DE SMET
ENGINEERS & CONTRACTORS

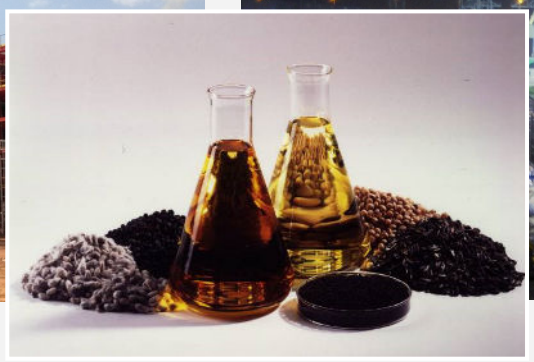
RELIABILITY THROUGH EXPERIENCE

De Smet Engineers & Contractors and the Biofuels







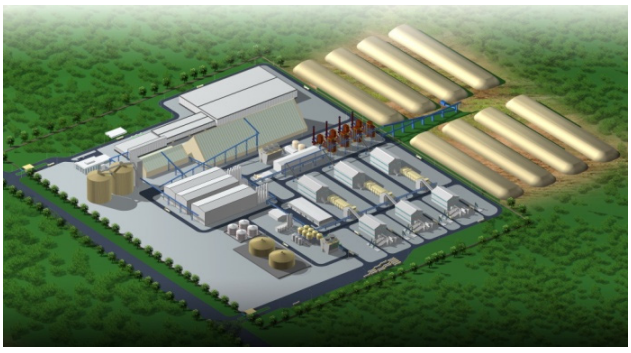



Your project is to produce Biofuels ...

- ✓ *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*

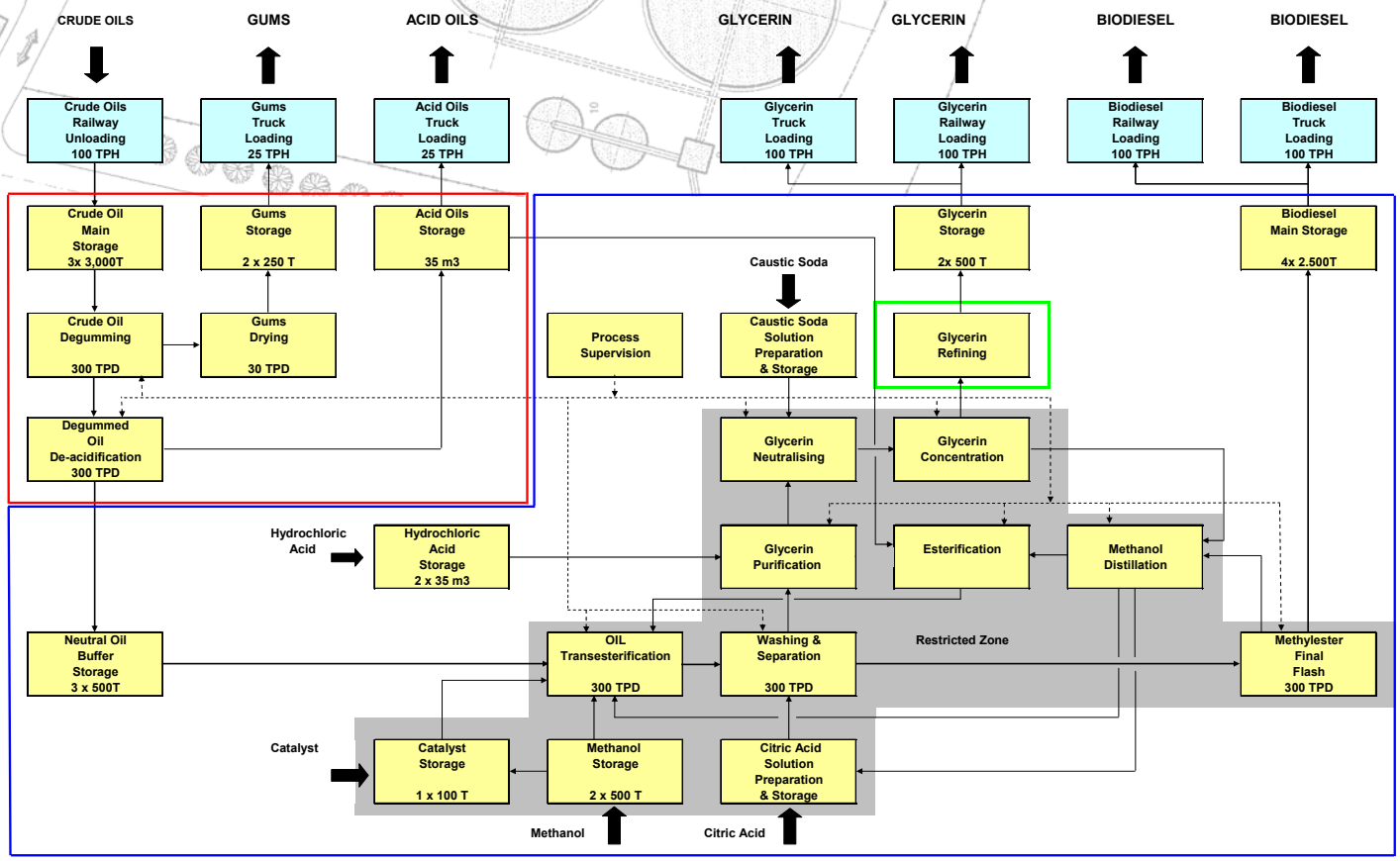
A well defined project:

Definition
and understanding
of the objectives

The project
and its environment

PRODUCTION OF 100.000 TPY OF BIODIESEL FROM OILS

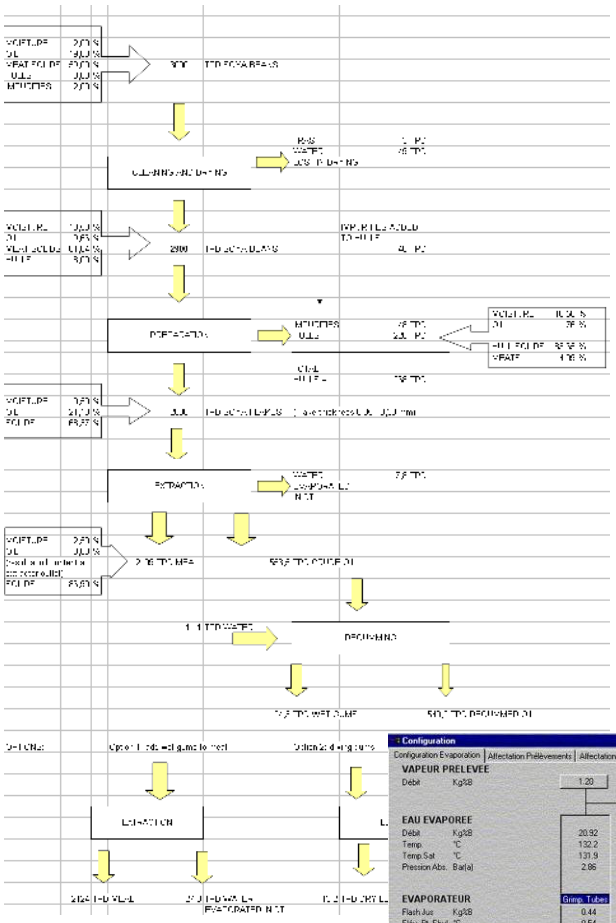
Preliminary Block Diagram



Risks analyses
and battery limits

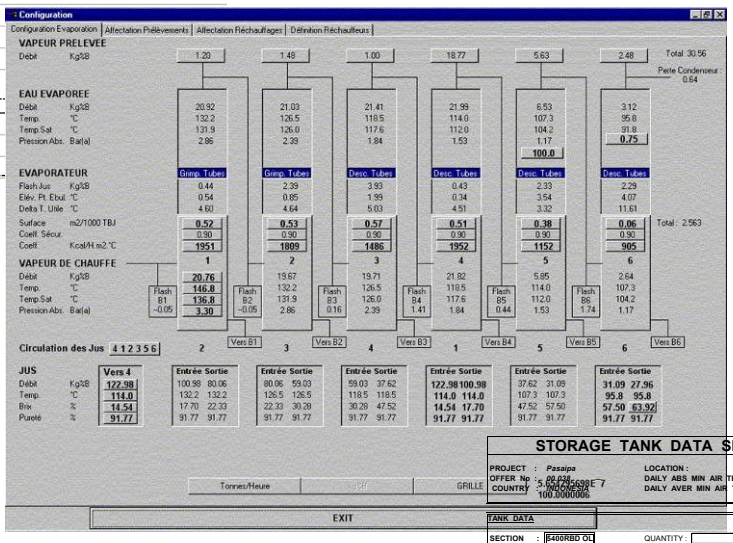
Establishing a constructive dialogue

Efficient installations:



Optimization:

- ✓ *processes*
- ✓ *storage*
- ✓ *utilities*



STORAGE TANK DATA SHEET (C)

