TETma
TECNICAS Y TRATAMIENTOS MEDIOAMBIENTALES

COMO CONVERTIR RESIDUOS EN BIOCARBURANTES

¿Cambio climático o renovables?

Mr. Francisco Vea Folch

R&D Director

BECSA
SERVICIOS INTEGRALES

Waste Treatment Plant

Treatment facility general features	
Capacity	100.000 (up to 120.000) Tn/year
Treatment line hourly capacity	40 ton/hour
Total treatment facility surface	15.500 m^2
Operators	35
Total investment	25 MEuro

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REDUZCO COMPENSO CALCULO 2014 2

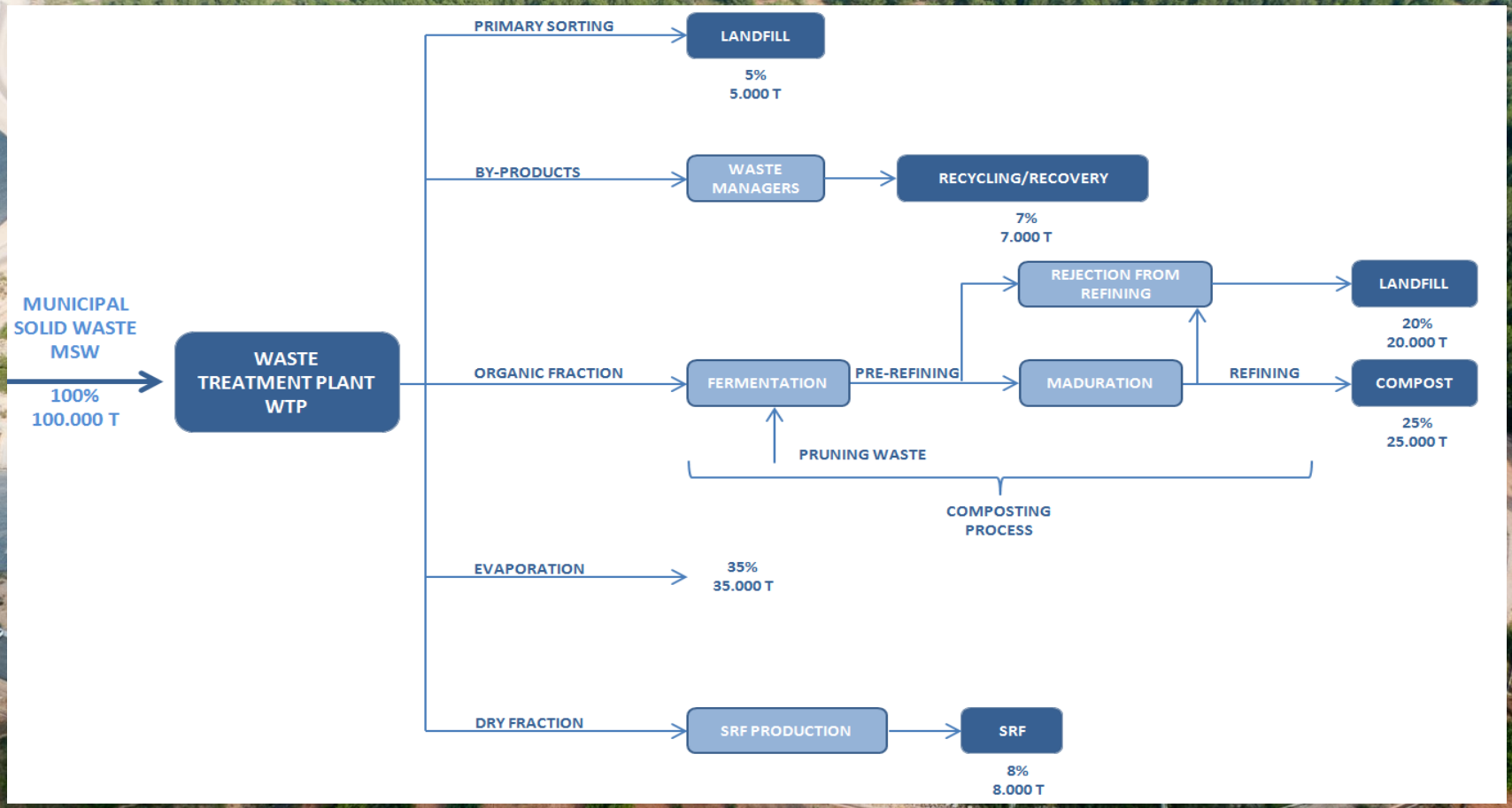
AENOR
Gestión Energética
UNE -EN ISO 50001

