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## **Alternative Fuels Summary since 1990**

Additional submitted attachment is included below.

## Alternative Fuels Summary, 1990-present

162,000 gal	Nil Volume Inherent	Camelina oil not viable	412 million gal 2014	70 million gal/yr 2014	No liquid fuels	12 million gal/yr	1 million SqFt Modular Fab Feb. 2015	Project defined Jan. 2015	Richardton, ND - Dickinson, ND ITGR Project
Syntroleum Corp	failed economics  ICVR (2) March 2015  Integrated Corn Biorefinery  Co-production CEL Ethanol w/butanol trial 2007	US EPA approval of diesel fuel from Camelina issued Nov. 2013  400,000 gal 2011 \$30-32/gal  Sustained Oils, LLC 140,000 gal USAF + Naval Air \$86.50/gal 2010  HEFA Jet Fuel specs 2009 Dr. James Edwards USAFRL - Dayton	Rotterdam 2013 Singapore 2011 Porvoo 2006	Ren Energy Group purchase 2013  equipment misdesign	Multiple waste processes purchased by Outotec 2011 Energy Products of Idaho  process failure shutdown 2014 KiOR Miss. Plant 2012	2 2016 startups July 2015 startup  Vadxx Energy Akron, OH Plant	GTL JV Mar. 2014 Waste Mgmt. Inc NRG Energy Velocys  Kurdish Iraq 5 refineries 2010-2015  Siberia 4 refineries 1990s	Process on-well Portage Co., OH	Project defined March 2015  oil stabilization project February  railcar crashes huge burns  interim spec for vapor pressure Bakken Crude is useless 1st Qtr 2015
Conoco GTL	CAAFI 2006 Cellulosic Ethanol to Jet Fuel	Michigan Tech Camelina Oil Supply 1B lbs/year 2008	Neste Oil Co.	Dynamic Fuels Tyson/ Syntroleum 2011	Finland, Italy Pyrolysis 1990s	Auto scrap residue	Ventech Int'I	AGI Methanol	Lowcap GTL Bakken Crude

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