ALS Bioenergy

Biocombustibles y Energías Alternativas ALS S.A.


Responsibility » Technology » Innovation » Development

ALS Bioenergy

Our Mission:

- Development of sustainable Bio Energy production.

Our Goals:

- Active Corporate Social Responsibility.
- Achieve a sustainable production system.
- Joint Ventures developments.
- Sustainability Certification by the United Nations.

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Know How development:

- Technological innovation.
- No effluents (no negative environmental impact).
- Self-sufficient in power.
- Decontaminant (positive environmental impact).
- Commodities transformation.
- Generation of new working sources.
- Greater added value for by-products.
- Introduction of new vegetable species for bioenergy production.
- Development of financing models of non-reimbursable funds.

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ALS developments:

- Project and design of a Biodiesel production plant with “second generation technology”.
- Accomplished development of biodiesel production plants as business units.
- Innovative logistic solutions.
- Framework agreements signed with institutions and governmental organizations.

Comparative advantages: Biodiesel development in Argentina.

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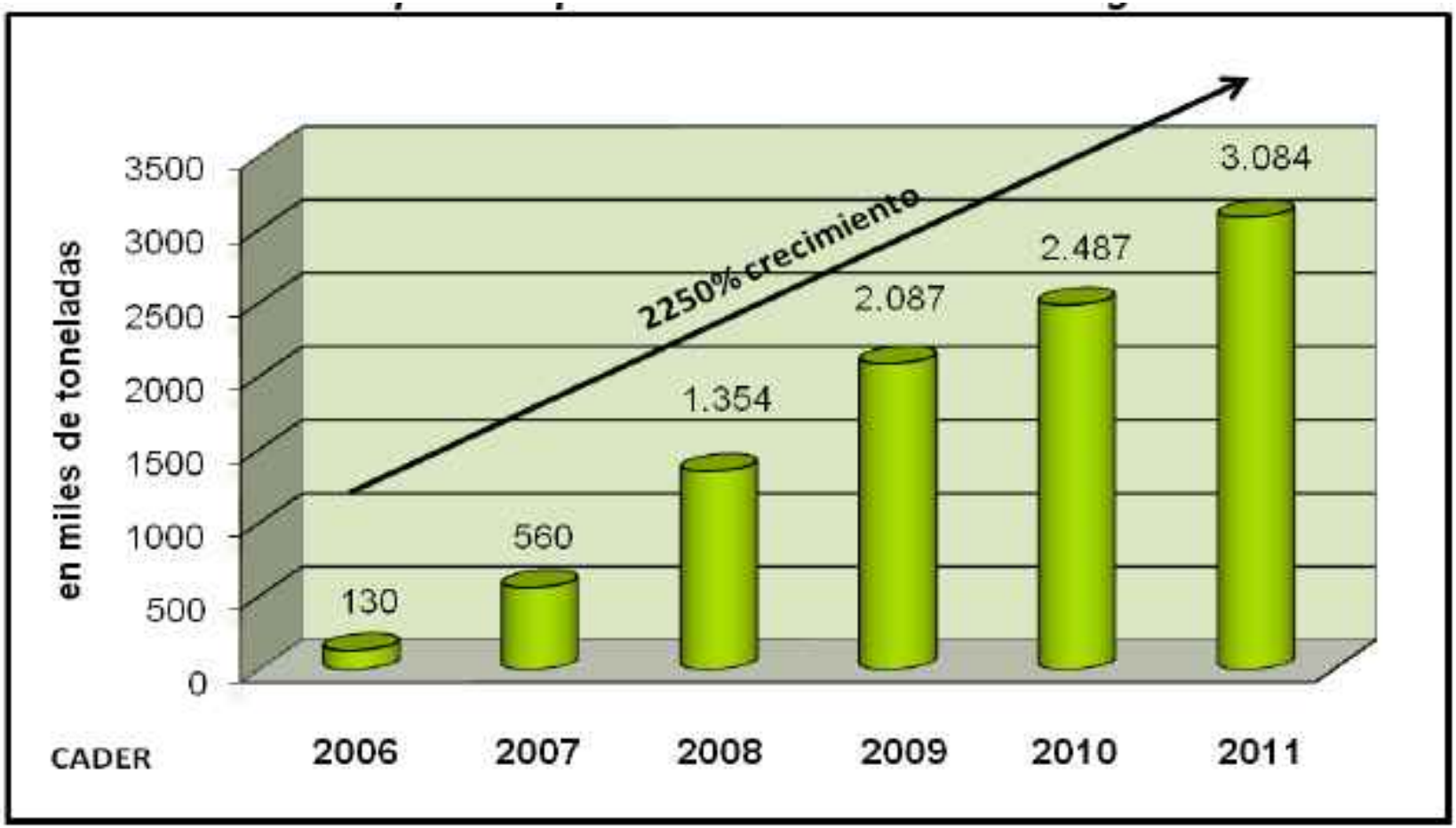
Capacity Evolution



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Capacity Evolution

#	Empresa Productora Biodiesel	2006	2007	2008	2009	2010	2011
1	Vicentin SA	48000	48000	48000	63400	63400	63400
2	Biomadero SA	30000	30000	30000	72000	72000	72000
3	Pitey SA	18000	18000	18000	18000	18000	18000
4	Soyenergy SA	18000	18000	18000	18000	18000	18000
5	Advanced Organic Materials SA	16000	16000	48000	48000	48000	48000
6	Renova SA		200000	200000	480000	480000	480000
7	Ecofuel SA		200000	200000	240000	240000	240000
8	Diaser SA		30000	30000	96000	96000	96000
9	LDC Argentina SA			305000	305000	305000	305000
10	Unitec Bio SA			230000	230000	230000	230000
11	Explora SA			120000	120000	120000	240000
12	Molinos Rio de la Plata SA			100000	100000	100000	100000
13	Energía Renovables Argentinas SA			6500	6500	9600	9600
14	Patagonia Bioenergia SA				250000	250000	250000
15	Ecopor SA				10200	10200	10200
16	Diferoil SA				30000	30000	30000
17	Viluco SA					200000	200000
18	Aripar Cereales SA					50000	50000
19	Oil Fox SA					50000	50000
20	Maikop SA					40000	40000
21	Rosario Bio Energy SA					36000	49000
22	Hector Bolzan & Cia. SA					10800	10800
23	New Fuel SA					10000	10000
24	Cargill						240000
25	Unitec Bio SA						220000
26	B.H. Biocombustibles SRL						4000
Capacidad de producción al final del año, toneladas		130.000	560.000	1.353.500	2.087.100	2.487.000	3.084.000