WTP Layout

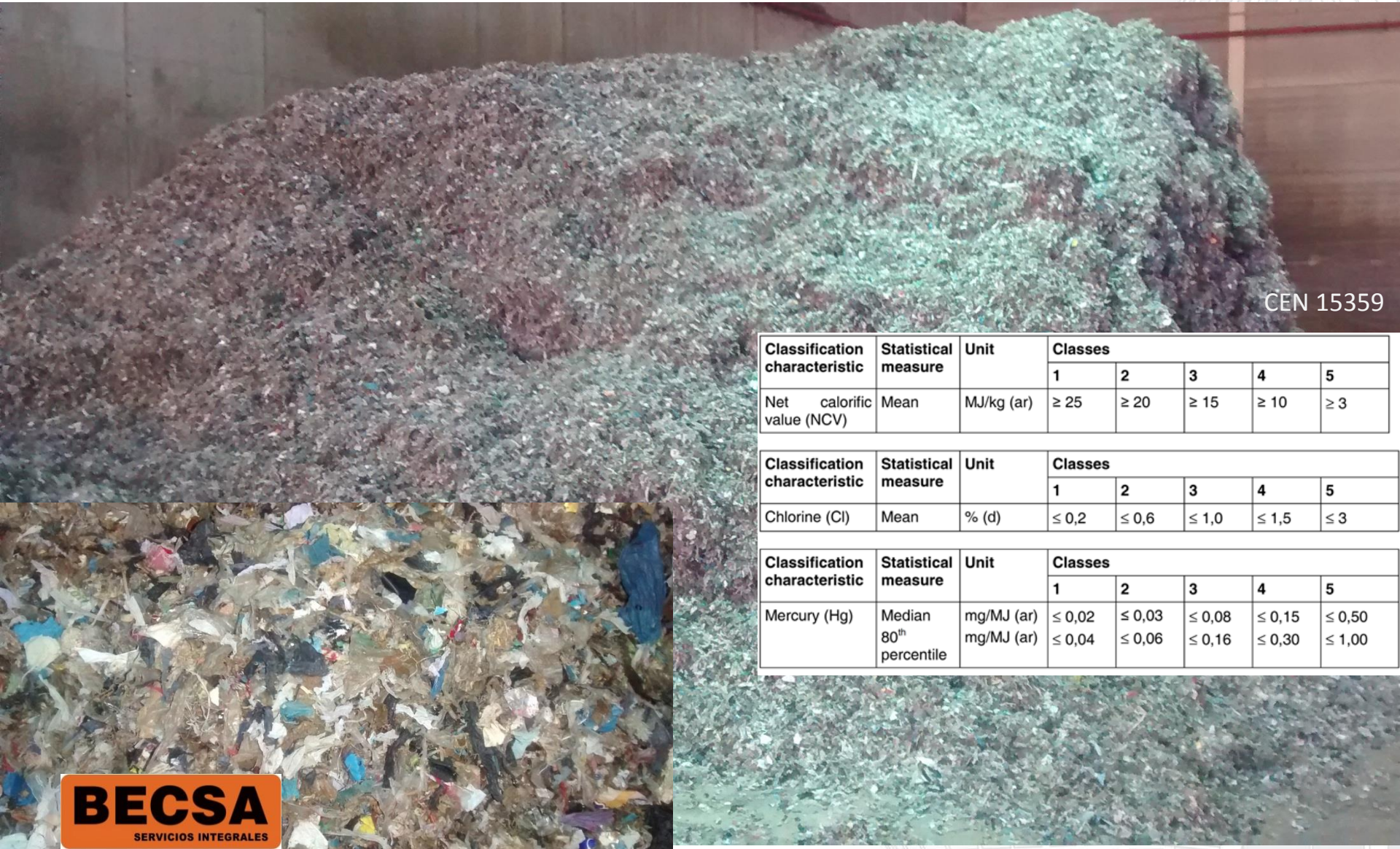

SORAIN CECCHINI TECNO
BioMax

WASTE UNLOADING
BIOFILTER
FERMENTATION REACTOR
PRE-TREATMENT
MADURATION REACTOR
SOLID RECOVERY FUEL (SRF)
COMPOST WAREHOUSE
BY-PRODUCTS
ENTRANCE

