

# ANOTHER FIRST: Innovation Goes Green

The City of Altamonte Springs and industry leading engineering firm AECOM have formed a public-private partnership to conduct an innovative biofuel pilot program at the City's award-winning Regional Water Reclamation Facility (RWRF). The goal of this pilot program is to demonstrate that algae and wastewater treatment biosolids can be transformed into biofuel to help remove harmful algae from water bodies and reduce dependence on fossil fuels. Our City is the first in the state of Florida and only the third in the country to test this cutting-edge technology.

Algae and wastewater biosolids are considered good source materials for biofuel because they are rich in carbon. By using these organic materials in alternative ways, we can protect Florida's waterways from nutrient pollution and eliminate harmful algal blooms. After collecting the algae from the water, these biosolids can be turned into liquid biofuel to create a renewable source of clean energy through hydrothermal processing. Temperature, pressure and water are combined to convert the wet wastes into oil and gas, which produce the same product as fossil fuels in 30 minutes rather than 30 million years.

This specialized process only takes 15% of produced fuel energy to run, allowing 85% of the product to be used for biofuel. As a result, the pilot produces 4 to 6 gallons of crude oil a day. The pilot begins in April at a smaller scale to test this technology and will help the City and AECOM understand its potential to expand to scale.

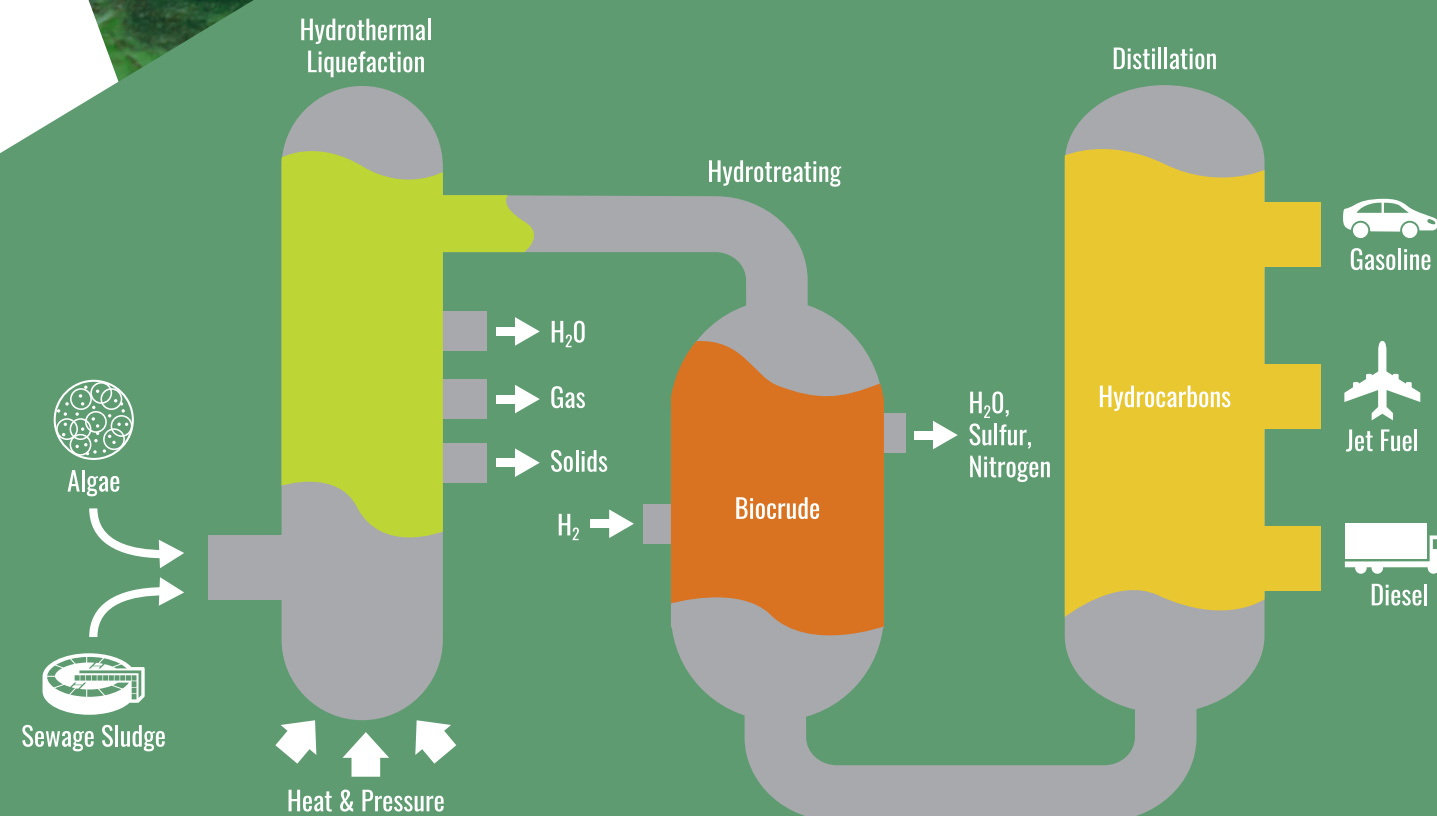
This technology is a gamechanger for how wastewater and biosolids are used. Wastewater is collected and treated at the City's facility around the clock every day, producing reclaimed water for thousands to use as well as additional biosolids, which are typically turned into fertilizing soil. These natural byproducts could go even further as usable oil and gas. This partnership and pilot program with AECOM are exciting milestones in a long list of groundbreaking achievements for our City as we create viable solutions for a better future.



Pilot-scale HTL processing equipment.

## How It Works

- Algae is harvested from Lake Jesup using patent-pending Hypernucleation Flootation System (HFS), a no-harm solution for removing algae, nutrients and algal toxins. The HFS removes nutrients and returns clean water back to the lake.
- Algae blooms are a naturally occurring organism, but can produce toxins that threaten human health, aquatic ecosystems and drinking water costing an estimated \$1 billion each year in damages in the U.S. alone.



- The collected algae is brought to the RWRF for dewatering, which filters out all liquid leaving behind biosolids. These biosolids are very similar to the sludge created during the wastewater treatment process, which is also used to create biofuel.
- The algae and biosolids go through the Hydrothermal Liquefaction (HTL) processor, which uses heat and pressure to produce two bioproducts—natural gas and biocrude.

- *Natural Gas*—can be sent to a gas pipeline to use in heating, electricity generation and industrial uses.
- *Biocrude*—can be either refined or blended to produce high value chemicals and biofuels, including both petrol and diesel replacement fuels.
- AECOM's work on this project provides much needed relief to communities, improving air quality, reducing effects to sea life and improving quality of life for residents.