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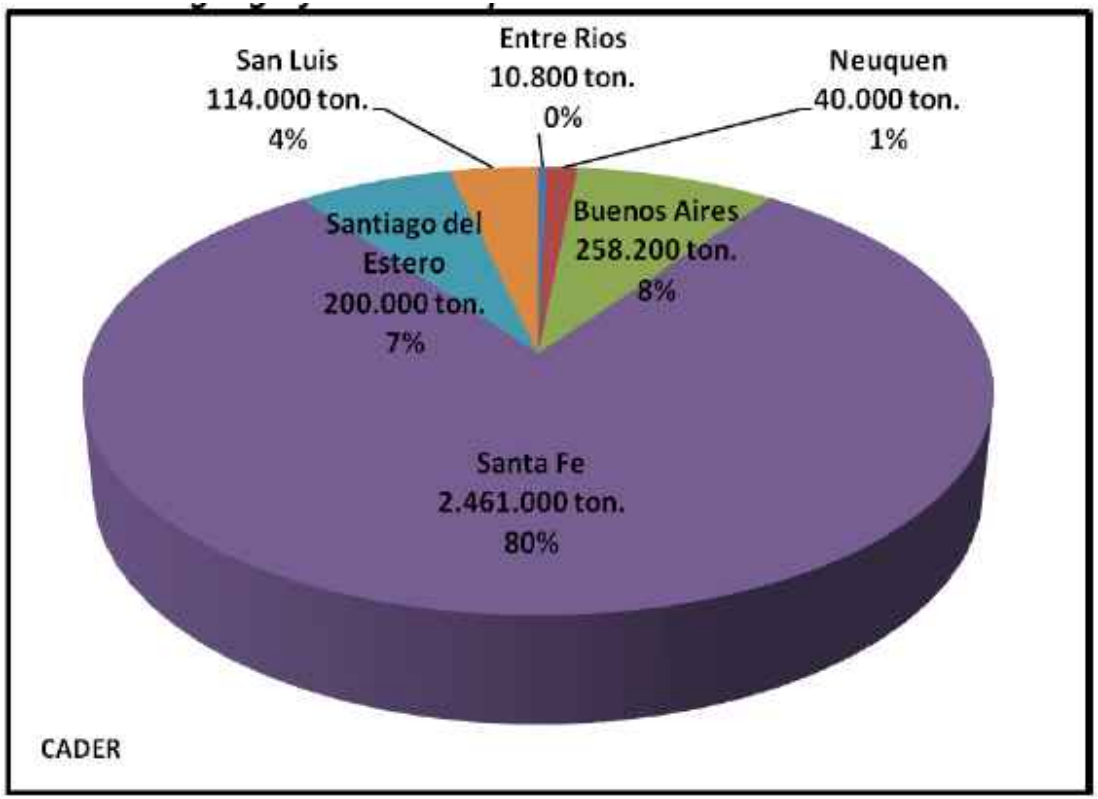
Capacity Geographic Distribution



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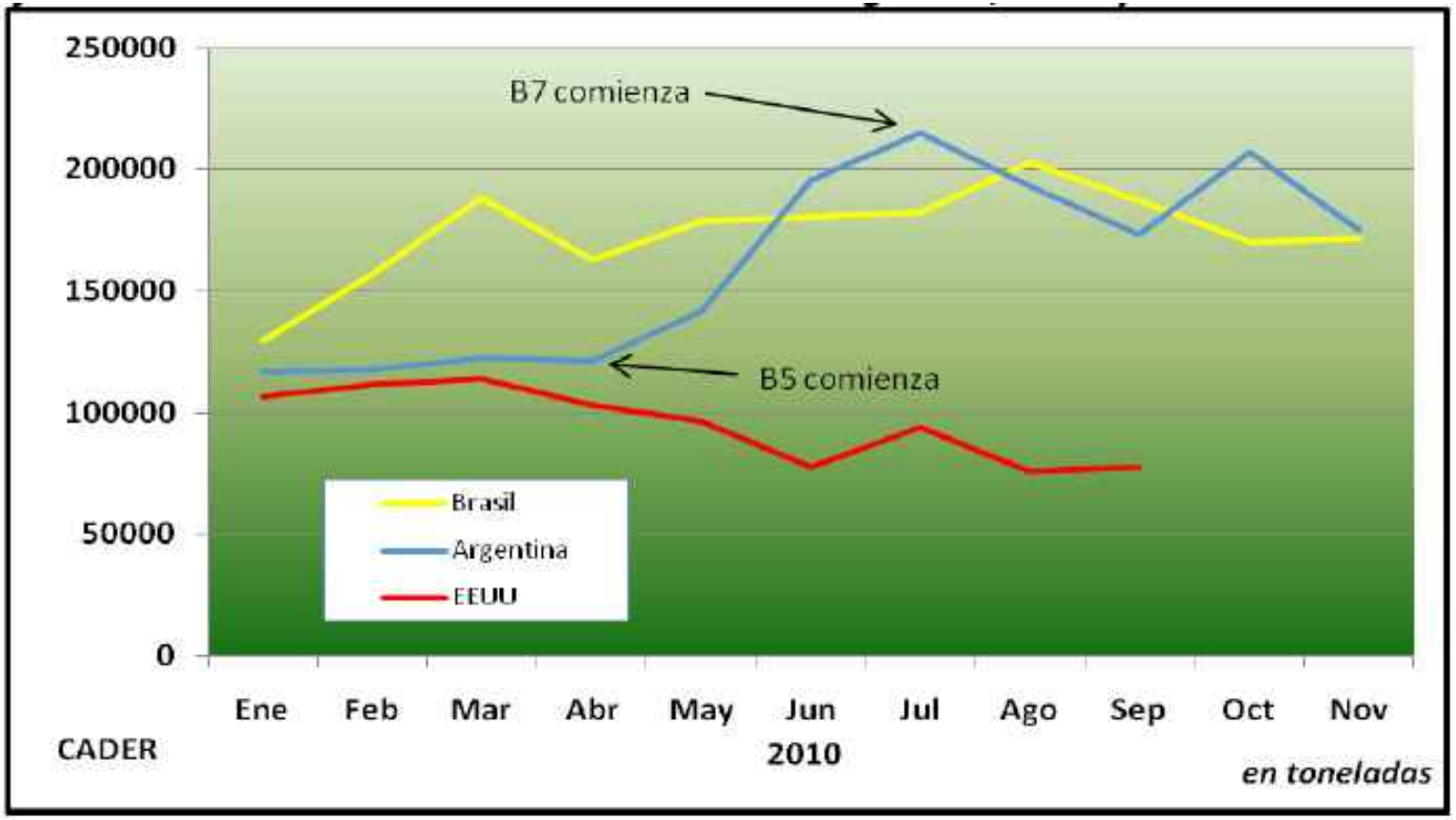
Comparative Biodiesel Production



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Argentinean as world productor Evolution

Rank	2007	2008	2009	2010 (proyectado)
1	Alemania	Alemania	Alemania	Alemania
2	EEUU	EEUU	Francia	Francia
3	Francia	Francia	EEUU	Brasil
4	Italia	Brasil	Brasil	**Argentina**
5	Brasil	**Argentina**	**Argentina**	EEUU
6	Austria	Italia	España	
7	**Argentina**	Malasia	Italia	
8	Portugal	Bélgica	Malasia	
9	España	Polonia	Bélgica	
10	Malasia	Portugal	Polonia	

