

Interest and potential of 2nd generation biofuels in petro-chemistry from an industry perspective

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1983 - 1993: Senior Researcher, Research and Development Centre, Unipetrol

1993 - 1999: Director of Research and Development Centre

2006 - Habilitation of the University of Chemical Technology, Associate Professor

1999 - 2010: Research Institute of Inorganic Chemistry

2010 - 2017: UniCRE - Scientific Director

2018 - UniCRE - Emerite Scientist



OUTLINES – TOPICS / QUESTIONS

FISCHER-TROPSCH PLANT IN A REFINING-PETROCHEMISTRY COMPLEX:

- WHERE TO BUILD
- WHAT CAPACITY
- WHAT FINAL PRODUCTS
- HOW TO PROCESS INTERMEDIATES



WHERE TO BUILD ?



MONDI
PULP
FACTORY

2 mil. m³



WHAT CAPACITY ?



Orlen Unipetrol RPA	kt/y
Crude oil	5 500
Motor gasoline	1 200
Diesel	2 300
Ethylene	500
Propylene	250

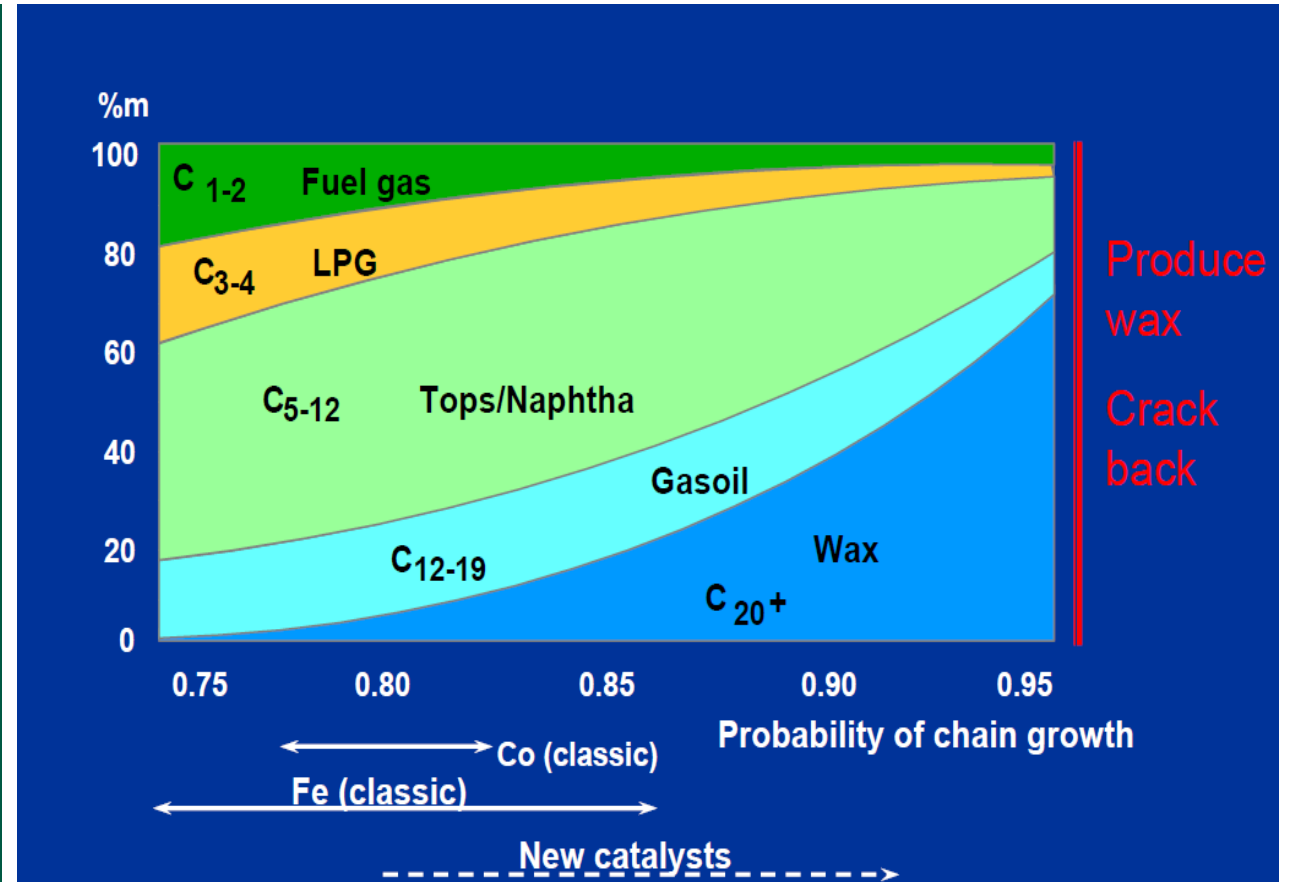
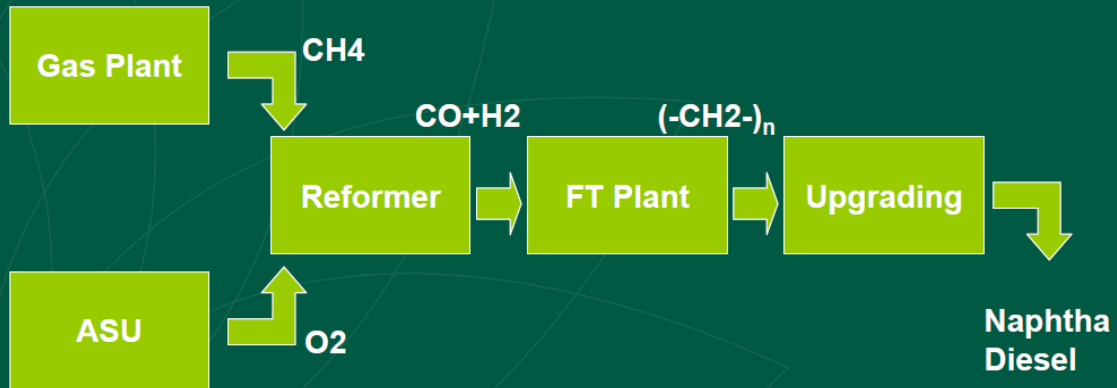
How much FTS product could be relevant ?

