



ENSYN

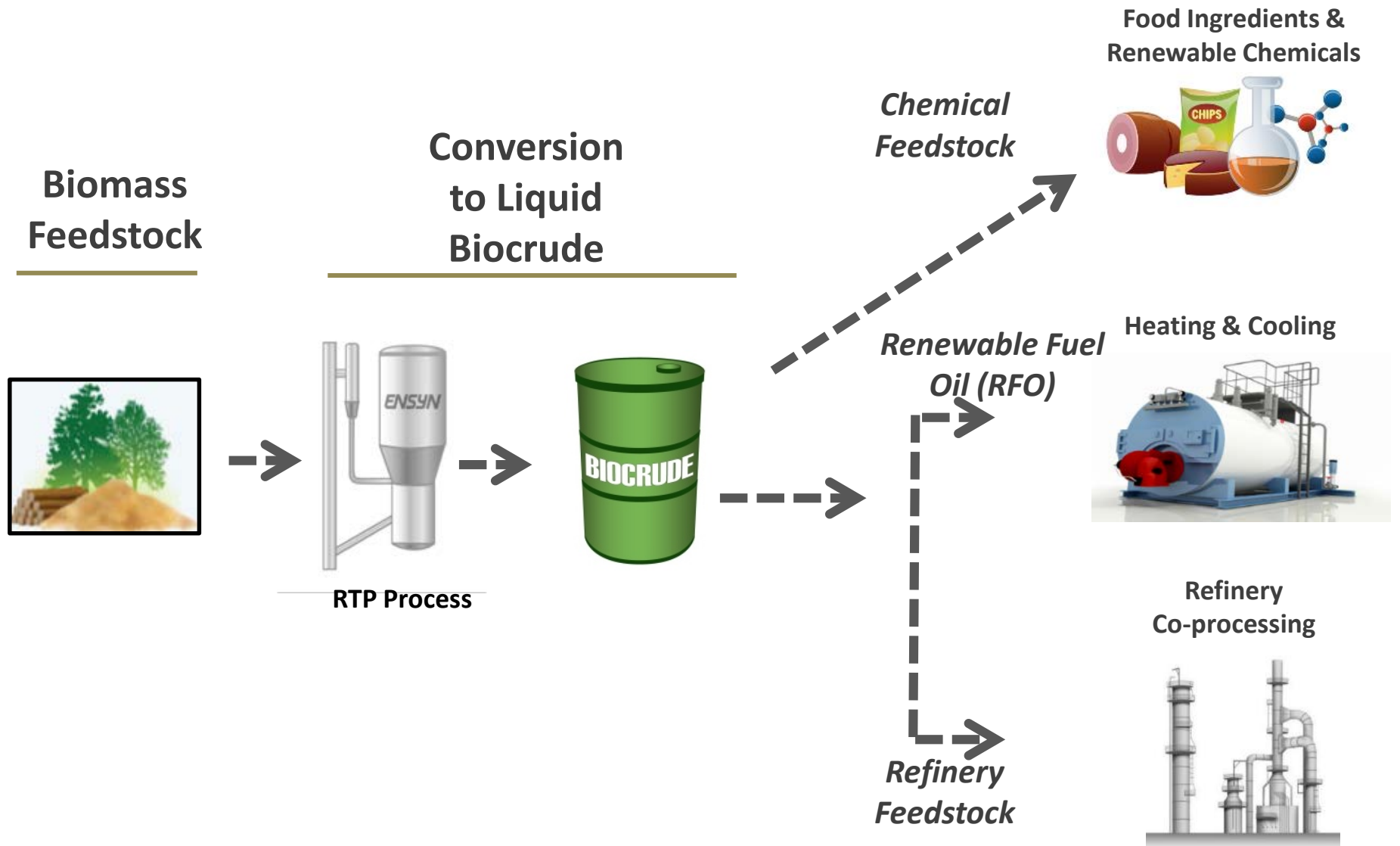
2016 BioCleantech Forum
Integration with Canada's Oil Industry
Ottawa, Ontario November 3, 2016



