

JEFFREY J. GRILL



Education

B.S. – Chemical Engineering; University of Connecticut, 2000
B.S. – Materials Engineering; University of Connecticut, 2000

Professional Affiliations

Renewable Natural Gas Coalition - Advocacy LAB & Set Committee
Renewable Natural Gas Coalition - Education LAB & Set Committee
American Biogas Council Science & Research Subcommittee
American Biogas Council RNG Subcommittee
American Biogas Council Policy Subcommittee

Training

Six Sigma Black Belt - Northern Illinois University
HYSYS Advanced Process Modeling – AspenTech
HYSYS Process Modeling - AspenTech

Professional Experience

Jeffrey J. Grill is Vice President and Business Unit Director of SCS Energy, in Long Beach, CA. a division within SCS Engineers, which is responsible for the design, construction and operation/maintenance of biogas to Renewable Natural Gas & energy facilities. He has over 20 years of energy and renewable natural gas (RNG) project development, engineering, and management. His core values are quality, consistency and engineering excellence.

Prior to assuming the BUD role, Mr. Grill led the Energy group's process engineering division which is responsible for the design of all SCS's RNG facilities. He provides a wide array of engineering and management services ranging from conceptual to detailed design and implementation.

During his career, he has built an execution portfolio of 19 patents and applications and designed over 50 Renewable Natural Gas processing plants with a combined designed production capacity equivalent to 16% of California's 2021 residential natural gas consumption. This is equivalent to almost one and a half percent of the US residential natural gas consumption, equating to a reduction of over 4.1 million tons of CO₂ GHG emissions or 2.1 million tons of coal burned per year. The capacity of the landfill gas to pipeline quality RNG projects that Mr. Grill has supervised or designed totals over 335 MMCFD for landfill gas to RNG, and over 34 MMCFD for dairy digester and municipal WWTW gas to RNG.

Landfill Gas to Energy / Landfill Gas to RNG / Digester Gas to RNG Projects

Brevard Energy, LLC – Brevard – Complete engineering design of a 3,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology at the Brevard County Landfill in Juno Beach, Florida.

NextEra Energy Resources, LLC – Pecan Grove – Complete engineering design of a 2,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology at the Pecan Grove Landfill in Pass Christian, Mississippi.

Ocean Energy Holdings, LLC – Ocean – Design of a 6,500 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Ocean County Landfill in Manchester, New Jersey.

Waste Connections Canada Inc. – Ridge – Design of a 6,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Ridge Landfill in Blenheim, Ontario, Canada.

Opal Fuels – Atlantic RNG, LLC (ACUA) - Design, construction & commissioning of a 2,500 scfm landfill gas to pipeline quality renewable natural gas CNG facility utilizing CO₂ membrane and N₂ PSA separation technology in Egg Harbor Township, New Jersey.

Opal Fuels – Polk County RNG, LLC - Design, construction & commissioning of a 4,000 scfm landfill gas to pipeline quality renewable natural gas CNG facility utilizing CO₂ membrane and N₂ PSA separation technology in Winter Haven, Florida.

Conversion Energy Systems, Inc. Plastics Gasification – Design review & analysis and plastics to energy facility utilizing a proprietary gasifier combined with a Capstone microturbine for syngas and liquid fuels power production in Manchester, New Jersey.

Waste Management Renewable Energy, LLC – Covell Gardens – Lead the engineering design of an 8,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in San Antonio, Texas.

Waste Management Renewable Energy, LLC – Okeechobee – Lead the engineering design of a 6,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Okeechobee, Florida.

Waste Management Renewable Energy, LLC – Columbia Ridge – Lead the engineering design of a 12,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Arlington, Oregon.

Waste Management Renewable Energy, LLC – Columbia Ridge – Lead the engineering design of a 12,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Arlington, Oregon.

Waste Management Renewable Energy, LLC – Williamson County – Lead the engineering design of a 4,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Hutto, Texas.

Waste Management Renewable Energy, LLC – Richland – Lead the engineering design of a 6,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation.

Waste Management Renewable Energy, LLC – Pheasant Point – Lead the engineering design of a 4,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Bennington, Nebraska.

Waste Management Renewable Energy, LLC – Oak Ridge – Lead the engineering design of a 3,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation and propane injection technology in Dorchester, South Carolina.

Waste Management Renewable Energy, LLC – Salem– Lead the engineering design of a 3,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Opelika, Alabama.

Waste Management Renewable Energy, LLC – High Acres – Lead the engineering design of an 8,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Fairport, New York.

Waste Management Renewable Energy, LLC – Medley – Lead the engineering design of a 3,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Medley, Florida.

Waste Management Renewable Energy, LLC – Dekalb – Lead the engineering design of a 4,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Dekalb, Illinois.

Waste Management Renewable Energy, LLC – Security – Lead the engineering design of a 3,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Cleveland, Texas.

Waste Management Renewable Energy, LLC – Temple – Lead the engineering design of a 3,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology in Temple, Texas.

Waste Management Renewable Energy, LLC – Orchard Hills – Complete engineering design of an 8,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology at the Orchard Hills Landfill in Davis Junction, Illinois.

Waste Management Renewable Energy, LLC – Simi Valley – Complete engineering design of a 9,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology at the Simi Valley Landfill in Simi Valley, California.

Waste Management Renewable Energy, LLC – Standardized Plants –Sixty percent complete engineering designs of a 3,000 scfm, 4,000 scfm, 6,000 scfm and an 8,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology for a site in Houston, Texas.