Proposal: 200 kt/y as motor fuels
50 kt/y as petrochemicals



WHAT FINAL PRODUCT ?

GTL technology challenges



CRUDE-TO-CHEMICALS

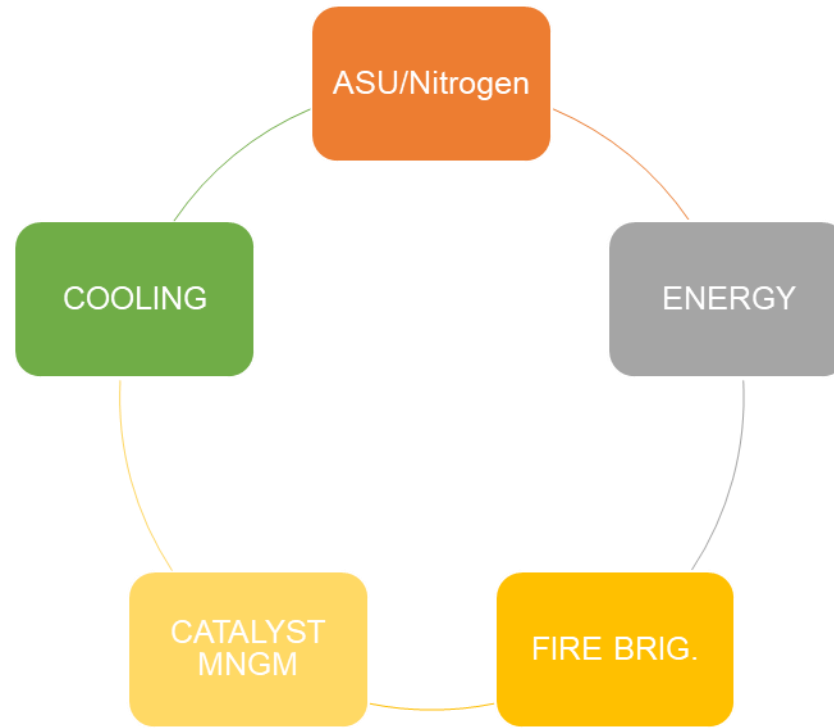
„The demand for higher-value, higher-growth chemical products has created a unique opportunity for producers to improve their profitability, while supplying raw materials that will help billions of people improve their basic standard of living.

