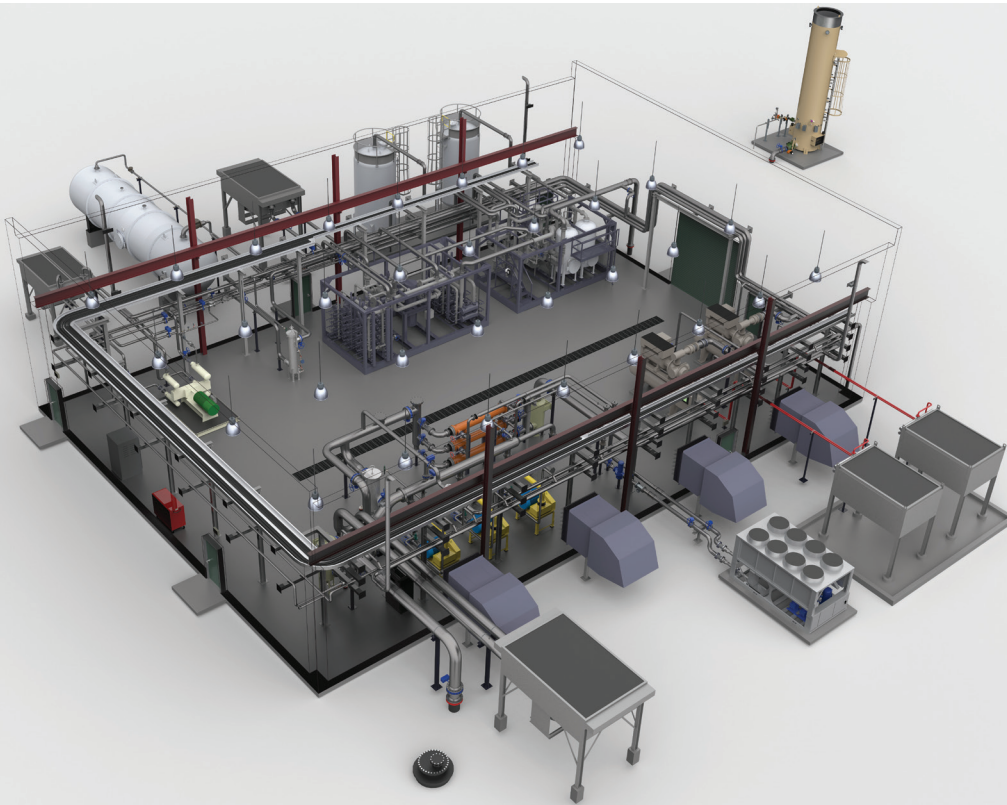


# CASE STUDY – SE OKC RENEWABLE NATURAL GAS FACILITY DESIGN

ESI provided full process, mechanical, electrical, and controls engineering services for a 3,000scfm (inlet) landfill gas-to-pipeline RNG facility. The facility utilizes a membrane based CO<sub>2</sub> removal system integrated with a PSA based nitrogen rejection system. ESI provided the complete facility mechanical design in 3D while providing detailed point-to-point electrical plans.



## UNIQUE CHALLENGE

The project required seamless integration (mechanical, electrical, and controls) of multiple technologies supplied by multiple equipment vendors to produce a cohesive operating facility designed to maximize facility up-time. To streamline the integration of the facility, ESI provided a comprehensive set of over 350 drawings that included: spool-by-spool mechanical pipe fabrication drawings, point-to-point control termination drawings, and detailed pipe support drawings. This level of detail represents significant savings to clients in construction costs and is only achieved through ESI's advanced 3D design capabilities and meticulous attention to detail.

## PROJECT OVERVIEW

### LOCATION:

Republic Services SE OKC Landfill  
Oklahoma City, Oklahoma

### OWNER:

Aria Energy

### DESIGN COMPLETION:

October 2017

### EQUIPMENT:

Air Liquide Membranes  
Guild PSA N<sub>2</sub> Rejection System  
Glauber/Sullivan Compression

### CAPACITY:

3,000scfm raw LFG inlet

### SCOPE OF WORK:

- Process Design
- Mechanical Design
- Electrical Design
- Controls Design Assistance
- Advanced 3D Facility Design
- Spool-by-Spool Piping Drawings
- Point-to-Point Controls Drawings
- Construction Permit Assistance
- Facility HAZOP Review
- Construction Engineering Assistance



## RENEWABLE NATURAL GAS EXPERTS

The completion of the SE OKC RNG Facility design marks the 4th successful project between ESI and Aria. A 5th project is scheduled for completion in mid-2018 and more are in the late stages of development. As with each prior project, ESI and Aria have taken the safety and performance of the facility to the industry's cutting edge.

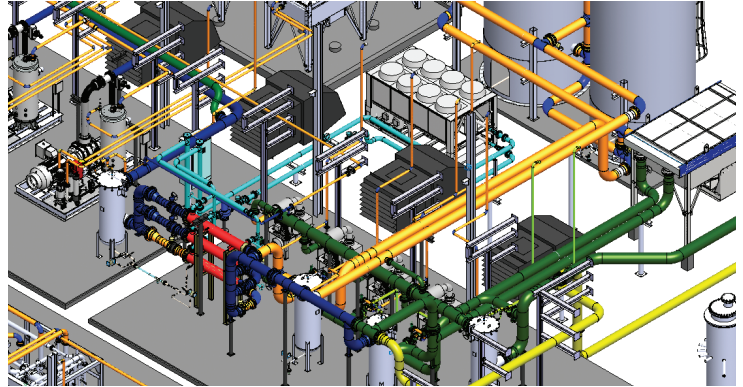
As the largest developer of renewable natural gas projects in the United States, Aria relies on ESI to play a key role in the engineering and integration of their facilities. ESI's technical expertise in gas separation of biofuels includes experience and understanding with a wide variety of technologies including: membrane, PSA, TSA, amine, water wash, biological scavengers, bulk media removal, and more. As a true third party engineer, ESI is technology agnostic but maintains relationships with most of the major RNG technology suppliers in the industry. ESI is committed to providing clients with the best RNG solution for their project needs.



5 Complete RNG Facility Designs in 5 years.



Experience in integrating a wide variety of technologies and suppliers including membrane and PSA systems



Advanced Plant Design capabilities help to streamline projects.



RNG Facilities designed to maximize uptime with integrated overhead cranes and easy access to equipment. We know what it takes to make a facility perform well.



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ENERGYneering provides customers the peace of mind that comes from experienced professionals skilled at completing turn-key gas-to-energy solutions.  
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