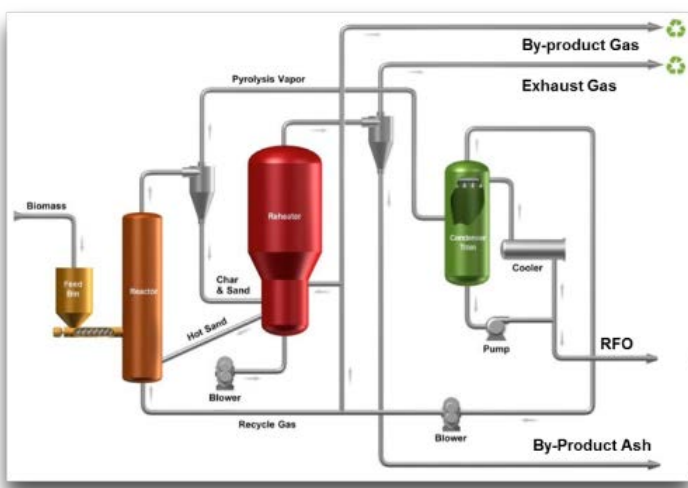
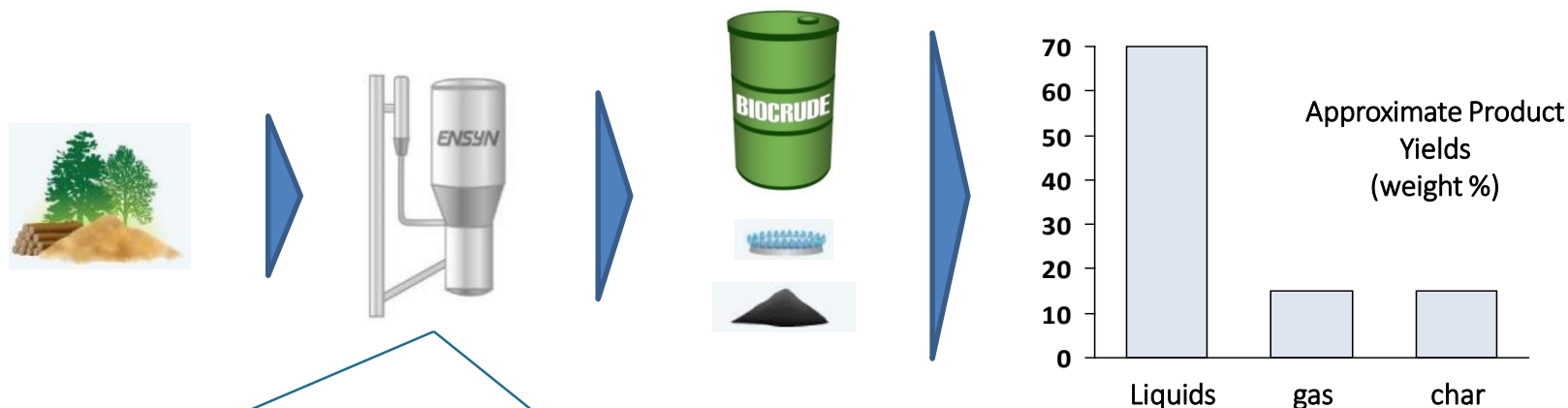
Ensyn's Approach to Integration with the Oil Industry

- ▶ We are partners, not competitors
- ▶ Ensyn provides an economical solution for the oil industry to meet its obligation to produce and blend low carbon fuels
- ▶ Anchored by Ensyn's commercial RTP process
- ▶ Integrates within the existing oil industry asset base
- ▶ Refinery market represents a large-scale, global opportunity
- ▶ Backed by world-class strategic partners across the value chain
- ▶ Existing commercial production in Ontario
- ▶ Capacity expansion underway in Quebec, Brazil and the U.S.

Ensyn's Business – Forest Biomass to High Value Products



Ensyn's RTP[®] Technology



Maximum Conversion of Solid Carbon to Liquid

- Not “severe” – a non-catalytic, thermal process
- Similar to Fluid Catalytic Cracking (FCC)
- No need for catalysts, high pressure or hydrogen
- Gas and char used to run the facility and dry the biomass (energy self-sufficient)
- 35 patents issued, 97 pending

A 30+ Year Growth Story Backed by Commercial Operations



1984



1989
Commercial
Deployment



1998-2005
Heavy Oil



2006
Ontario Facility &
return
to Bio-energy



Ongoing
Bioenergy
Expansion

Strategic Relationships Across the Value Chain

Feedstock



Conversion to RFO



Refinery Feedstocks



Heating & Cooling



Specialty Chemicals & Food Ingredients



Specialty Chemicals – Initial Commercialization

- Initial commercial application – specialty chemicals & heating fuels
- 25+ years of commercial production
- Over 40 million gallons produced
- Five commercial RTP facilities in operation
- Strategic relationship: Kerry Group (Red Arrow Products, Wisconsin)
- Over 30 food products developed
- Red Arrow is now the market leader