Crude-to-chemicals projects represent one way that the industry is pursuing this opportunity, and resid conversion is a key element in the project configuration that impacts how much value can be extracted across the integrated facility“.

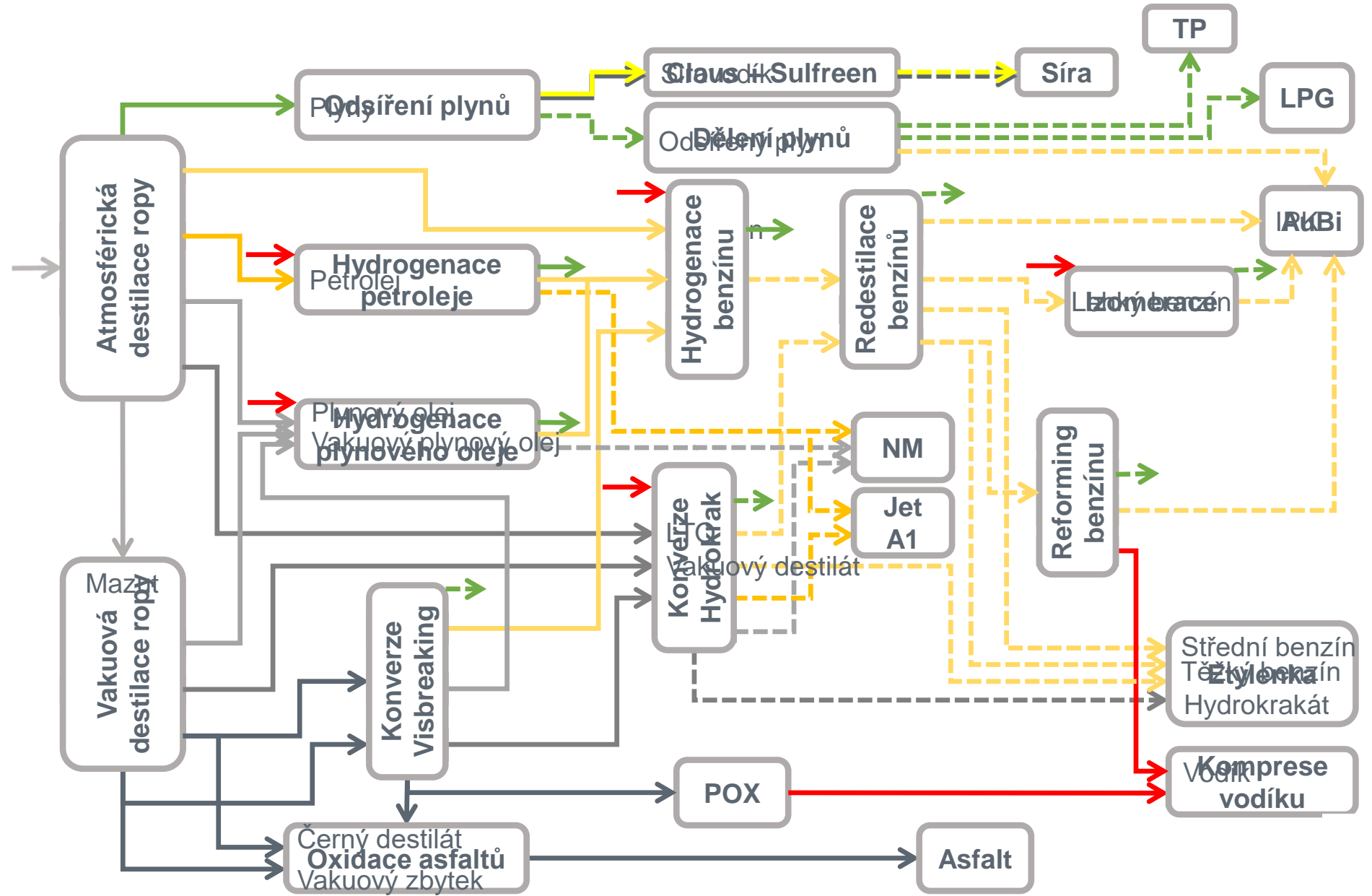
DGMK conference, 2017



FTS – GENERAL APPROACH



UNIPETROL REFINERY – BLOCK SCHEME



WHAT TO PRODUCE ?

2648.pdf - Adobe Acrobat Reader DC (32-bit)

Soubor Úpravy Zobrazení Podepsat Okna Nápověda

Domovská stránka Nástroje Wurzel_Syngas_Imp... Hoek_Shell_FTS_im... 2647.pdf 2648.pdf x Přihlásit se

1 / 1 125%

Data File: C:\Chem32\1\DATA\2021\S040321A 2021-03-04 09-24-21\204B0401.D\204B0401.CDF
Blank File: C:\Chem32\1\DATA\2021\S040321A 2021-03-04 09-24-21\201B0101.D\201B0101.CDF
Calib File: C:\Chem32\1\DATA\2021\S040321 2021-03-04 06-03-55\202B0301.D\202B0301.CDF

Solvent Exclusions: **Mins** BaseLine Zero: **14.92754**
Quench Region: **No Quenching Correction**
Uncorr Total Sample Area: **5.8709E5**
Corr Total Sample Area: **5.8398E5**

