

De Smet Engineers & Contractors and the Biofuels



Your project is to produce Biofuels ...

- ✓ *New Biodiesel and/or Bioethanol production units...*
- ✓ *Extension/diversification of your oil or sugar plants*

...and you want for this project:

- ✓ *Performance guarantees for the new installations*
- ✓ *A budget and a time schedule fixed before the project implementation*
- ✓ *The most appropriate technologies*
- ✓ *The management and advice of professionals with a reputation worldwide*
- ✓ *The respect of the tightest quality standards and environmental norms.*



De Smet Engineers & Contractors (DSEC)

Is your partner for:

- ✓ *Technical and financial feasibility studies*
- ✓ *Financial and contractual set-up adapted to the project specificities*
- ✓ *Support for the identification of potential operators*
- ✓ *Performance guarantees through selection of the most appropriate technologies*
- ✓ *Engineering and interfaces design*
- ✓ *Civil engineering and structural steel design*
- ✓ *Selection and purchase of equipment*
- ✓ *Equipment transport to the site, reception and quality survey*
- ✓ *Coordination of all related project activities*
- ✓ *Plant electricity and automation standardization*
- ✓ *Supervision of civil engineering and erection works*
- ✓ *Plant start-up and commissioning*
- ✓ *Personnel training*



A well defined project:



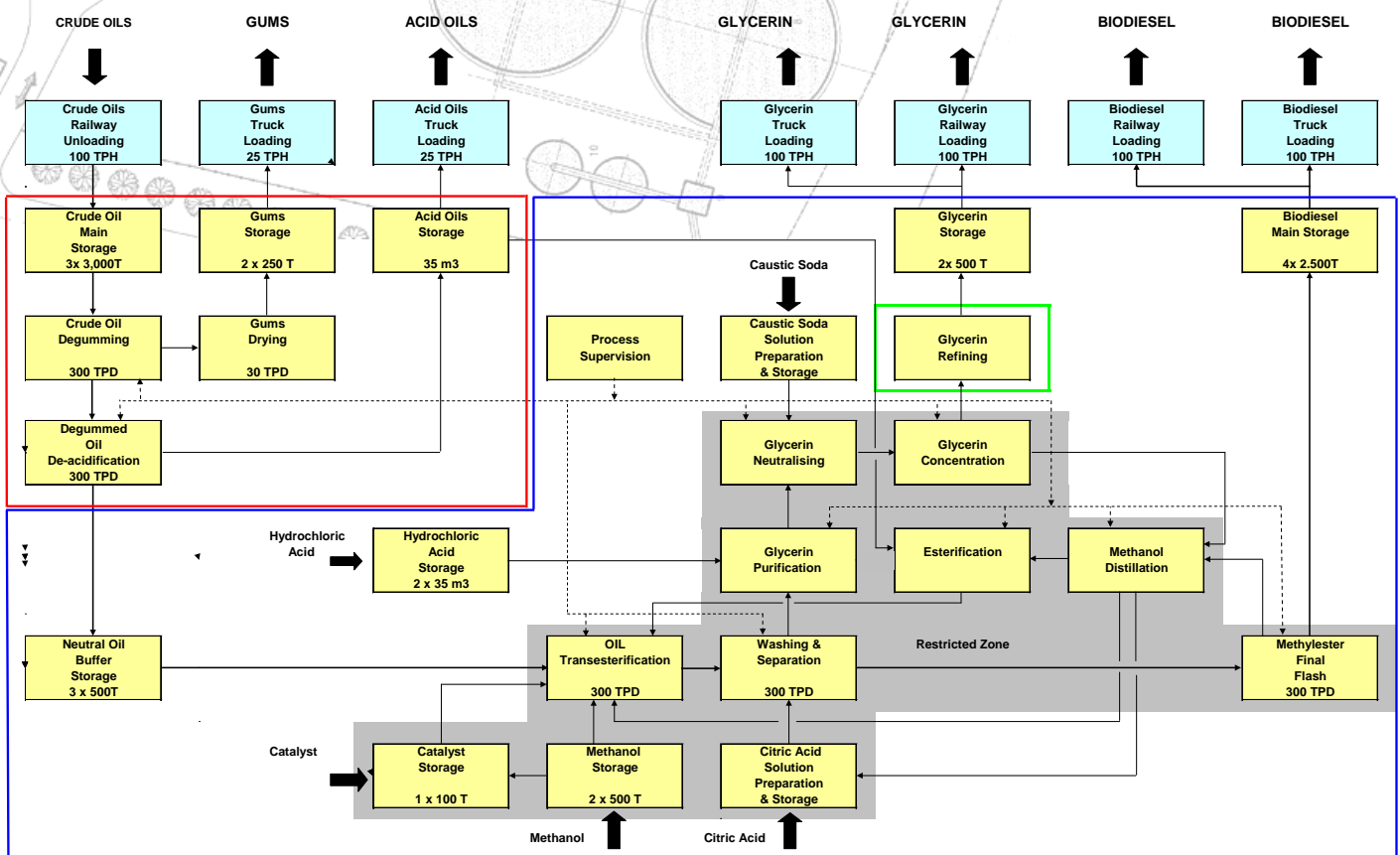
*Definition
and understanding
of the objectives*