Balance Mass



Waste-to-energy Solid Recovered Fuel



CEN 15359

Classification characteristic	Statistical measure	Unit	Classes				
			1	2	3	4	5
Net calorific value (NCV)	Mean	MJ/kg (ar)	≥ 25	≥ 20	≥ 15	≥ 10	≥ 3

Classification characteristic	Statistical measure	Unit	Classes				
			1	2	3	4	5
Chlorine (Cl)	Mean	% (d)	≤ 0,2	≤ 0,6	≤ 1,0	≤ 1,5	≤ 3

Classification characteristic	Statistical measure	Unit	Classes				
			1	2	3	4	5
Mercury (Hg)	Median 80th percentile	mg/MJ (ar) mg/MJ (ar)	≤ 0,02 ≤ 0,04	≤ 0,03 ≤ 0,06	≤ 0,08 ≤ 0,16	≤ 0,15 ≤ 0,30	≤ 0,50 ≤ 1,00

FORUS

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Waste-to-Energy Gasification

Parameter	Amount
Feedstock Input (tons/year)	3250
Electric Power (MW)	0.5
MSW flow (wet) (kg/h)	454
MSW amount (wet) (tons/year)	3408
Humidity (%)	16.90
Low calorific power (Kcal/kg)	4400
SYNGAS flow (kg/h- Nm3/h)	1077- 816
SYNGAS Low calorific power (Kcal/kg)	1136.2
Ash flow (kg/h)	33
Approximate syngas flow after conditioning and cleaning (Nm^3/h)	400
Flow of gas used for FT and methanation for the demonstrator (Nm^3/h) (maximum 10% of total syngas)	40
Operation time (h/year)	7500
Maximum Methane production (Nm^3/h)	266
Maximum liquid biofuel production (Tons/year)	1200
POWER	
Biomass (KW)	2226.4
SYNGAS (KW)	1385
Thermal of SYNGAS	132.2
Global efficiency (%)	55.4
Electric yield (%)	21.7
Thermal yield (%)	33.7

Waste-to-energy Pyrolisys

Muestra	PCI (kcal/kg)
CSR2	10.157
FORSU	9.983
RECHAZO	10.172

Muestra	% N	% C	% H	% S	%O
CSR1	0,92	84,71	11,42	0,97	1,98
CSR2	0,97	84,11	11,14	0,73	3,05
RSU Líquido	0,79	84,90	11,45	0,75	2,11
Neumático	0,67	80,85	11,61	0,74	6,13
RSU Sólido	0,74	46,38	2,51	0,75	49,62
Crudo (Irán)	1,60	84,20	7,00	5,80	1,40

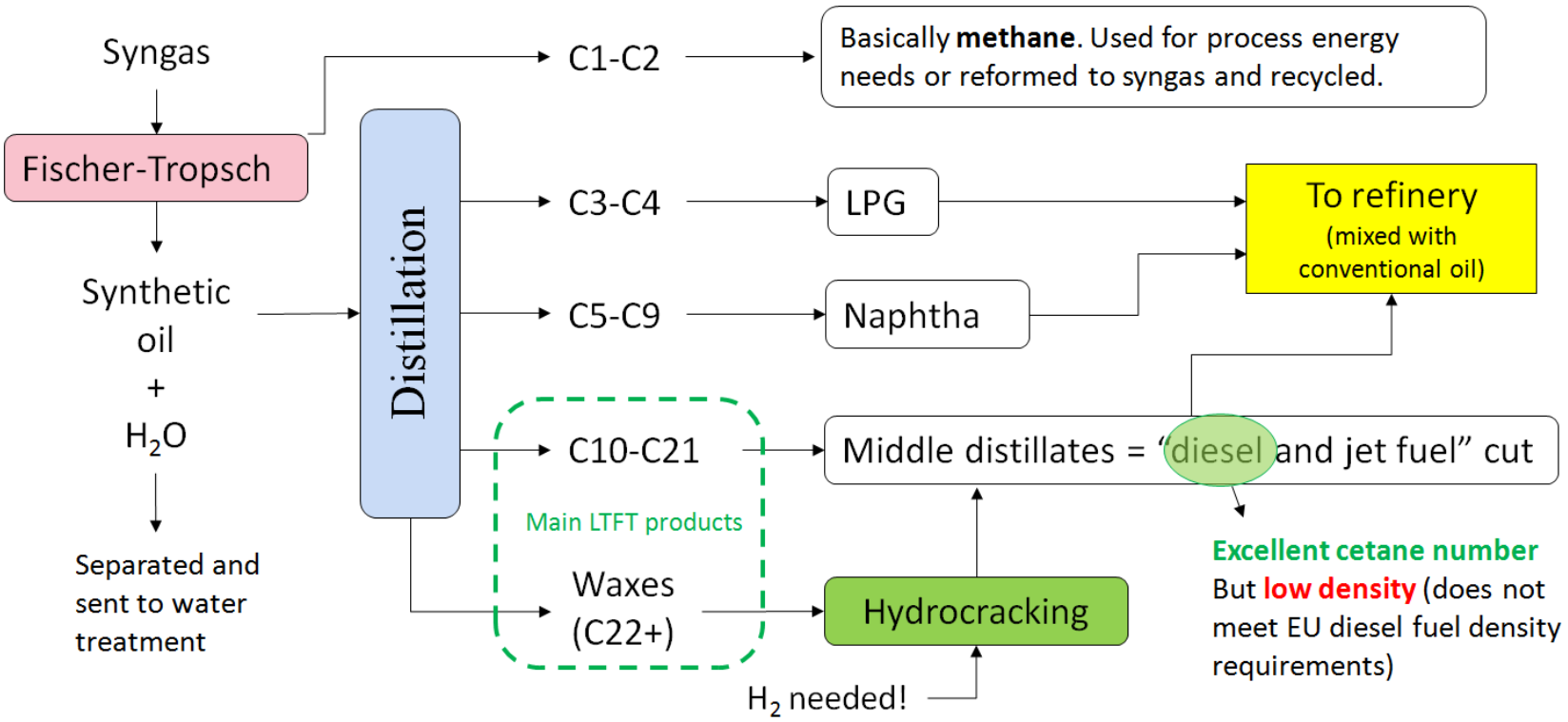
Muestra	Fracción	% peso
FORSU	Gasolina	14,62
	Diésel	33,32
	Pesados	52,07
CSR2	Gasolina	17,39
	Diésel	32,69
	Pesados	49,91
RECHAZO	Gasolina	13,75
	Diésel	34,38
	Pesados	51,86

