FOCUS ON INNOVATIVE TECHNOLOGIES
R&D TECHNOLOGY PLATFORMS

CIRCULAR ECONOMY

CARBON NEUTRALITY

OPERATIONAL EXCELLENCE
A SINGLE R&D TEAM FOR ALL ENI BUSINESSES
AN INDUSTRIAL R&D TO SUPPORT ENI NEEDS

PEOPLE
1,500

NETWORK
70
UNIVERSITIES AND RESEARCH CENTERS

FACILITIES
7
CENTERS

Waste to Fuel Pilot plant - Novara
ENI’S BIO-REFINERIES
A REAL EXAMPLE OF BUSINESS TRANSFORMATION
BIO-FUELS STRATEGY: ECOFINING™ TECHNOLOGY

RECONVERSION OF A TRADITIONAL REFINERY INTO A BIO REFINERY TO TRANSFORM ORGANIC FEEDSTOCK AND WASTE INTO HIGH QUALITY BIO-FUELS

<table>
<thead>
<tr>
<th>INPUT</th>
<th>PROCESS</th>
<th>OUTPUT PRODUCTS</th>
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<tr>
<td><strong>TO DATE</strong></td>
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<td><strong>TO DATE</strong></td>
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<tr>
<td>▪ UCO (Used Cooking Oil)</td>
<td>Pre-Treatment</td>
<td>▪ BIO-DIESEL HVO (Hydrotreated Vegetable Oil)</td>
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<tr>
<td>▪ Certified Palm Oil</td>
<td>ECOFINING™</td>
<td>▪ BIO-LPG</td>
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<td>▪ Tallow</td>
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<td>▪ BIO-NAPHTHA</td>
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<tr>
<td>▪ Waste</td>
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PALM OIL FREE TARGET @2023

NEW ALTERNATIVE FEEDSTOCK
▪ Microbial Oil
▪ Algal Oil
▪ Castor Oil

FURTHER POSSIBLE PRODUCTS
▪ BIO-JET FUEL
WASTE TO FUEL

A PROPRIETARY TECHNOLOGY FOR CIRCULAR ECONOMY
**WASTE TO FUEL TECHNOLOGY**

**TERMOLIQUEFACTION PROCESS OF THE ORGANIC FRACTION OF MUNICIPAL SOLID WASTE**

TO PRODUCE BIO-OIL TO BE USED AS MARINE BUNKER FUEL

**INPUT**

ORGANIC FRACTION OF MUNICIPAL SOLID WASTE

**PROCESS**

**OUTPUT PRODUCTS**

- **BIO-OIL up to 16%**
  as marine bunker fuel
- **WATER up to 80%**
  for industrial and irrigation purposes

**PILOT SCALE**

250 t/y PILOT PLANT
RUNNING SINCE DECEMBER 2018

**KEY FIGURES FOR 1 INDUSTRIAL PLANT**

- **150,000 t/y PLANT SIZE**
- **FEEDSTOCK**
  Waste produced by
  ~1.5 Mn people
- **PRODUCTION**
  Bio-Oil
  up to 24 kton/y
  Water
  up to 120 kton/y
MAGNETIC FUSION

A BREAKTHROUGH TECHNOLOGY
FOR THE FUTURE
MAGNETIC FUSION – A BREAKTHROUGH TECHNOLOGY FOR CLEAN AND RELIABLE ENERGY

DEVELOPMENT OF TECHNOLOGIES LEADING TO THE CONSTRUCTION AND OPERATION OF THE FIRST INDUSTRIAL PLANT THAT CAN ENSURE A CONTINUOUS AND PROFITABLE PRODUCTION OF ENERGY FROM FUSION BY MAGNETIC CONFINEMENT

HIGHLIGHTS

- NO EMISSION OF AIR POLLUTANTS AND GREENHOUSE GASES
- ABUNDANCE OF FUEL
- OPERATIONAL SAFETY DUE TO CONTROLLABILITY OF THE REACTION

COLLABORATIONS ON A GLOBAL SCALE

- 2018 – 2019
- 2020 – 2021
- 2025 – 2026
- 2033
- 2050

CNR

JRA for STUDIES ON PLASMA, SUPERCONDUCTORS & MATERIALS

CONSTRUCTION OF THE DIVERTOR TOKAMAK TEST

DIVERTOR TOKAMAK TEST OPERATION MANAGEMENT

ACQUISITION of a CFS SHARE & REALIZATION OF THE FIRST COIL

SPARC REALIZATION

ARC REALIZATION

* CFS = COMMONWEALTH FUSION SYSTEM | CNR = ITALIAN NATIONAL RESEARCH COUNCIL | ENEA = ITALIAN NATIONAL AGENCY