*The project
and its environment*



PRODUCTION OF 100.000 TPY OF BIODIESEL FROM OILS

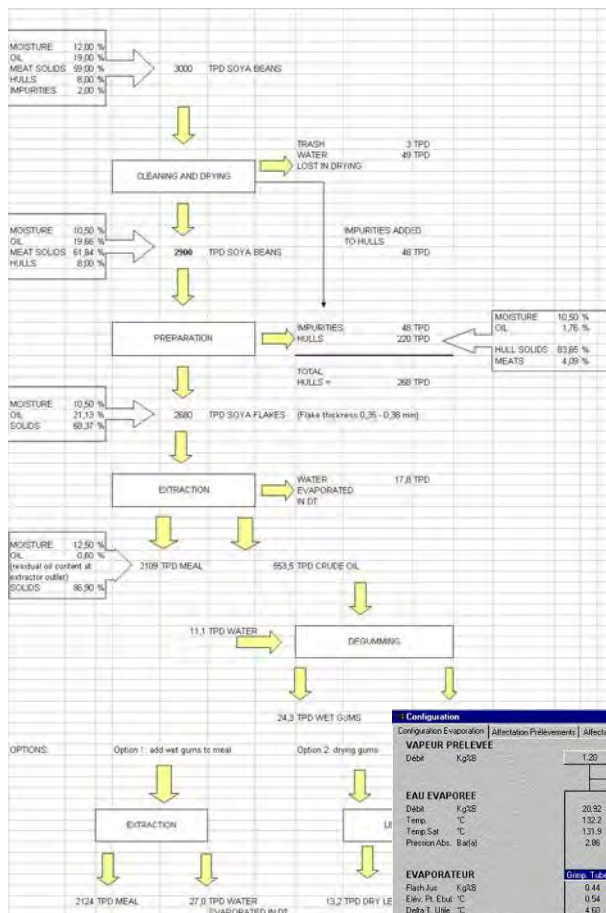
Preliminary Block Diagram



*Risks analyses
and battery limits*

Establishing a constructive dialogue

Efficient installations:



Optimization:

- ✓ processes
- ✓ storage
- ✓ utilities

Configuration Computation Evaporation Allocation Prééléments Allocation Réchauffages Définition Réchauffeurs

VAPEUR PRELEVÉE
Debit Kg/28

1.20	1.48	1.00	18.77	5.63	2.48	Total: 30.56
						Perte Chaleur 0.64

EAU EVAPOREE
Debit Kg/28
Temp. °C
Temp.Sat. °C
Pression Abs. Bar(a)

20.92	21.03	21.41	21.99	6.53	312
132.2	126.5	118.5	114.0	107.3	96.8
131.9	126.0	117.5	112.0	104.2	91.8
2.86	2.39	1.84	1.53	1.17	0.75
					100.0

EVAPORATEUR

Group Tubes	Group Tubes	Desc. Tubes	Desc. Tubes	Desc. Tubes	Desc. Tubes
0.44	2.39	3.93	0.43	3.33	2.29
0.54	0.85	1.99	0.38	3.54	4.07
4.60	4.64	5.03	4.63	2.32	11.61
0.52	0.53	0.57	0.51	0.38	0.06
0.30	0.30	0.30	0.30	0.30	0.30
1951	1899	1486	1952	1152	905
1	2	3	4	5	6

VAPEUR DE CHAUFFE
Debit Kg/28
Temp. °C
Temp.Sat. °C
Pression Abs. Bar(a)

20.76	19.82	19.71	21.82	5.6	2.64
146.8	132.2	126.5	116.5	114.0	107.3
136.8	131.9	126.0	117.6	112.0	104.2
-0.05	2.86	2.39	1.84	1.53	1.17
3.30	0.16	0.44	0.44	1.74	