Waste-to-Energy Fischer-Tropsch

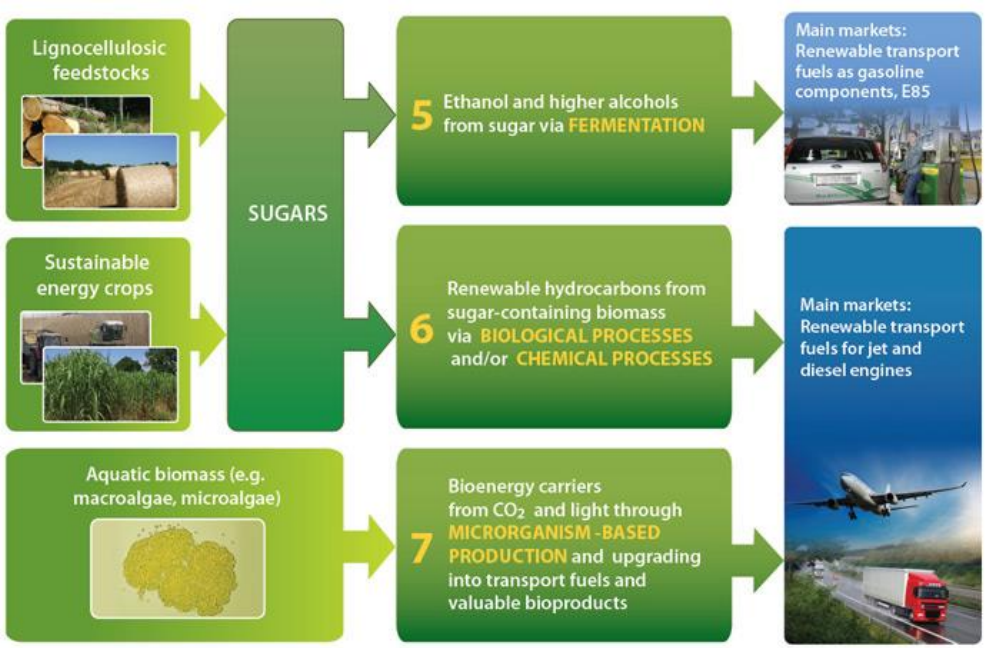
ROYAL INSTITUTE OF TECHNOLOGY

From FT to biofuel: hydrocracking, distillation, refinery, other

The LTFT approach (FT + hydrocracking + refinery)



Waste-to-Energy Fermentation (pruning)



Source: Biofuelstp.eu

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Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas

Waste-to-Energy