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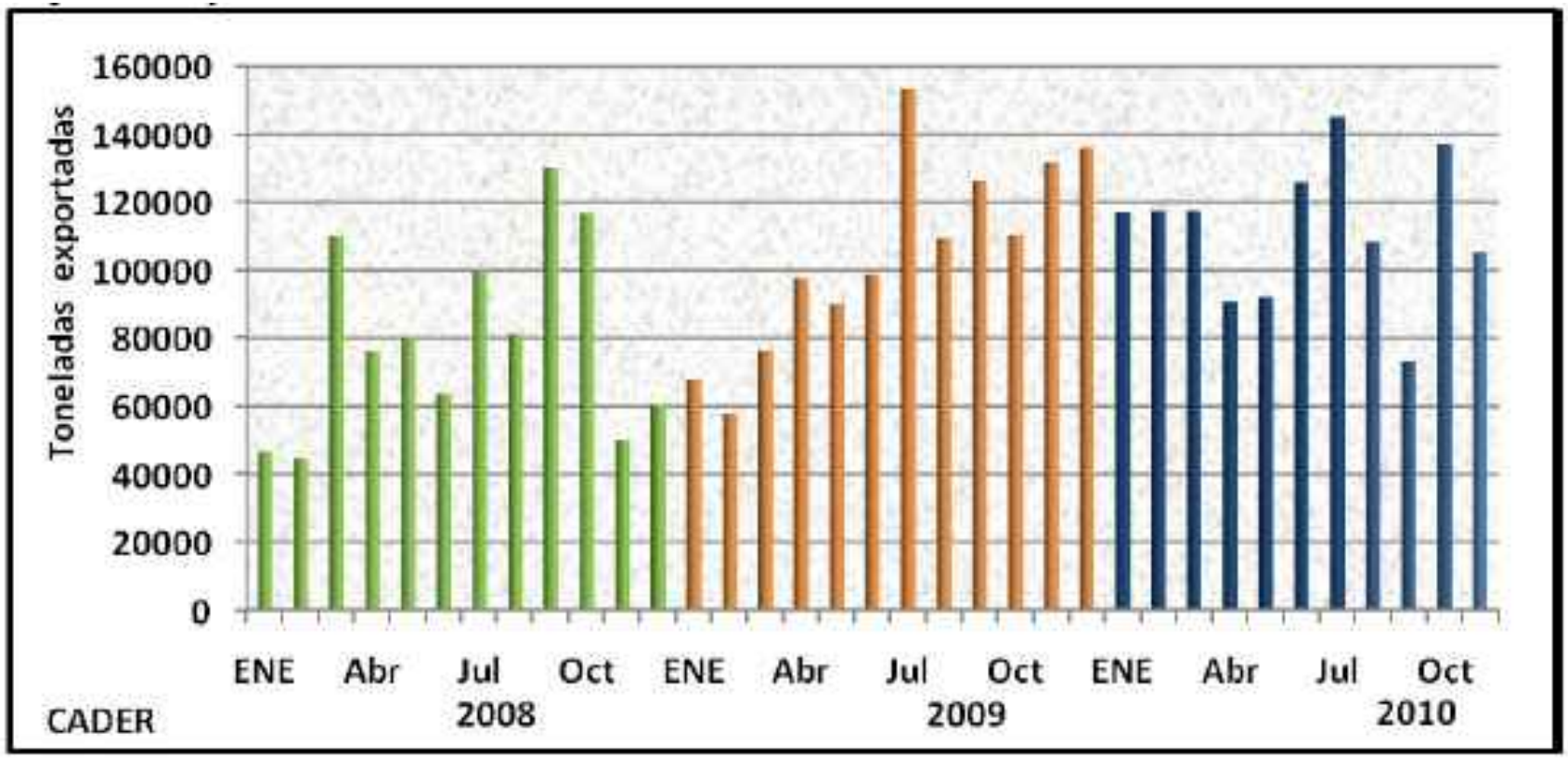
Argentinean Exportation Evolution



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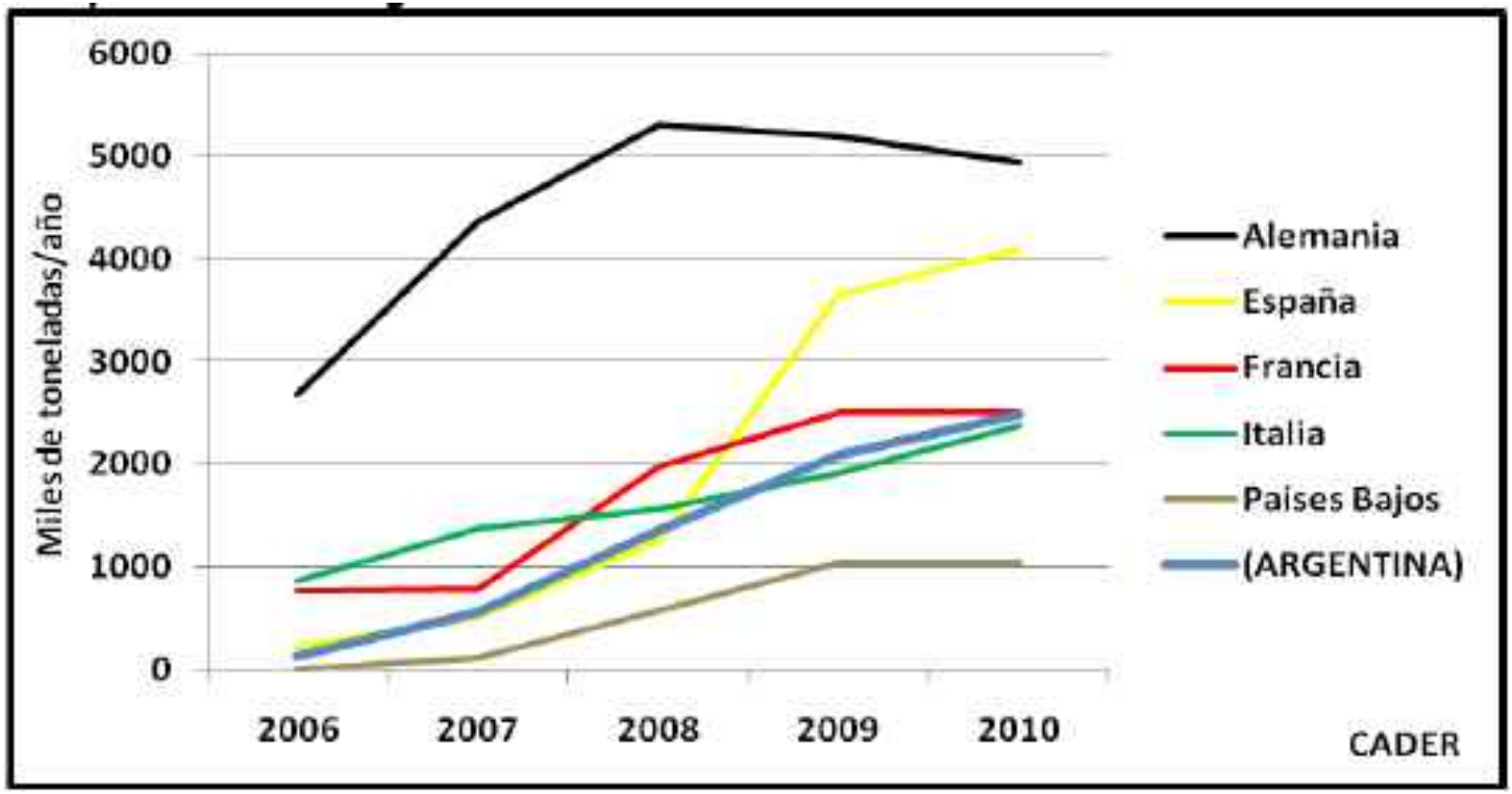
Argentina Vs Europe - Production Evolution



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International Biodiesel Price Evolution