Circulation des Jus 4 1 2 3 5 6

Vers B1	Vers B2	Vers B3	Vers B4	Vers B5	Vers B6
2	3	4	1	5	6

JUS
Debit Kg/28
Temp. °C
Brû. %
Pseudo %

Vers 4	Entrée Sortie	Entrée Sortie	Entrée Sortie	Entrée Sortie	Entrée Sortie
122.98	104.96 53.02	53.03 27.52	122.98 100.38	27.52 31.96	31.99 27.96
114.0	132.2 132.2	126.5 126.5	114.0 114.0	107.3 107.3	95.8 95.8
14.54	17.70 22.33	22.33 30.28	30.28 47.52	47.52 57.50	57.50 63.92
91.77	91.77 91.77	91.77 91.77	91.77 91.77	91.77 91.77	91.77 91.77

STORAGE TANK DATA

PROJECT : Passape	LOCATION : DAILY ABS MIN
OFFER No : 5	DAILY AVER MIN
DATE : 100.0000000	

TONNES/HEURE 0.05 GR/LIRE

EXIT TANK DATA

Savings in consumptions:

- ✓ water
- ✓ energy
- ✓ reagents

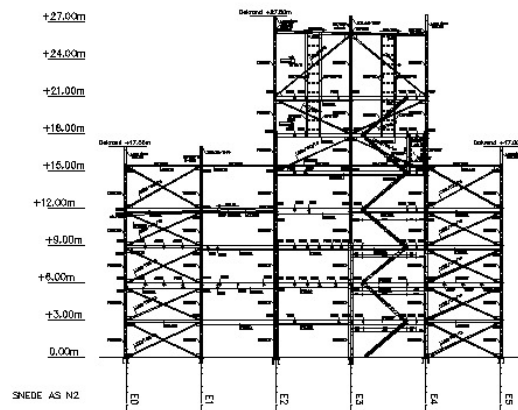
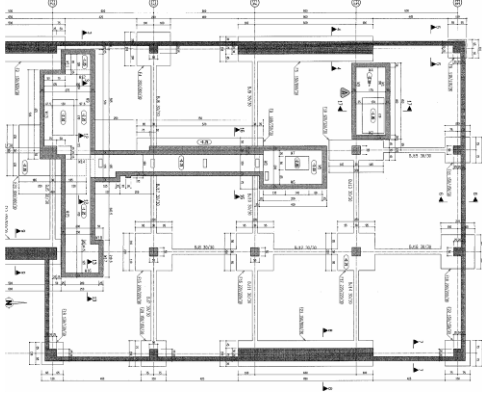
Reducing wastes:

- ✓ zero effluents process
- ✓ dehydration / incineration

Meeting the customer's needs

Global and accurate engineering:

Civil engineering



Steel structure



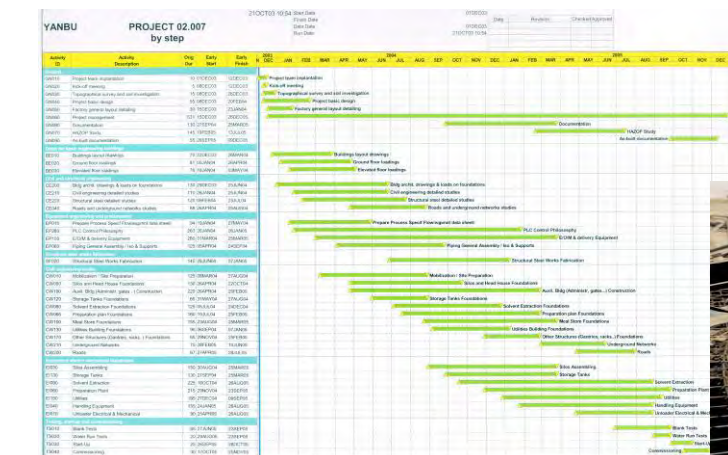
Material storage and handling



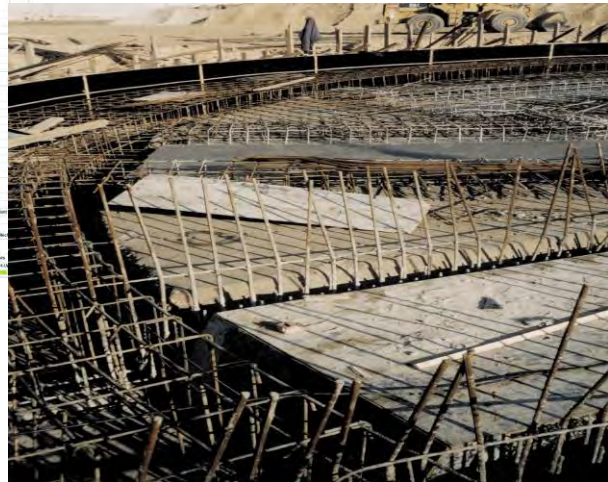
Utilities (steam production, compressed air generation, effluent water treatment, fire fighting, electricity distribution,...)