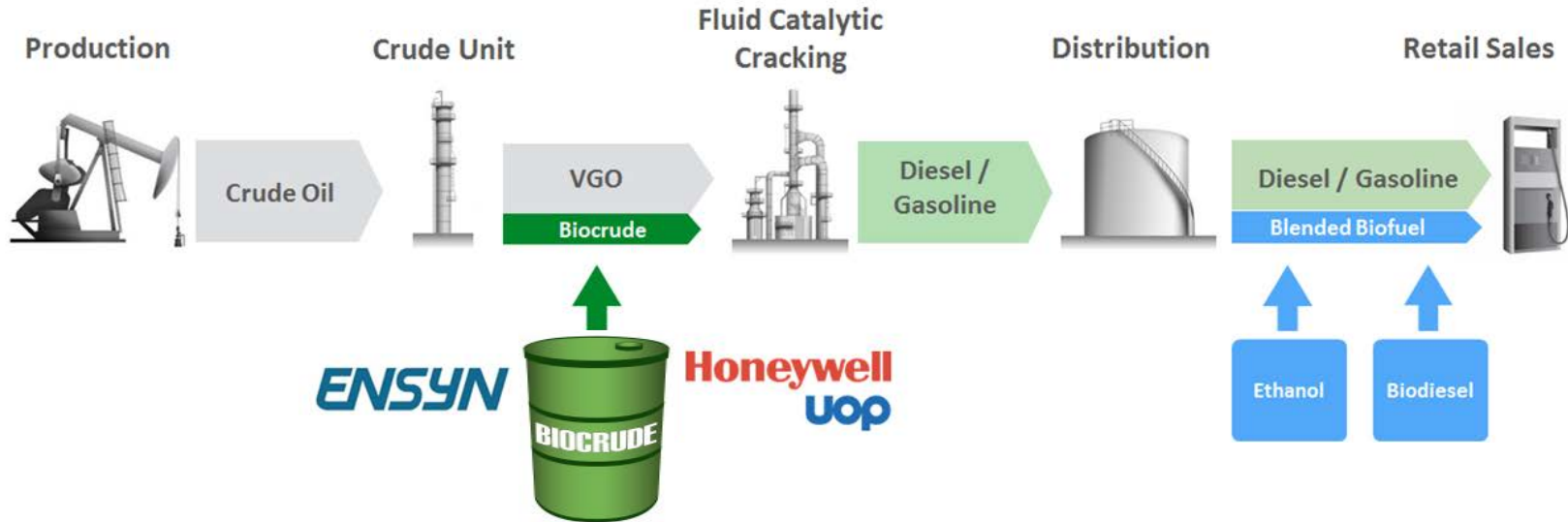


Heating Fuels

- Over 25 years of combustion on an industrial scale
- Approximately 20 million gallons used in industrial boilers
- Now demonstrated across a range of applications
 - ▶ Heating & cooling markets
 - ▶ Large commercial and institutional users
 - ▶ District heating systems
 - ▶ Mining (indurating furnace)



Refinery Co-processing vs. Traditional Biofuels



Leveraging existing infrastructure:

- Lowers the refiners CAPEX & OPEX of compliance
- Facilitates implementation
- Up to 5% biocrude processed with conventional petroleum feedstocks
- Provides comparable yields on a volumetric basis
- Does not compete for market share with the refiner
- Allows refiner to control generation of their regulatory credits

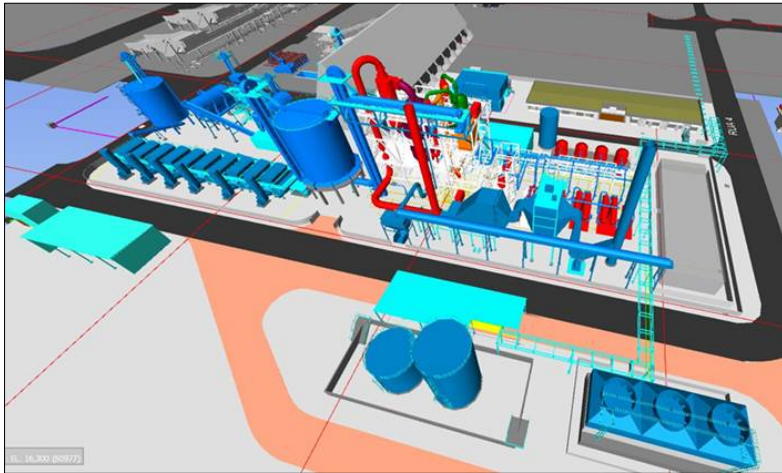
Co-processing Commercialization

- 5+ years of development
- Strategic alliance with Honeywell UOP expanded in 2014 to include Refinery Co-processing
- In negotiations with a motivated group of “Early Adopter” refiners
- Announced refining strategic relationships include Chevron & Tesoro
- Several additional refiner initiatives underway
- Biocrude supply for these contracts:
 - ▶ Initially from the Ontario facility
 - ▶ Additional deliveries from projects in development