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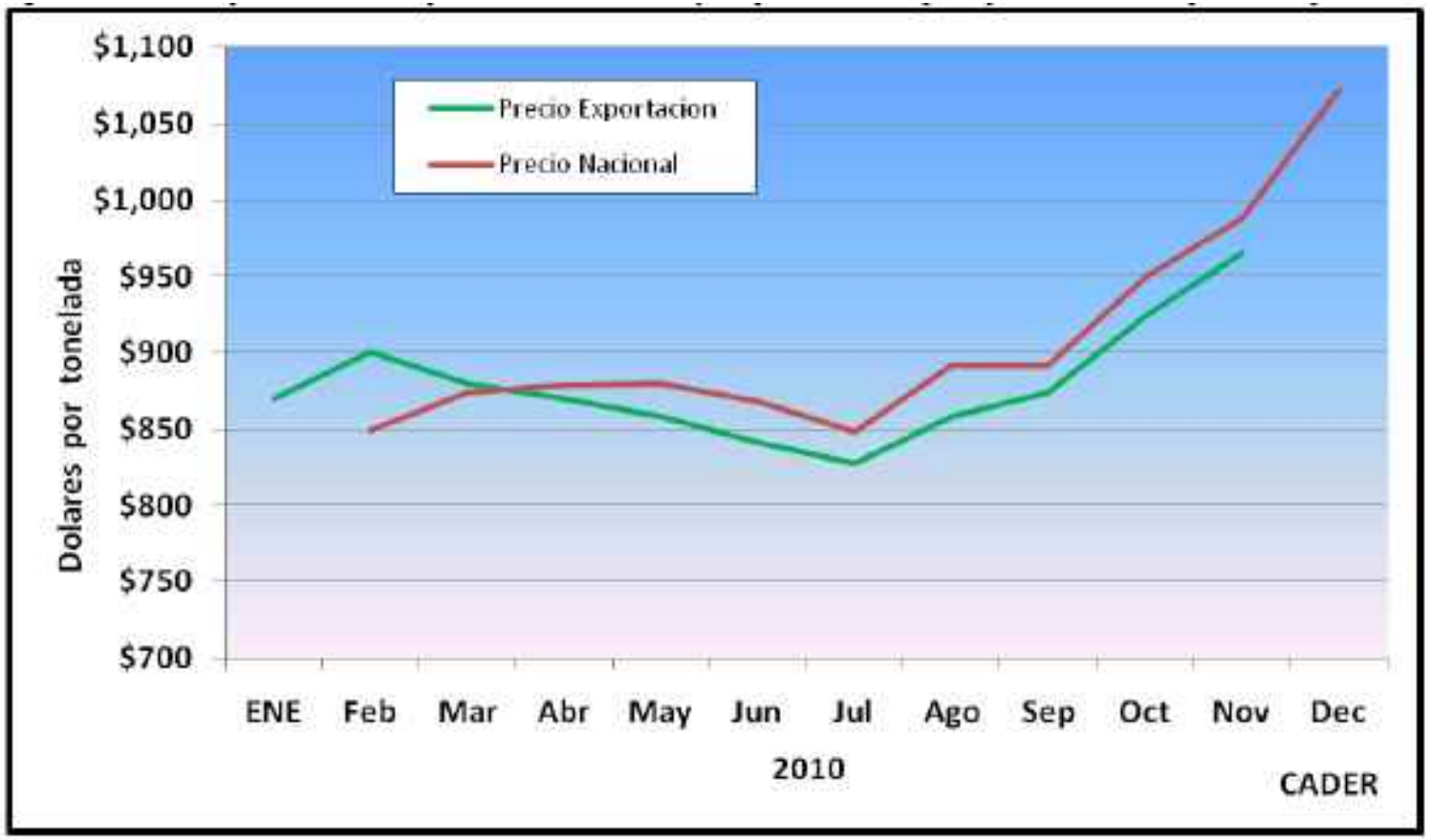
International Vs National Biodiesel - Price Evolution



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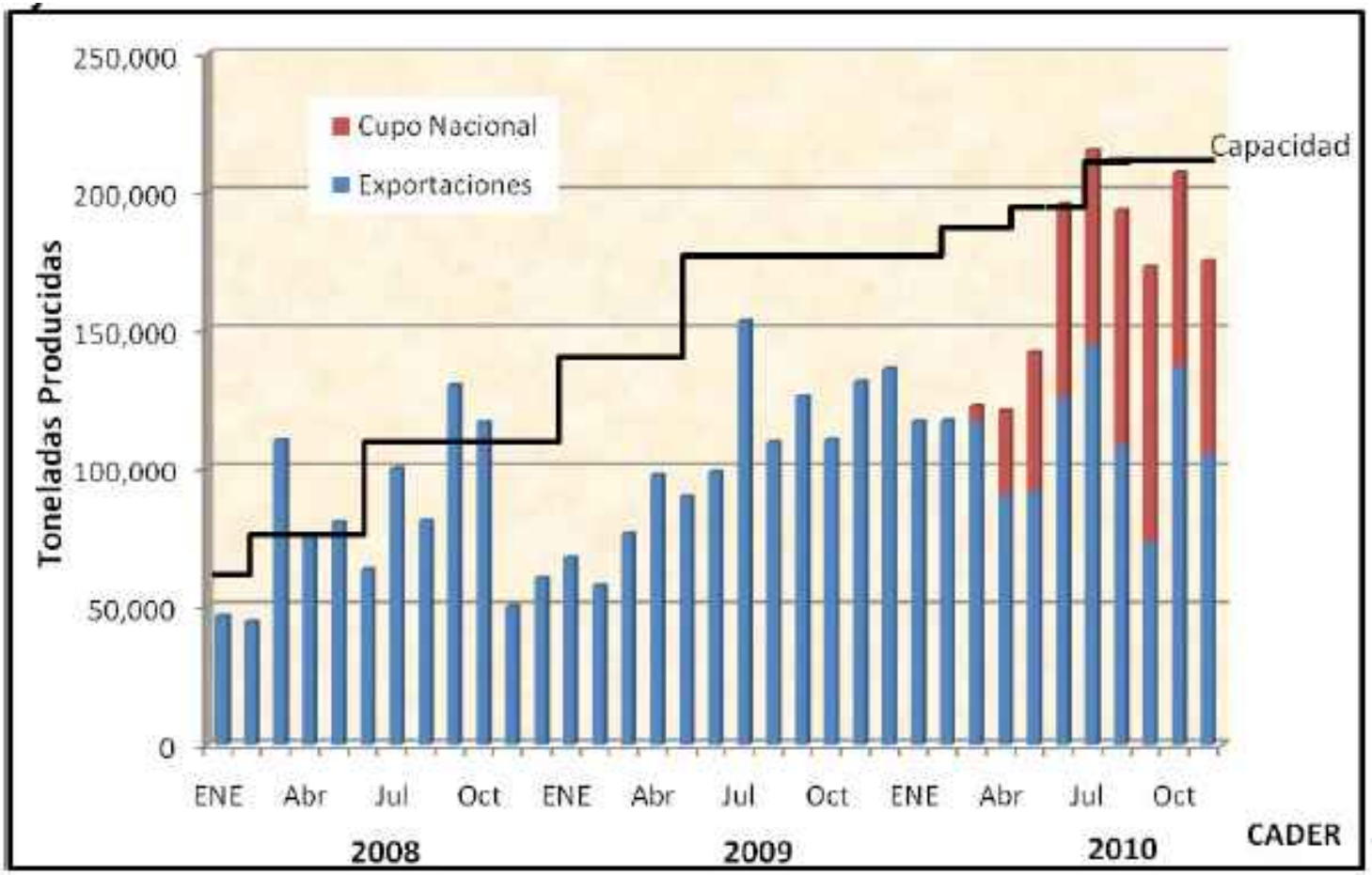
Argentinean Biodiesel Market Evolution



