



BIOFUELS AND CHEMICALS FROM MIXED WASTE: THE ENERKEM CONTRIBUTION TO SUSTAINABILITY AND CIRCULAR ECONOMY

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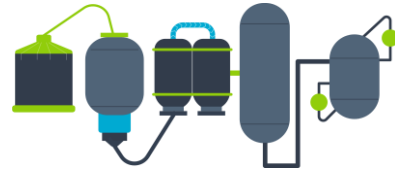


ENERKEM AT A GLANCE

Transforming waste and residues into biofuels and renewable chemicals



200+ employees



Exclusive feedstock-flexible multi-product technology



Pre-commercial facility in operation



Low-cost advanced biofuels and renewable chemicals



Smart waste management solution displacing landfilling and incineration



International projects backed over US\$600M in investments



Enerkem

ENERKEM SOLUTION

FEEDSTOCK



PRODUCTS



Ethanol



Methanol

MARKETS



Transportation Fuels



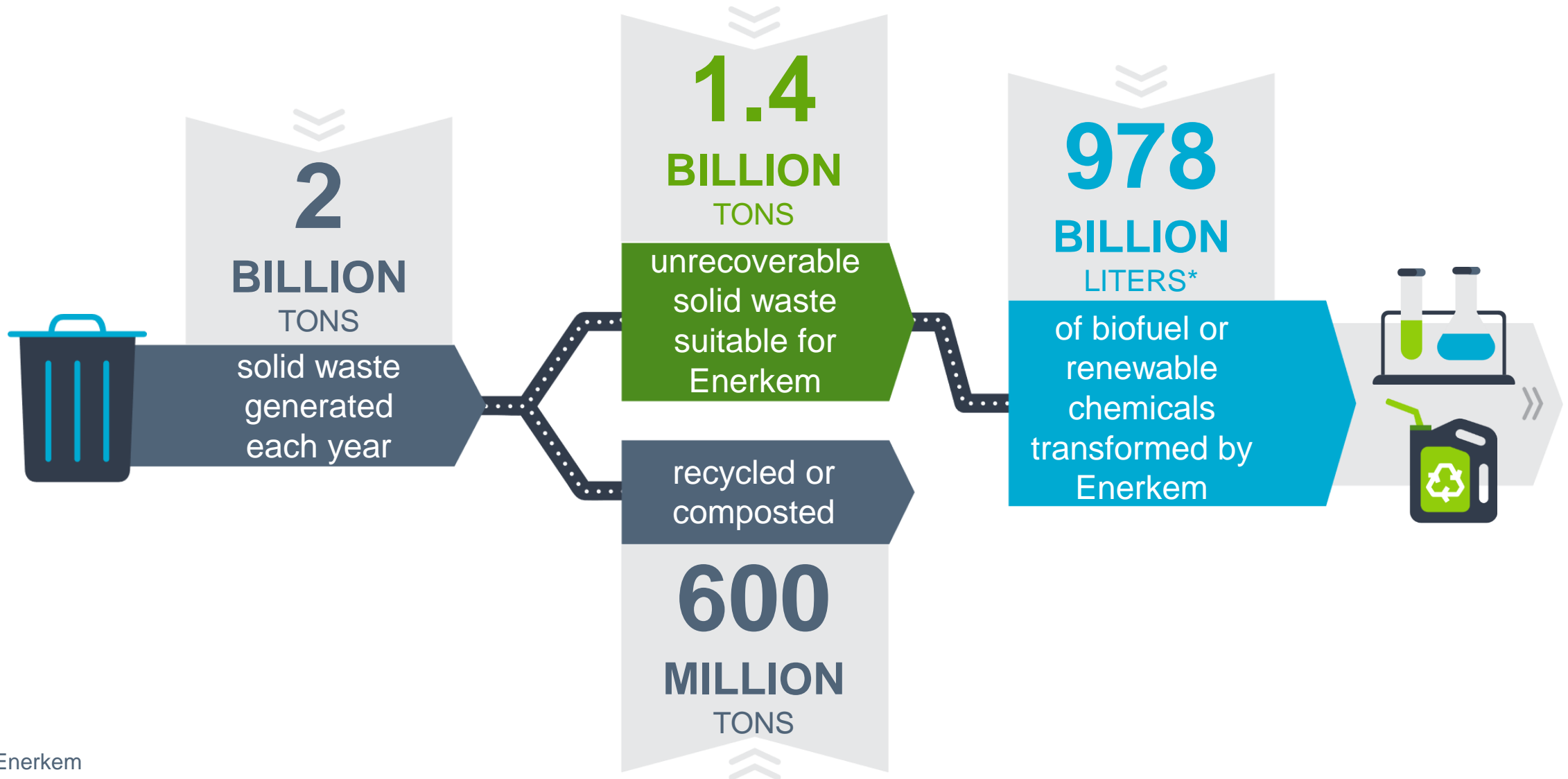
Solvents & Coatings



Plastics & Renewable Chemicals

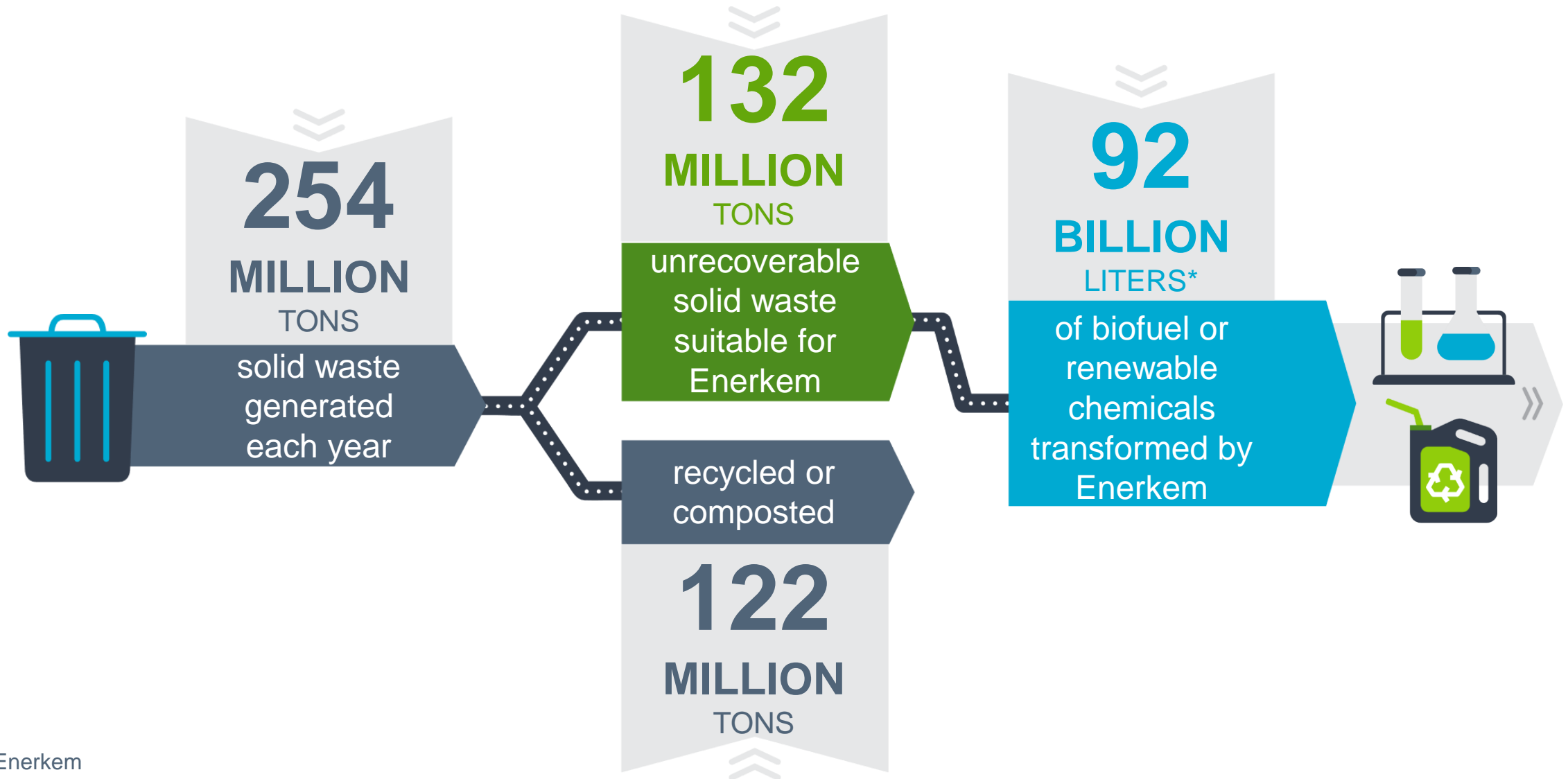


MUNICIPAL SOLID WASTE IN THE WORLD





MUNICIPAL SOLID WASTE IN EUROPE





TO A CIRCULAR ECONOMY





Enerkem



ENERKEM ALBERTA BIOFUELS (EAB)

The World's first pre-commercial waste-to-biofuels facility.