U.S. Regulatory Framework Supports Deployment

- RFS – the following pathways are in place
 - ▶ RFO Heating (D7 RINs – Ensyn leading producer of D7 RINs)
 - ▶ Co-processing gasoline (D3 RINs)
 - ▶ Co-processing diesel (D7 RINs)
- LCFS – California pathway approved:
 - ▶ For Ensyn's renewable gasoline and diesel
 - ▶ Carbon intensity determined to be approximately 20-25 g CO₂e/MJ
- RECs
 - ▶ Generation of REC- eligible heat since Aug 2015 in NH
 - ▶ Final stages of measurement protocols with the regulatory authorities

Production Facilities & Projects



Ontario Production Facility

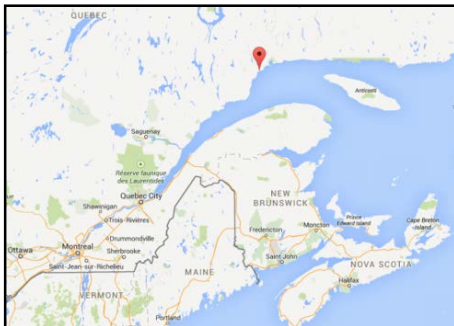
- Operational facility with capacity of 3 million gallons per year
- Deliveries ongoing to commercial markets – focus on U.S. markets
- Commissioned in 2006 with a focus on chemicals/fuels production
- Enhanced in 2014 as Ensyn's anchor fuels facility
- Facility is qualified by the U.S. EPA under the RFS program
- Sales to qualified users in the U.S. are generating D-7 RINs



Cote Nord Project, Quebec



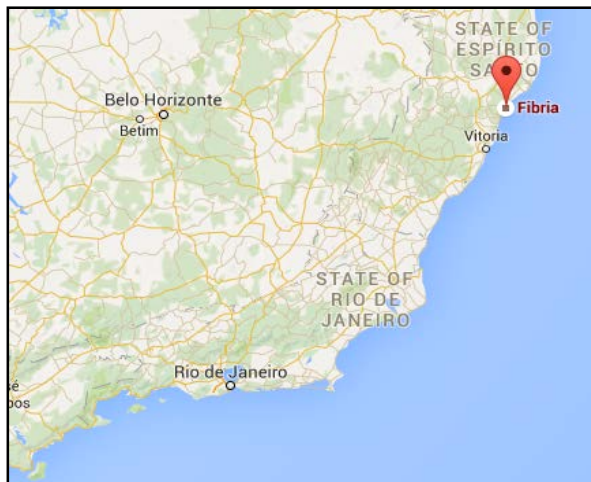
- 10 million gpy facility under construction
- First of several projects under a joint development agreement with Ensyn and Arbec Forest Products
- Located at Arbec's sawmill in Port Cartier, Quebec - feedstock is forest slash
- Civil work has begun and major equipment modules ordered
- Project capex approx CAN\$ 103 million, fully funded, financing parties include:
 - ▶ Sustainable Development Technology Canada
 - ▶ Investments in Forestry Industry Transformation
 - ▶ Investissement Quebec



Aracruz Project - Brazil

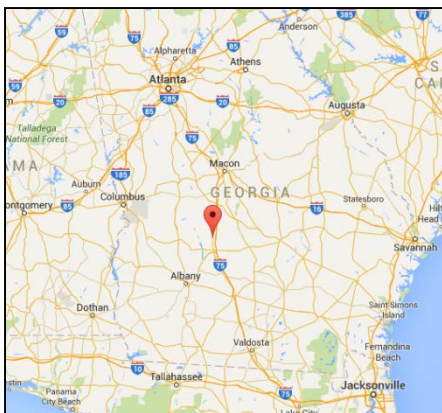


- 22 million gallon per year facility being developed in partnership with Fibria Celulose
- Located at Fibria's pulp mill in Aracruz, Espirito Santo
- Feedstock is eucalyptus forest residues
- Offtake targeted for U.S. refineries and heating clients
- Preliminary engineering substantially complete



Vienna Project, Georgia

- 20 million gallon per year facility being developed by Ensyn, Renova Capital Partners, and Roseburg Forest Products
- Location is a mothballed mill in Dooly County, Georgia
- Feedstock is forest residues and thinnings from local sources
- Product targeted for refineries and district heating clients
- Conditional commitment from the USDA for a \$70 million loan guarantee with Citibank as the Lender of Record
- Preliminary engineering substantially complete



Keys to Successful Integration with Canada's Oil Industry

- ▶ Be a business partner, not a competitor
- ▶ Offer an economical solution to their problem
- ▶ Leverage the existing industry asset base
- ▶ Do not add to the complexity of their business



Advancing Low Carbon Fuels