Every small detail is important!

Coordinated activities:



Tasks management



Transport



Civil Engineering



Start-up



Erection



The key to a successful site management

De Smet Engineers & Contractors' (DSEC) experience in the bioethanol industry:

Keeping up with the sugar industry that De Smet Engineers & Contractors has been successfully serving worldwide for more than 25 years, DSEC started in 2004 the development of bioethanol production plants for its traditional customers.

Professionalism, expertise and experience of DSEC's engineers dedicated to the production of ethanol contributed in 2006 to the award of the first large capacity turn-key contracts.

With over 700,000 m³ annual capacity in operation, DSEC is today a key player in the field and is now facing constant demand for the implementation of new ethanol production facilities from cereals, molasses and sugar cane as well as 2G feedstocks in partnership with recognized technology providers.

DSEC's competences in seeds handling and processing, cogeneration as well as its general contracting experience acquired over the years are additional assets for the development of this activity.

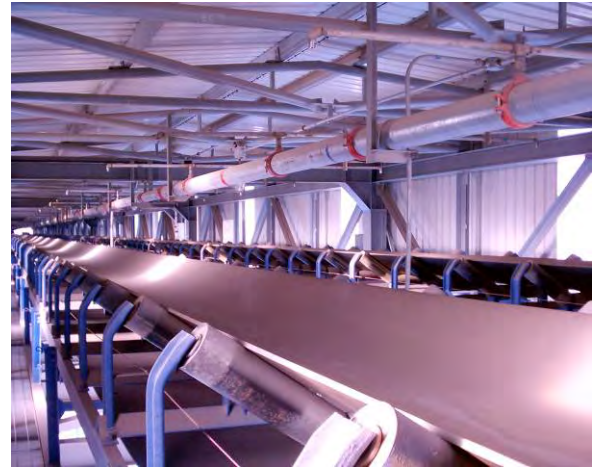


**A well-known experience in the biofuels industry,
at the service of 2G feedstocks**

First class technologies providers:



Appropriate auxiliary units:



From raw material storage



...to finished products forwarding...



...DSEC selects equipment all over the world

Equipment at the best quality/price ratio

Some of our references:



Alco Bio Fuel, Gent – Belgium:

Turnkey construction of a complete bioethanol production plant.

Capacity: 150,000 m³/year.

Investment value: 80 M€.



Biowanze, Wanze – Belgium:

Turnkey construction of a complete bioethanol production plant with cogeneration.

Capacity: 300,000 m³/year.

Investment value: 250 M€.



Dutch BioDiesel, Rotterdam – The Netherlands:

Turnkey construction from greenfield of a biodiesel production plant.

Capacity: 2 x 250,000 TPY biodiesel.

Investment value: 50 M€.



Ineos Enterprises, Baleycourt – France:

Turnkey construction from greenfield of a crushing plant (rapeseed) including a biodiesel production unit.

Capacity : 1,200 TPD rapeseed;

2 x 100,000 TPY biodiesel.

Investissement value: 100 M€.



Addax Bioenergy, Makeni – Sierra Leone:

Construction of a complete bioethanol production plant including cogeneration.

Capacity: 80,000 m³/year + 20 Mwe.

Investment value: 130 M€.



Acabio, Villa Maria – Argentina:

Construction of a complete bioethanol production plant.

Capacity: 150,000 m³/year.

Investment value: 140 MUS\$

Since its creation in 1990, DSEC has successfully carried out over 50 projects



DE SMET ENGINEERS & CONTRACTORS is a privately held limited liability company incorporated in Belgium in 1989. It has an established reputation as a general contractor, specializing in the agro-industrial field where it is a fully-integrated world class provider of engineering, procurement and construction services.

It brings a compelling business offering that combines excellence in execution, safety, cost containment, experience and reliability with particular care towards energy saving and sustainability.

Sugar as well as **Oils & Fats** have been the core of **DE SMET ENGINEERS & CONTRACTORS's** fields of activity. A major diversification towards the **Biofuels, Biochemicals** and **Agrochemical** industries has now taken place, based on its specific competence in agro-industrial engineering and project management acquired over the years.

DE SMET ENGINEERS & CONTRACTORS provides the industry with general contracting services from project management (**EPCM** - *Engineering, Procurement and Construction Management* or "*For and on Behalf*" operations) to full turnkey construction (**EPC** - *Engineering, Procurement and Construction*) allowing industrial operators to concentrate on their production commitments.

From conceptual study to vocational training, **DE SMET ENGINEERS & CONTRACTORS** has the ability and skill to **successfully complete large turnkey projects on brown- or green-fields**, all within the pre-established budget and delivery time, in a variety of geographical environment.



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