Comparative advantages of biodiesel development in Argentina

Hidrovía Paraguay-Paraná

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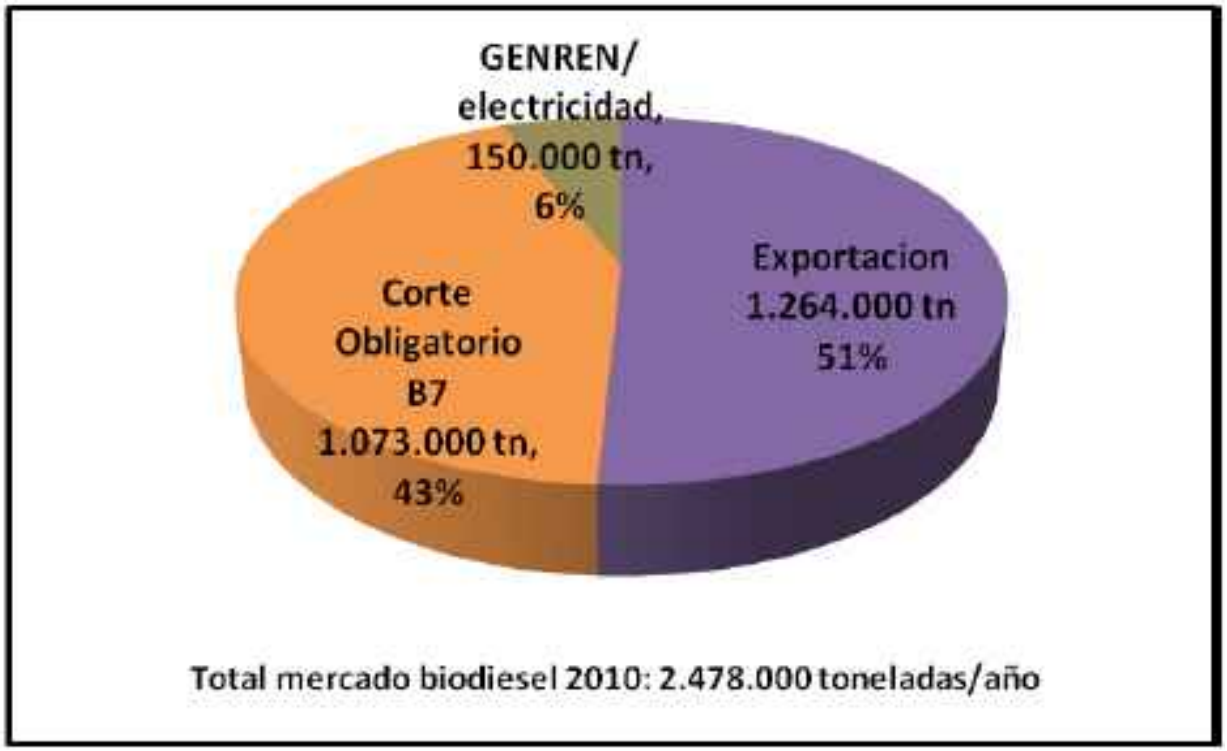
Argentinean Biodiesel National Market – Principal Clients



2.3 Plant Location – Comparative Advantages

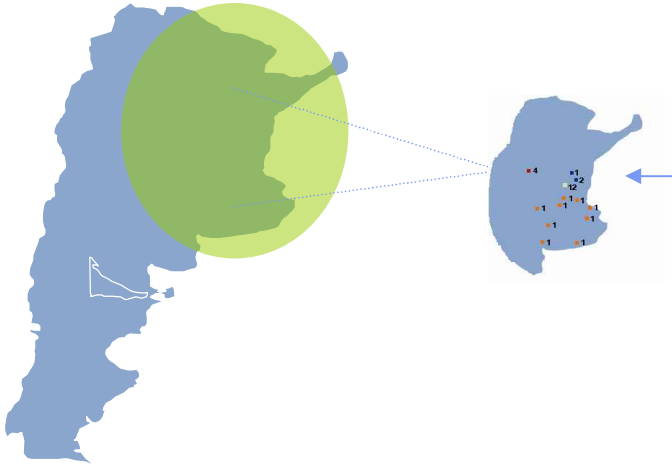
The Agricultural production is mainy concentrated in the provinces of Santa Fe, Buenos Aires, Cordoba and Entre Rios.

ALS has made agreements with other agricultural producers for the supply of feedstock used during the industrial processes.

Location

- The Oil Industry has been developed mainly in the middle area of the country, where Rosario is the main exponent at a national level. In Argentina, soy is the predominant crop and 99% of its national yield is concentrated in the provinces of Santa Fé, Buenos Aires and Córdoba.
- This project is planned to be located in the area of Zarate. This city is located between the main producers: Buenos Aires and Rosario.
- ALS has reached oil supply agreements with the area's producers.
- Goods can be transported either by land or river. Its close location to hydrovia alows the use of river barges.

Location of oil plants



Most oil plants are located in Santa Fe, most exactly in Rosario area.

Capacidad Instalada	%
Santa Fé	84%
Buenos Aires	8%
Córdoba	7%
Entre Ríos	1%

2.3 Plant Location – Comparative advantages

Location

Zarate city has an important commercial activity and runs numerous industries, amongst which we can name: paper, chemical and brewery industries. There is also an automotive industry located in the North boundaries of the Metropolitan area of Buenos Aires.

- 50 minutes from/to Buenos Aires.
- 2 hours from/to Rosario.
- Wide access roads.
- It has access to National Roads 9 and 12 which link northbounds to mesopotamian provinces and to Brazil, Paraguai and Uruguai, through the bridge Zárate-Brazo Largo, and southbounds through Panamericana Road to Federal Capital.
- The city has two railroads, NCA and General Urquiza, which connect the city with Brazil, Uruguai and Paraguai.

Zarate Port:

There are three private terminals and a provincial dock: VITCO Fuels Terminal, specialized in fuels transship and its by-products; Zarate Port is specialized in general loads, dry bulks, fertilizers and container vessels by means of a floating deck; and Autoterminal Zárate, is the main port used in Latin-America for the transportation of vehicles. Close to Zárate there is a complex called Delta Dock and a nuclear plant dock called Atucha. The access to this complex is by the main channel of Paraná de las Palmas River, with a width of 100 mts and a maximum depth of 70 feet. .