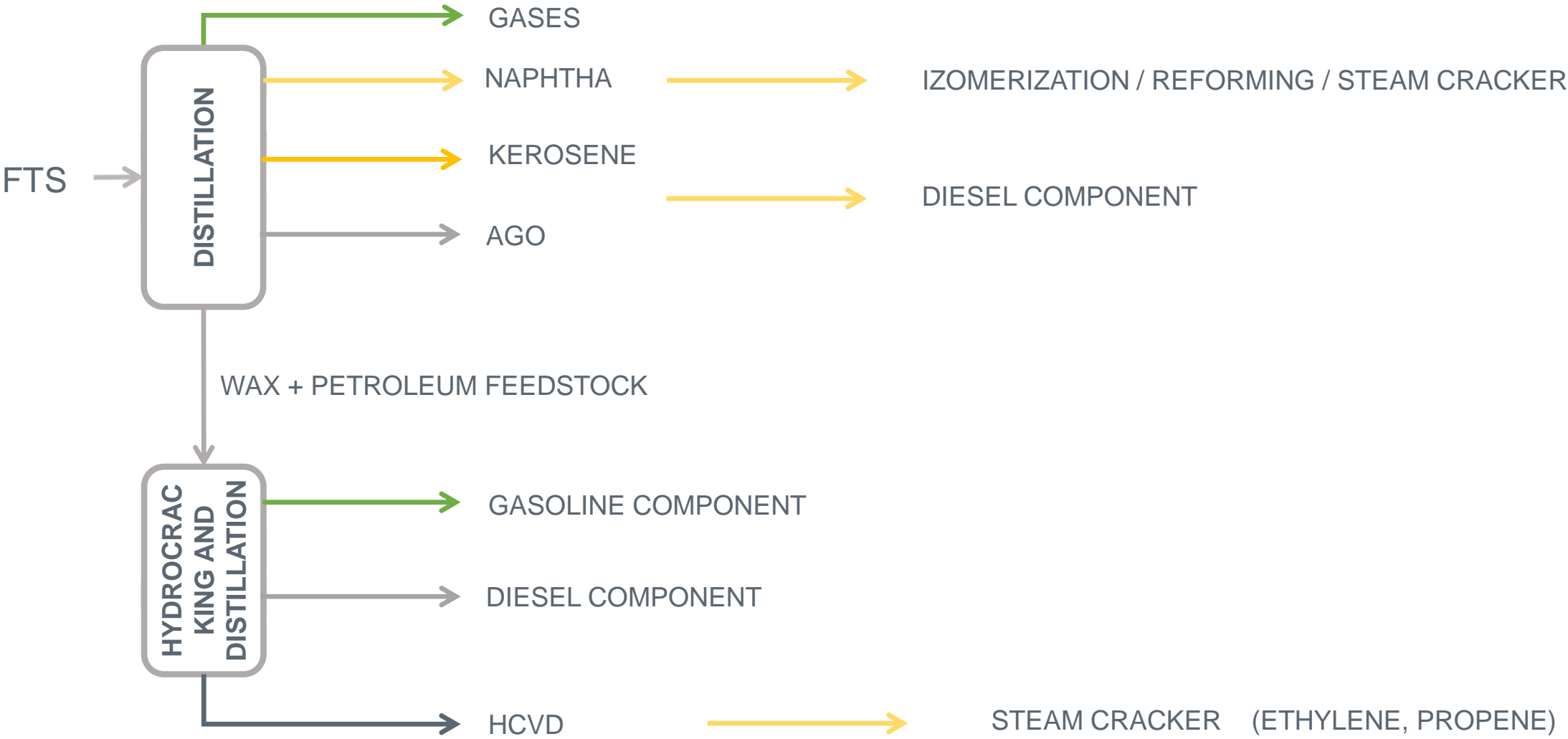
Start Of Material (mins): **0.125** End Of Material (mins): **19.545** Sample Weight (g): **1.0000**
SOM Thrsh: **(0.01000000%)** EOM Thrsh: **(0.01000000%)** Solvent Weight (g): **1.0000**

Material Search Restricted To: **NO RESTRICTION**
Material End Forced To: **28.000**
Warnings: **EOM Accuracy may be affected by BLEED at END OF RUN**

D2887/D6352 Simulated Distillation Plot

The plot displays a chromatogram with a red integration curve and a vertical dashed line at 19.545 minutes. The x-axis represents time in minutes (0 to 35), and the y-axis represents relative intensity (0 to 100). The plot title is "D2887/D6352 Simulated Distillation Plot".

FTS PRODUCT PROCESSING



UNIPETROL HYDROCRACKING UNIT



Capacity: 145 t/h

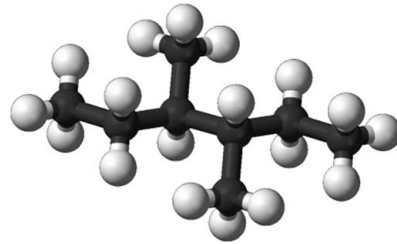
Conversion: 71 %



IZOMERIZATION AND CAT REFORMING

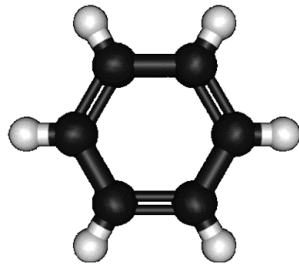
1. Production of branched hydrocarbons - Penex

