40	$ 800.000,00
HARVESTING SYSTEM	$ 1.000,00	2000	$ 2.000.000,00
PERIMETER FENCE	$ 20,00	32000	$ 640.000,00
ELECTRICAL CARTS	$ 4.938,00	200	$ 987.600,00
EMPLOYEE QUARTERS	$ 8.000,00	40	$ 320.000,00
WATER INFRASTRUCTURE	$ 1,00	225000	$ 225.000,00
WATER VALVES	$ 10,00	2000	$ 20.000,00
170M3 PVC WATER TANKS	$ 15.000,00	40	$ 600.000,00
WATER SUPPLY AND PUMP	$ 3.000,00	40	$ 120.000,00
PUMPS	$ 500,00	40	$ 20.000,00
START-UP MINERALS	$ 6.893.370,00	1	$ 6.893.370,00
OIL PIPING TO BIO PLANT	$ 500.000,00	1	$ 500.000,00
OIL EXTRACTION INFRASTRUCTURE	$ 50.000,00	12	$ 600.000,00
TOTAL			**$ 51.051.670,00**

MONTHLY COST

MINERALS			1	$ 100.000,00	3000000
ELECTRICITY	cost kw/h	kw/h x day			
WATER CIRCULATION	$ 0,06	4,5	2000	$ 540,00	$ 16.200,00
CO2 air pump	$ 0,06	2,6	2000	$ 312,00	$ 9.360,00
ALGAE ILUMINATION	$ 0,06	5,8	20000	$ 6.960,00	$ 208.800,00
electric carts loading	$ 0,06	0	200	$ 0,00	$ 0,00
PUMPS for algae harvesting	$ 0,06	3	2000	$ 360,00	$ 10.800,00
CENTRIFUGAL WATER EXTRACTION	$ 0,06	110	120	$ 792,00	$ 23.760,00
OIL EXTRACTION machinery	$ 0,06	280	20	$ 336,00	$ 10.080,00
LIGHTING AND OVERHEADS.	$ 0,06	0,15	2000	$ 18,00	$ 540,00
TOTAL DAILY REQUIREMENTS		**406,05**			
BOILER COST	$ 0,10	3700000	1	$ 12.333,33	$ 370.000,00
CO2 GENERATION COST					
SALARY	$ 1.300,00	1	100	$ 130.000,00	$ 130.000,00
ROYALTY / ton of oil	$ 20,00	1		$ 13.333,33	$ 400.000,00
TOTAL				$ 264.984,67	**$ 4.179.540,00**
total project is for a minimum of 20.000 mt of oil per month, for which the cost of oil would be					**$ 208,98**

OIL FOX

The first ALGAE based BIODIESEL brand in Argentina

Thank you very much!!!

Jorge Kaloustian – Berlin 2009

www.oilfox.com.ar