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Production Process Description

3.1 Stages involved in Biofuels Industrial Process

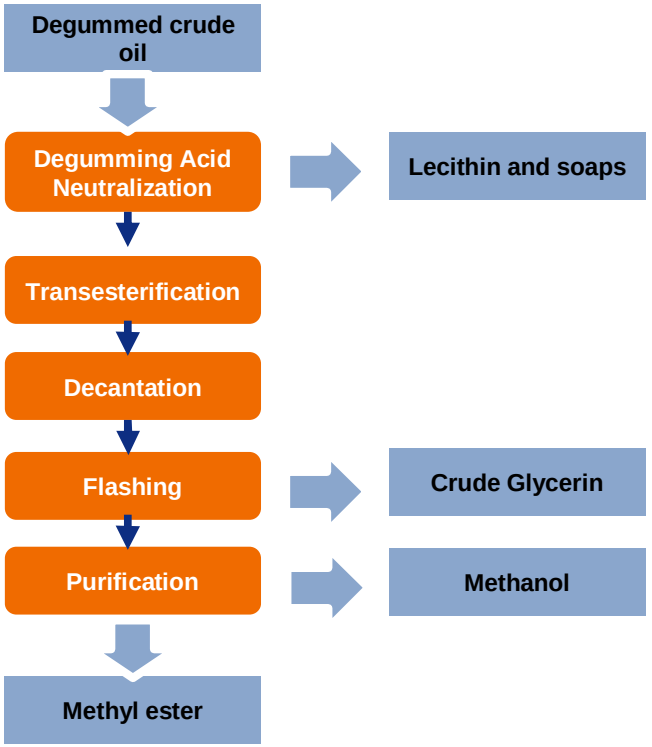
Industrial Process

Biodiesel production process has been known for a long time and generally comprises the following stages:

• Degumming: the main purpose of degumming is to eliminate phosphatides and glycolipids, as part of an initial purification process. Phosphatides are chemical compounds caused by high phosphorus content in crude soy oil.
• Neutralization: consists in lowering the acidity of used oils into around 1% (quality of degummed crude soy oil), in order to reach a maximum acidity of 0.1%.
•Degummed and neutralized crude oil is processed through different stages such as:

- Transesterification, which is a chemical reaction by which glycelor that is present in oils is substituted by an alcohol (methanol) through a catalyst.
- Flashing (warming) and Purification.

- By means of this production process, Biodiesel (Methyl ester) is obtained and also Glycerin as a by-product, which is used mainly for pharmaceutical or cosmetic purposes.



3.2 Conventional Process Description and ALS Technology

ALS proposed technology provides reduced initial investments and improved performance and investment margins.

Saybolt has validated the production process developed by ALS.

1.Conventional production process

The production process for biodiesel has been known for many years and in the present it is produced through the use of conventional technologies, either through batch or continuous production and washing by the use of water.

This type of conventional production process involves the use of large-scale plants with high loss levels by conversion, which require the use of a very specific feedstock with technical parameters in order to obtain high quality biodiesel.

2. Proposed Technology

ALS has developed a biodiesel production process that has been validated in the United States by Saybolt firm, a leading american company in biofuels testing. This company makes tests and verifies standards following norms EN 14214 and ASTM D 6751.

Furthermore, ALS has reached a strategic, technical and commercial agreement with Dow Chemical Argentina, for the building of biodiesel plants and technology trading.

The production process proposed by ALS implies important technical, economic and environmental advantages compared to the traditional production process of biodiesel.

This process uses:

a) Ion-exchange resins developed by DOW (B10, B19 y B20) which, due to their qualities, allow to:

- Reduce considerably the initial investment
- Begin the production process with a wide variety of feedstocks (multi-feedstock process).
- Not to use water or acids in the production process
- Improve the quality of obtained biodiesel.

b) Cavitation technology provided by a well-known American company. Due to ALS developments, this technology achieves an oil convertion ratio in biodiesel which widely exceeds the one obtained from traditional technology.

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3.3 ALS Technology v. Traditional Technology

ALS technology allows the use of different feedstocks, safeguarding future supply price fluctuations.

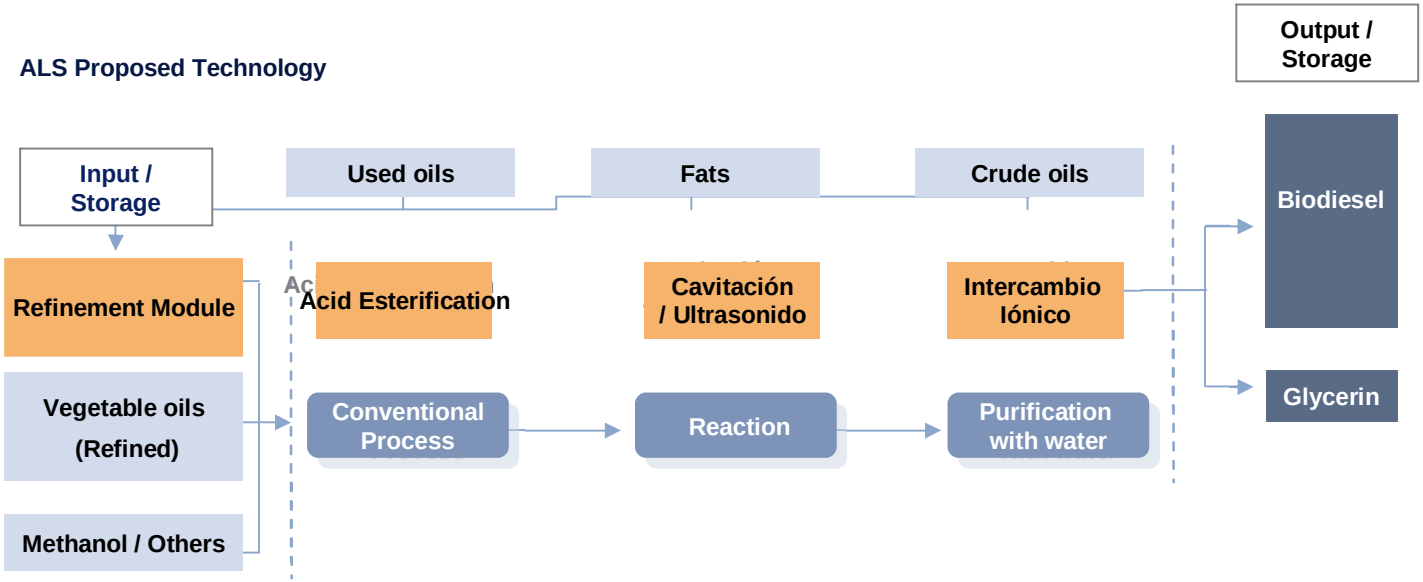
ALS technological process increases the convertion ratio improving the project's profitability.

This process uses DOW technology allowing a green process with economic advantages that differentiate it from traditional technology.

ALS vs. Traditional Technolgy Production process flow

- Feedstocks: ALS process uses not only soy oil, but also used oils, animal fats, several crude oils and second and third generation supplies.
- Acid Esterification: This process converts the acid contained in biodiesel oil through the use of B19 resins, instead of the conventional process by which the acid contained is decreased. It is important to notice that for every 1% of acidity in oil, 3% is lost in biodiesel conversion.
- Reaction: Ultrasound accelerates the chemical reaction process and enables transesterification of vegetable oils and animal fats in biodiesel. This process reduces the hours or minutes consumed by the use of conventional technology into seconds, due to its cavitation technology.
- Purification process: The ionic exchange produced by B10 resins is used in the purification process, eliminating the use of water, thus obtaining final higher quality results without effluents.

ALS Proposed Technology



3.5 Technical Results Validation

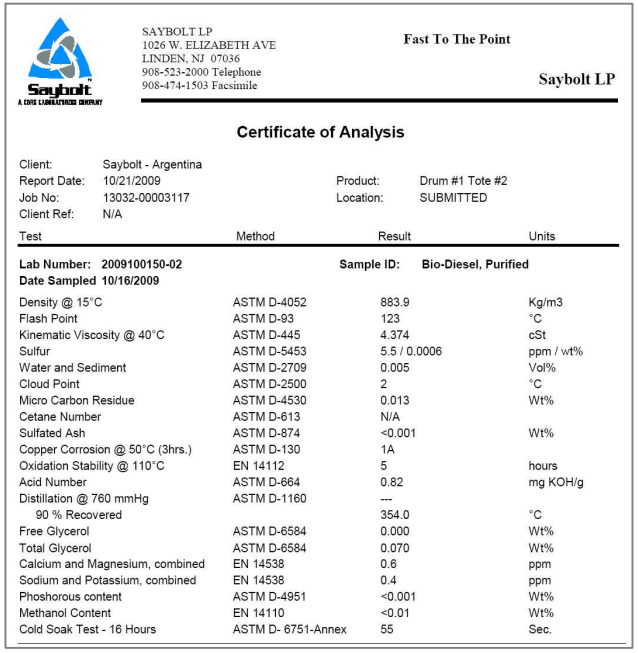
Saybolt is a well known firm which specializes in biodiesel quality validation and certification.