IZOMERIZATION



2. Production of aromatics

CCR REFORMING



STEAM CRACKER

ETHYLENE CAPACITY: 500 KT/Y

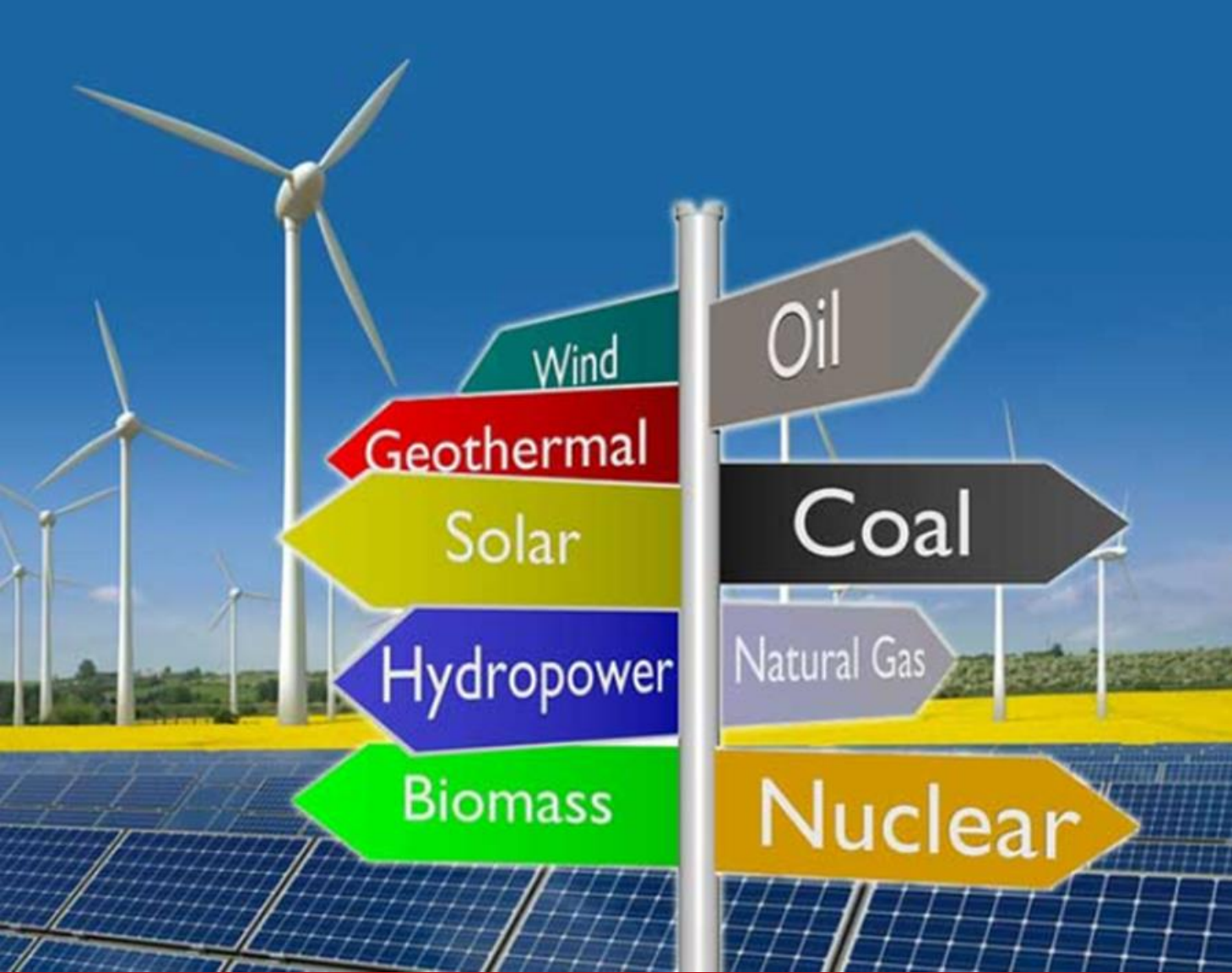
FEEDSTOCK: NAPHTHA, HCVD – HYDROCRACKING DIST. RESIDUE

FTS NAPHTHA



ETHYLENE
PROPYLENE
BUTADIENE





**THANK
YOU**