- 1 CAPACITY**
38 million litres per year
(i.e. 1 X standard Enerkem system)
- 2 FEEDSTOCK**
25-year agreement with City of Edmonton
for 110,000 dry US tons of waste per year
- 3 PRODUCT**
Cellulosic ethanol



Enerkem

INTEGRATED WASTE MANAGEMENT

2

3

1

4

1

INTEGRATED PROCESSING
& TRANSFER FACILITY

2

RECYCLING
CENTER

3

COMPOSTING
CENTER

4

ENERKEM
BIOREFINERY

THE CITY OF
Edmonton

ALBERTA
INNOVATES



FACILITY SNAPSHOT EDMONTON ALBERTA BIOFUELS (“EAB”)



| | |
|---------------------|--|
| LOCATION | Edmonton, Alberta, Canada |
| CAPACITY | 14.5 tph of waste feed |
| FEEDSTOCK | MSW from City of Edmonton, wood biomass, C&D, waste plastics |
| KEY FEATURES | <p>Proprietary technology transforming the ultimate residue of sorted MSW into clean syngas</p> <p>Syngas is used to produce, thermo-catalytically, and with the option of additional H₂, MeOH. The latter is carbonylated and Ethanol produced by hydrogenolysis</p> |

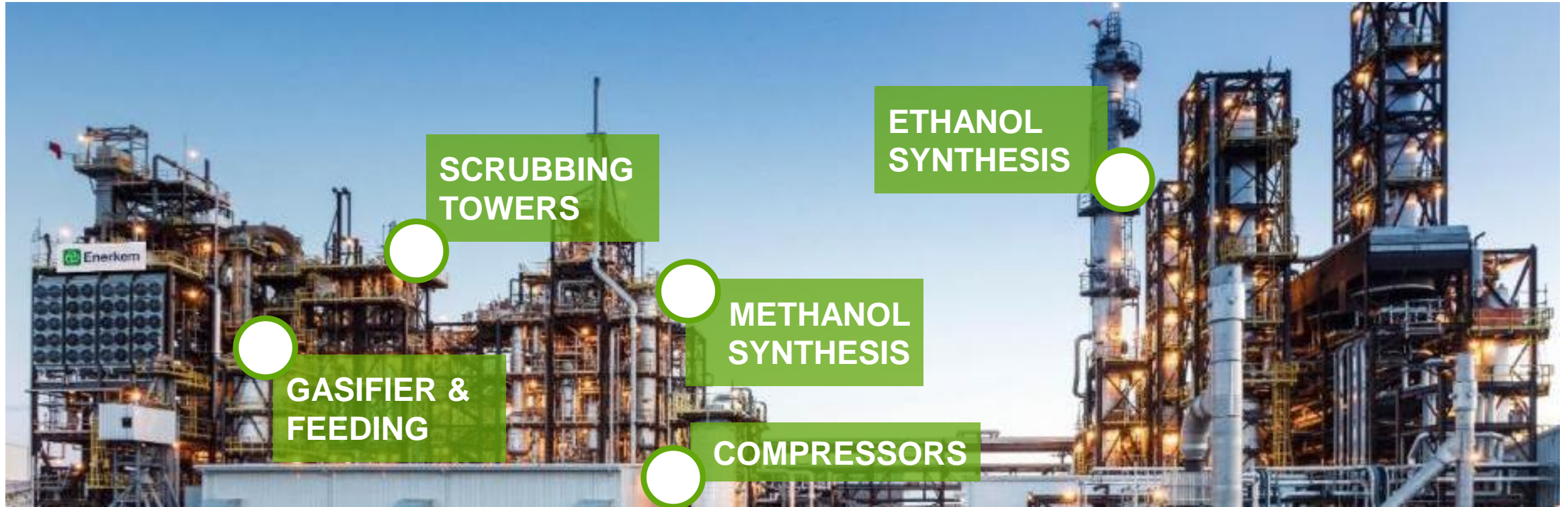
| PHASED CONSTRUCTION FOR SUCCESSFUL SCALE-UP | KEY ACHIEVEMENTS | COMPLETION STATUS |
|--|--|-------------------|
| PHASE 1+2 WASTE TO SYNGAS & SYNGAS TO METHANOL | <p>1st Pre-commercial plant to convert heterogeneous waste feedstock to chemical grade syngas</p> <p>Senior lenders “Bankability / Reliability” test passed (February 2017):</p> <ul style="list-style-type: none"> • IMPCA industry-compliant Bio-Methanol sold | |
| PHASE 3 METHANOL TO ETHANOL | <p>Installation of Bio-Methanol to Bio-Ethanol island completed in fall 2017, on time and on budget. Commissioned on 2018.</p> <p>EtOH production since Q1 2019; ramping-up production in Q2 & Q3</p> | |