To have obtained Saybolt certification proves the intrinsic efficiency of the proposed technology process.

Validated technical results

- Saybolt has made strict tests in order to obtain a product quality validation and certification in the use of ALS technology process. The validated technical results show the important advantages of this innovating technology.

- The Production process allows to:
  - Convert 99% of oil in biodiesel
  - Obtain high quality biodiesel and glycerine
  - Use multiple feedstocks
  - Obtain Scalability
  - Not generate effluents
  - Reduce considerably initial investment and production costs.



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Fast To The Point

Saybolt LP

Certificate of Analysis

Client: Saybolt - Argentina
Report Date: 10/21/2009 Product: Drum #1 Tote #2
Job No: 13032-00003117 Location: SUBMITTED
Client Ref: N/A

Test	Method	Result	Units
Lab Number: 2009100150-02		**Sample ID: Bio-Diesel, Purified**	
Date Sampled 10/16/2009			
Density @ 15°C	ASTM D-4052	883.9	Kg/m3
Flash Point	ASTM D-93	123	°C
Kinematic Viscosity @ 40°C	ASTM D-445	4.374	cSt
Sulfur	ASTM D-5453	5.5 / 0.0006	ppm / wt%
Water and Sediment	ASTM D-2709	0.005	Vol%
Cloud Point	ASTM D-2500	2	°C
Micro Carbon Residue	ASTM D-4530	0.013	Wt%
Cetane Number	ASTM D-613	N/A	
Sulfated Ash	ASTM D-874	<0.001	Wt%
Copper Corrosion @ 50°C (3hrs.)	ASTM D-130	1A	
Oxidation Stability @ 110°C	EN 14112	5	hours
Acid Number	ASTM D-664	0.82	mg KOH/g
Distillation @ 760 mmHg	ASTM D-1160	---	
90 % Recovered		354.0	°C
Free Glycerol	ASTM D-6584	0.000	Wt%
Total Glycerol	ASTM D-6584	0.070	Wt%
Calcium and Magnesium, combined	EN 14538	0.6	ppm
Sodium and Potassium, combined	EN 14538	0.4	ppm
Phoshorous content	ASTM D-4951	<0.001	Wt%
Methanol Content	EN 14110	<0.01	Wt%
Cold Soak Test - 16 Hours	ASTM D- 6751-Annex	55	Sec.

4.1 Sales Prices and production costs

The price is determined by a formula developed by the Energy Secretariat.

A necessary initial investment 5 times smaller and 20% smaller operating costs than by using conventional technology.

Established sales price

- The agreement signed by the Energy Secretariat has established a formula to determine biodiesel price. Based on the prices and costs, the price will be of approximately USD 1230 by ton of biodiesel. This price does not include the profits that can be obtained by glycerin.
- The established price mechanism has the advantage of isolating the price business margin which corresponds to the feedstocks used.
- Producers will also obtain glycerin as a by-product, thus, obtaining an additional profit of USD 25 for every biodiesel ton.

Precio de venta según formula de Secretaria de Energía	
Componentes del precio en USD	
Costo de aceite FAS	840
Costo de compra	42
Costo de transporte	10
Merma de producción (6%)	50
Costo del metanol	71
Demás componentes del costo	164
Utilidad	28
Precio de venta a refinería	1.205
Glicerina (250 USD/TN x 10%)	25
Precio total por tonelada (USD)	**1.23**

Production Costs

- Under a simplified scheme, the following chart shows a comparison of the necessary production and investment costs between conventional technology and ALS developed technology.
- The result of it is that ALS technology needs a considerable smaller initial investment for the plant installment, specially when compared to European plants installment cost (USD 17 millions).
- Moreover, the production process has a significantly smaller operating cost (approximately 20% less), wich means less time to recover the initial investment.

Costo de producción estandar	
Componentes del costo en USD	
Costo de aceite FAS	840
Costo de compra (5%)	42
Costo de transporte	10
Merma de producción (6%)	50
Costo de metanol	71
Demás componentes del costo	70
Costo total por tonelada (USD)	**1.08**

Costo de producción con Tecnologia ALS	
Componentes del costo en USD	
Costo de aceite FAS	840
Costo de compra (5%)	42
Costo de transporte	10
Merma de producción (0%)	-
Costo de metanol	60
Demás componentes del costo	60
Costo total por tonelada (USD)	**1.01**

4.2 Projected Results

Projected Results

- The following chart shows the results obtained from operating a biodiesel plant that uses ALS technology to supply the local market following the terms of the agreement.

Estado de Resultados					
USD '000	1	2	3	4	
Producción (TN)	30.000	60.000	60.000	60.000	60.000
Ingresos Biodiesel	36.150	73.889	74.960	76.908	78.298
Ingresos Glicerina	750	1.533	1.555	1.596	1.62
Ingreso Total	**36.900**	**75.422**	**76.516**	**78.504**	**79.92**
CMV	-29.356	-58.892	-59.192	-59.471	-59.727
Margen Bruto	**7.544**	**16.531**	**17.324**	**19.032**	**20.19**
Margen %	*20,45%*	*21,92%*	*22,64%*	*24,24%*	*25,27%*
Gastos Operativos	-2.492	-3.914	-3.921	-3.932	-3.940
EBITDA	**5.052**	**12.617**	**13.403**	**15.100**	**16.25**
Margen EBITDA %	*13,69%*	*16,73%*	*17,52%*	*19,24%*	*20,34%*
D&A	-785	-785	-785	-785	-785
EBIT	**4.267**	**11.832**	**12.619**	**14.315**	**15.47**
Interest	-2.778	-2.778	-2.778	-2.778	-2.77
Ingreso Neto	**1.489**	**5.137**	**5.424**	**6.527**	**7.27**

Important:
•To obtain these results and in order to create a simple scenario, both production costs and operating costs are between market technology and ALS developed technology. (See pg. 15)

4.3 Necessary Investment

ALS will be responsible for the performance of engineering works and technological developments.

There are an extra $5M working capital needed to develop ALS operation.

Eventhough the working capital is not included or detailed in the initial investment chart, its financial cost is contemplated in the corresponding cash flows.

Necessary Investment

In order to start this business, approximately $9.4M are needed, which will consist of:

- Machinery, storage tanks and other plant parts.
- Engineering works for the assemblance and building of the plant.

Concepto	USD
USD '000	
Tanques	718.000
Bombas y centrífuga	454.000
Ingenieria supervisión y montaje	258.000
Cañerías, calderas, columnas y torres	1.618.000
Instalación eléctrica, incendios y laboratorio	1.253.000
Cavitador	518.000
Equipamientos varios	1.030.000
Terreno y obra civil	2.000.000
Arquitectura y gestión de aprobaciones	500.000
Management fee	1.000.000
Capital de Trabajo	
Total	**9.349.000**

Important:
• These figures do not include taxes.