PROJECT : Pasaipa — LOCATION : Medan
OFFER No : 99-036 — DAILY ABS MIN AIR TEMP (Deg C) : 25
COUNTRY : Indonesia — DAILY AVER MIN AIR TEMP (Deg C) : 30

TANK DATA

SECTION	6400RBD OL	QUANTITY :	3
TANK ITEM	6482OL	LIQUID :	OLEIN
CAPACITY (t)	1,489	DENSITY :	0,90
INSULATED	NO	DIA. (m) :	13,25
STIRRER	YES	H (m) :	12,00
STEAM COIL	YES	VOL (m³) :	1.655
TEMP (Deg C)	133	S (m²) :	775
WATER COIL	NO	SPECIFIC HEAT (Kcal / Kg.C) :	0,45
TEMP (Deg C)	90 IN	LATENT HEAT FUSION (Kcal / Kg)	50
TEMP (Deg C)	70 OUT	FUSION TEMP (Deg C) :	10
		STORAGE TEMP (Deg C) :	35
		DAILY TEMP GRADIENT (Deg C)	5
		ASSUMED CRISTALIZATION (%)	0

TRANSMISSION COEFFICIENT

NON INSULATED TANK WALLS (Kcal / m².h.C) :	25
INSULATED TANK WALLS (Kcal / m².h) :	100
TANK BOTTOM (Kcal / m².h.C) :	10
COIL WITH STIRRER (Kcal / m².h.C) :	140
COIL WITHOUT STIRRER (Kcal / m².h.C) :	100

SIZING AND ENERGY CONSUMPTION :

1. Maximum heat losses with tank full and oil at (Deg C)	35	(Kcal / h) : 86.569	Steam (Kg / h) : 167
2. Maximum heat demand for full tank re-heating including possible re-melting - from (Deg C)	30		
- within (Days)	1	(Kcal / h) : 139.610	Steam (Kg / h) : 270
3. Total maximum heat demand (Kcal / h)		: 226.179	Steam (Kg / h) : 437
4. Coil dimensioning :			
4.1. Delta T ln (Deg C)		: 100	
4.2. Coil exchange surface (m²)		: 16	Water Flow (m³/h) : N. A.

SUMMARY

1. ALT 1 : All tanks full with minimum average outside temperature (Kg / h) :				502
2. ALT 2 : All tanks full with minimum average outside temperature except				
	1	half full &	1	empty (Kg / h) : 251
3. ALT 3 : Re - heating of	1	tank(s) only after shut - down (Kg / h) :		437

Savings in consumptions:

- ✓ *water*
- ✓ *energy*
- ✓ *reagents*

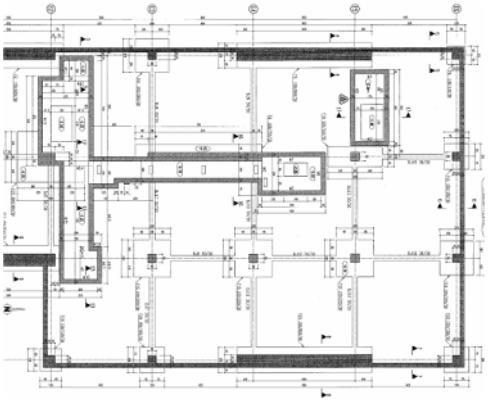
Reducing wastes:

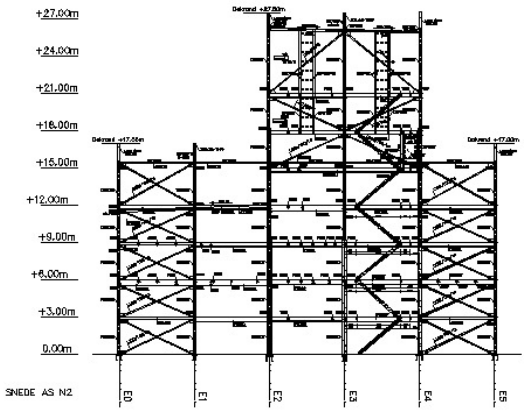
- ✓ *zero effluents process*
- ✓ *dehydration / incineration*

Meeting the customer's needs

Global and accurate engineering:

Civil engineering





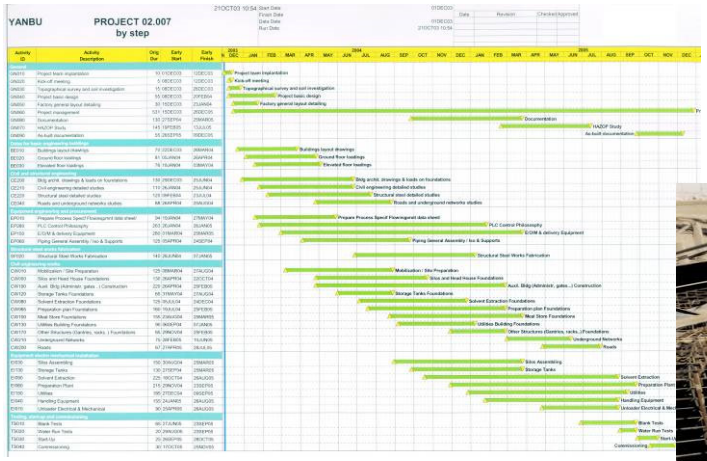
Steel structure

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

Civil Engineering

Transport

Start-up

Erection

The key to a successful site management

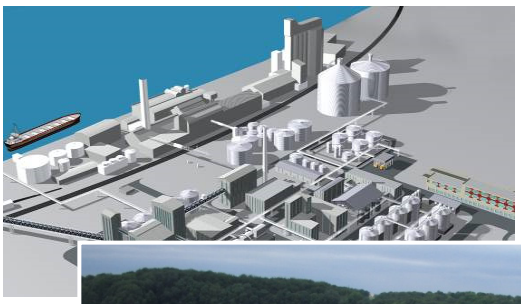
De Smet Engineers & Contractors' (DSEC) experience in the bioethanol industry:

Keeping up with the sugar industry that De Smet Engineers & Contractors has been successfully serving worldwide for 30 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:

desmet ballestra

praj

ICM

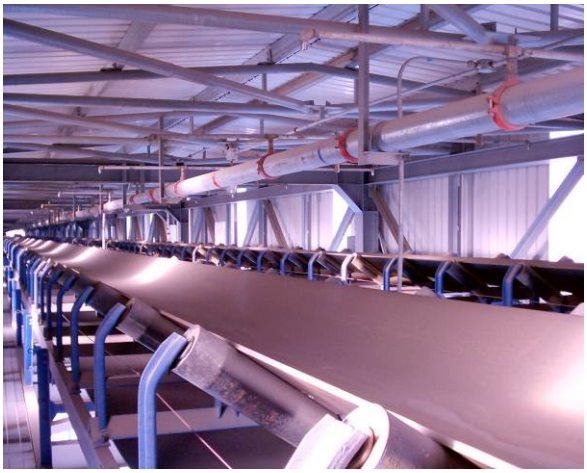
the energy of innovation™

KATZEN INTERNATIONAL, INC.

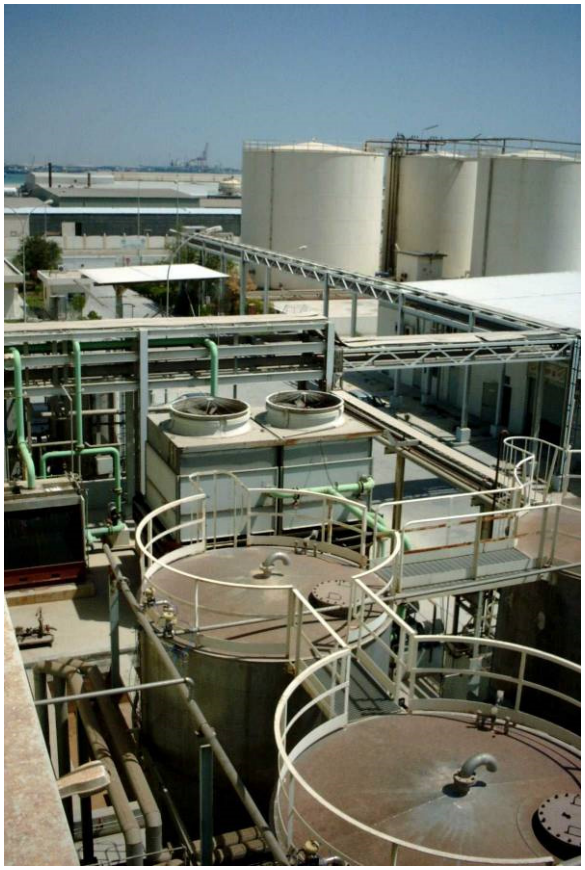
Maguin

A Moret Industries Company

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.
Investestissement 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 – Argentine:
Construction of a complete bioethanol production plant.
Capacity: 150,000 m³/year.
Investment value: 140 MUS$

Since its creation in 1989, 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 greenfields**, all within the pre-established budget and delivery time, in a variety of geographical environment.

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2020-09-14