Enerkem

ENERKEM ALBERTA BIOFUELS (EAB)

World's first MSW-to-biofuels facility



International Sustainable Carbon Certification (ISCC)



British Columbia Carbon Intensity certification (in addition to Alberta and Canadian RFS certifications)



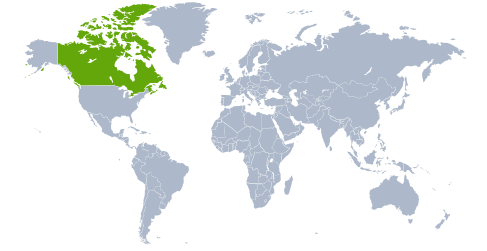
U.S. EPA approval to collect RIN's for cellulosic ethanol produced at EAB

2016-2017 **METHANOL**

2017-now **ETHANOL**



ENERKEM IN VARENNE



- 1 TYPE**
One production line facility
- 2 CAPACITY**
Input: 200K US tons of waste
Output: 95M litres per year
- 3 FEEDSTOCK**
Non-recyclable waste from the commercial and institutional sectors
- 4 PRODUCT**
(bio-)Methanol, (bio-)Ethanol



ENERKEM IN ROTTERDAM



1

TYPE

Two production line facilities

2

CAPACITY

Input: 400K US tons of waste
Output: 265M litres per year

3

FEEDSTOCK

Non-recyclable waste from the municipal, industrial, commercial and institutional sectors

4

PRODUCT

(bio-)Methanol

ENERKEM IN TARRAGONA



1

TYPE

Two production line facilities

2

CAPACITY

Input: 440K US tons of waste
Output: 265M litres per year

3

FEEDSTOCK

Non-recyclable waste from the municipal, industrial, commercial and institutional sectors

4

PRODUCT

(bio-)Methanol



PROJECT PIPELINE



OPERATIONAL



UNDER CONSTRUCTION



PERMITTED / IN PERMITTING PROCESS



UNDER DEVELOPMENT

AFFORDABLE AND SUSTAINABLE AVIATION FUEL

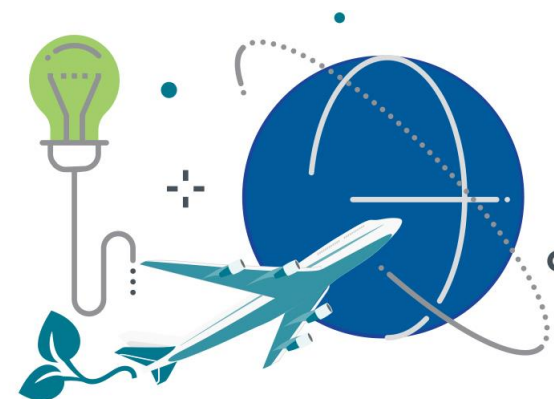
May 29th 2019

Enerkem is finalist of The Sky's the Limit Challenge led by Natural Resources Canada.

The Sky's the Limit Challenge is part of a nationwide challenge to Canadians to develop the cleanest, most affordable and sustainable fuel for the aviation sector to further reduce its carbon footprint and fight climate change.

« *By expanding the range of biofuels and biochemicals enabled by our technology, Enerkem will be able to set new global standards in waste management, biofuels and renewable chemicals and be at forefront of the circular economy* »

DOMINIQUE BOIES
Chief Executive Officer
and Chief Financial Officer





A STRONGER PARTNERSHIP WITH SUNCOR

October 22th 2019

Suncor Energy increases its participation in Enerkem, strengthening their existing relationship

- Closing of a US\$38.3 million equity investment from Suncor, Canada's leading integrated energy company
- The company first participated in the ownership of Enerkem in April 2019 as part of a US\$58.4 million equity financing alongside Enerkem's existing shareholders.
- With this new investment, Suncor becomes a significant, strategic shareholder of Enerkem

« *Through this additional investment, the confidence Suncor is showing us sends a clear signal that they strongly support and believe in the Enerkem technology, confirming our leadership in the advanced biofuels market* »

DOMINIQUE BOIES

Chief Executive Officer
and Chief Financial Officer





Enerkem



THANK YOU

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Enerkem



**CONTRIBUTING TO MEET WASTE
MANAGEMENT CHALLENGES**