4.4 Schedule of Expenditures

During the first semester the construction and developments of the plant will take place.

During the second semester, the business and production activities of the company will start.

Schedule of Expenditures

To launch this project, a 6 month building period is necessary, during which the following expenditures will be needed:

Actividades /Meses	1	2	3	4	5	6	Total
USD '000							
Tanques	265.189	149.169	66.297	237.344	-	-	**718.000**
Bombas y centrífuga	454.000	-	-	-	-	-	**454.000**
Ingenieria supervisión y montaje	12.286	69.619	57.333	57.333	57.333	4.095	**258.000**
Cañerías, calderas, columnas y torres	-	539.333	539.333	539.333	-	-	**1.618.000**
Instalación eléctrica, incendios y laboratorio	-	417.667	417.667	417.667	-	-	**1.253.000**
Cavitador	-	259.000	259.000	-	-	-	**518.000**
Equipamientos varios	-	343.333	343.333	343.333	-	-	**1.030.000**
Terreno y obra civil	2.000.000	-	-	-	-	-	**2.000.000**
Arquitectura y gestión de aprobaciones	277.778	111.111	111.111	-	-	-	**500.000**
Management fee	1.000.000	-	-	-	-	-	**1.000.000**
Capital de Trabajo	-	-	-	-	-	-	
Total	**4.009.253**	**1.889.232**	**1.794.075**	**1.595.011**	**57.333**	**4.095**	**9.349.000**

4.5 Income statement and projected cash flow

Projected Income Statement

The following chart shows the projected income statement for the first 5 years of the firm's activities.

Estado de Resultados					
USD '000	1	2	3	4	
Producción (TN)	30.000	60.000	60.000	60.000	60.000
Ingresos Biodiesel	36.150	73.889	74.960	76.908	78.298
Ingresos Glicerina	750	1.533	1.555	1.596	1.62
Ingreso Total	**36.900**	**75.422**	**76.516**	**78.504**	**79.92**
CMV	-29.356	-58.892	-59.192	-59.471	-59.727
Margen Bruto	**7.544**	**16.531**	**17.324**	**19.032**	**20.19**
Margen %	*20,45%*	*21,92%*	*22,64%*	*24,24%*	*25,27%*
Gastos Operativos	-2.492	-3.914	-3.921	-3.932	-3.940
EBITDA	**5.052**	**12.617**	**13.403**	**15.100**	**16.25**
Margen EBITDA %	*13,69%*	*16,73%*	*17,52%*	*19,24%*	*20,34%*
D&A	-785	-785	-785	-785	-785
EBIT	**4.267**	**11.832**	**12.619**	**14.315**	**15.47**
Interest	-2.778	-2.778	-2.778	-2.778	-2.77
Ingreso Neto	**1.489**	**5.137**	**5.424**	**6.527**	**7.27**

Projected cash flow

The following chart shows the projected cash flow for the first consecutive years of activities.

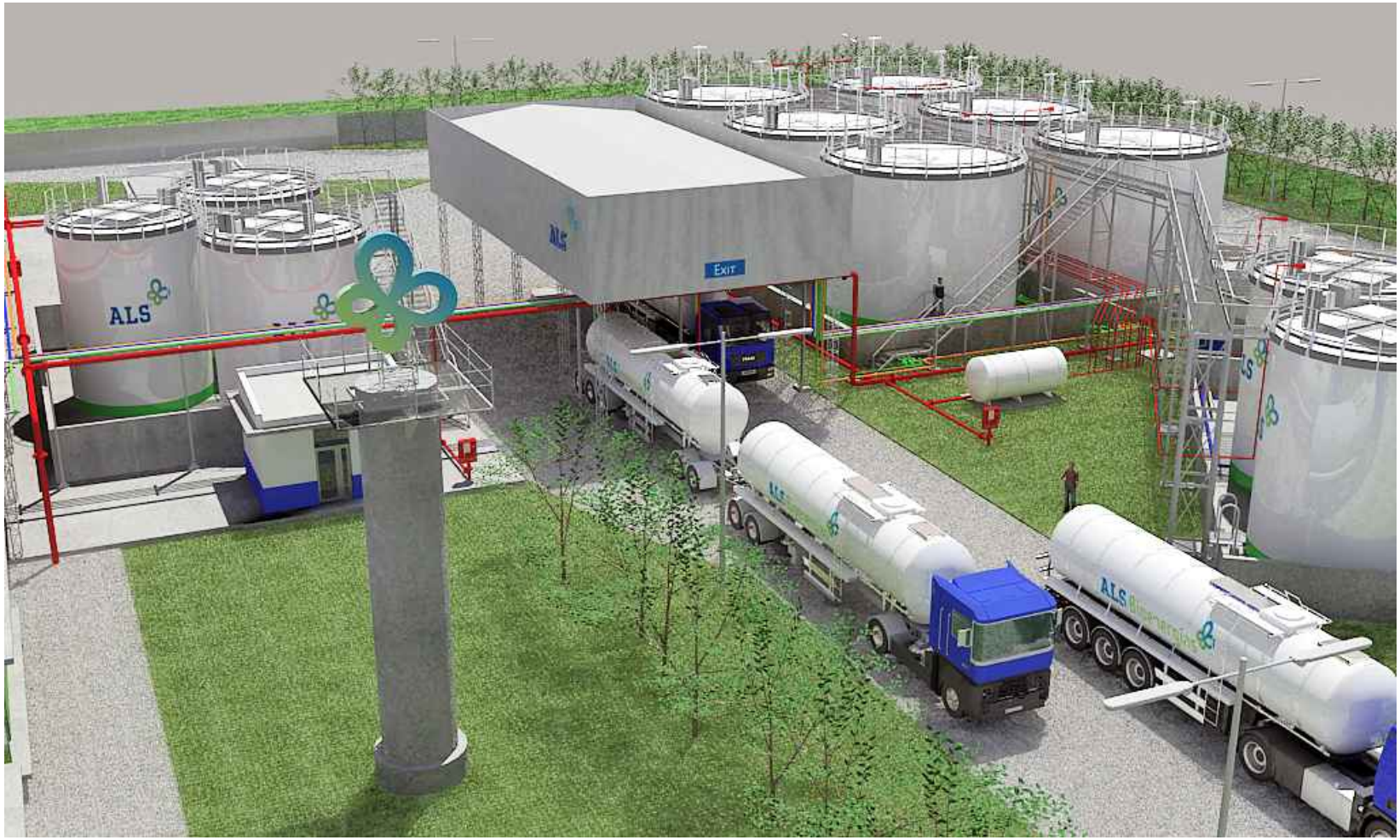
Flujos de Fondos					
USD '000	1	2	3	4	5
Ingresos Netos	1.489	5.137	5.424	6.527	7.278
Depreciación	2.747	785	785	785	785
CAPEX	-9.349	0	0	0	0
Capital de Trabajo	-5.000	0	0	0	0
Créditos Fiscales IVA	1.584	2.799	0	0	0
Flujo de Fondos Operativos	-8.528	8.721	6.209	7.312	8.063
Deuda financiera	-2.778	-2.778	-2.778	-2.778	-2.778
Flujo de Fondos Netos	**-8.528**	**8.721**	**6.209**	**7.312**	**8.06**

Anexo

Renders

Anexo

Renders



Anexo

Renders

a universe of possibilities
energy with responsibility…

Muchas Gracias Deutschland!!!

ALS Bioenergía