Waste Management Renewable Energy, LLC - DFW – Complete engineering design of a 5,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology at the DFW Landfill in Lewisville, Texas.

Sapphire RNG, LLC – Sapphire (Sampson) - Design, construction & commissioning of a 6,000 scfm landfill gas to pipeline quality renewable natural gas CNG facility utilizing CO₂ membrane and N₂ PSA separation technology at the Sampson County Landfill in Roseboro, North Carolina.

Emerald RNG, LLC – Arbor Hills - Design, construction and commissioning of a 10,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane, catalytic O₂ removal and N₂ PSA separation technology at the Arbor Hills Landfill in Northville, Michigan.

EDL – Lorain - Design, construction and commissioning of an 8,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ PSA, catalytic O₂ removal and N₂ PSA separation technology at the Lorain Landfill in Oberlin, Ohio.

EDL - Limestone - Design, construction and commissioning of a 9,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ PSA and N₂ PSA separation technology at the Carbon Limestone Landfill in Lowellville, Ohio.

Pratt Energy, LLC. –Thirty percent engineering design of a 7,500 scfm fermentation scrubber vent to carbon dioxide injection well for a Carbon Dioxide Compression and Sequestration plant in Pratt, Kansas.

Biofuels Coyote Canyon Biogas, LLC. – **Coyote Canyon** – Thirty percent engineering design of a 3,000 scfm landfill gas to pipeline quality renewable natural gas plant CO₂ membrane and N₂ PSA separation technology at Coyote Canyon Landfill in Newport Beach, California.

Fortistar Methane Group - Prima Deshecha - Thirty percent engineering design of a 3,500 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Prima Deshecha Landfill in San Juan Capistrano, California.

Archea Energy, LLC / Biofuels San Bernardino Biogas, LLC. – **Mid-Valley** – Thirty percent engineering design of a 370 scfm landfill gas to microturbine fuel facility at the Mid-Valley Landfill in Morrisville, Pennsylvania.

Brea Parent – EDL Energy – Brea – Thirty percent engineering design of a condensate management facility at the Power II Condensate Treatment Plant in Brea, California.

Waste Management Renewable Energy, LLC – Fairless - Complete engineering design of a 6,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ and N₂ PSA separation technology at the Fairless Landfill in Morrisville, Pennsylvania.

Prince William RNG, LLC. – **Opal Fuels** - Design, construction and commissioning of a 6,500 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Prince William Landfill in Manassas, Virginia.

Burlington RNG, LLC. – **Opal Fuels** - Design, construction and commissioning of a 3,500 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Burlington County Landfill in Florance, New Jersey.

Cottonwood RNG, LLC. – **Opal Fuels** - Design, construction and commissioning of a 2,500 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Cottonwood Landfill in Marissa, Illinois.

Waste Management Renewable Energy, LLC. - Eco Vista – Thirty percent engineering design of a 3,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Eco-Vista Landfill in Springdale, Arizona.

Assai Energy, LLC – Keystone – Complete engineering design of a 20,600 scfm landfill gas to pipeline quality renewable natural gas utilizing CO₂ membrane separation, catalytic O₂ removal, caustic scrubber, amine N₂ separation, fixed bed mercury removal technologies at the Keystone Landfill Renewable Natural Gas Plant in Dunmore, Pennsylvania.

Waste Management Renewable Energy, LLC – Sainte-Sophie – Thirty percent engineering design of a 7,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Sainte-Sophie Landfill in Quebec, Canada.

Will County - Prairie View – Complete engineering design and management of a 4,500 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Prairie View Landfill in Wilmington, Illinois.

New River RNG LLC - Opal Fuels – Design, construction and commissioning of a 2,500 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane separation technology at the New River Landfill in Raiford, Florida.

California Bio Energy – Buttonwillow - Design engineering, construction and commissioning support for a 2,500 scfm digester gas to pipeline quality renewable natural gas plant utilizing membrane separation technology at the Dairy Cluster Gas Processing Facility in Buttonwillow, California.

Pine Bend RNG LLC – Opal Fuels – Design, construction and commissioning of a 3,200 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane and N₂ PSA separation technology at the Pine Bend Landfill in Inver Grove Heights, Minnesota.

Five Points Pipeline, LLC – Design of a 2,050 scfm digester gas to pipeline quality renewable natural gas plant. Digester gas collected from a cluster of five separate dairy farms and routed to a central RNG facility utilizing CO₂ membrane separation technology at the Five Points Dairy Cluster in Riverdale, California.

Greengasco, LLC – Cactus - Design of a 3,350 scfm digester gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane separation technology at the Faria Dairy in Dumas, Texas.

EDL - Wood Road – Design, construction and commissioning of a 4,000 scfm landfill gas to pipeline quality renewable natural gas plant utilizing CO₂ membrane, catalytic oxygen removal and N₂ PSA separation technology at the Wood Road Landfill in Lansing, Michigan.

Noble Road RNG LLC – Opal Fuels – Design, construction and commissioning of a 3,500 scfm landfill gas to pipeline quality renewable natural gas plant utilizing membrane separation technology at the Noble Road Landfill in Shiloh, Ohio.

Dry Creek RNG LLC – Vitol – Design, construction and commissioning of a 700 scfm dairy digester gas to pipeline quality renewable natural gas plant membrane utilizing separation technology at the Dry Creek Dairy in Murtaugh, Idaho.

California Bio Energy – North Visalia - Design, construction and commissioning support for a 2,500 scfm dairy digester gas to pipeline quality renewable natural gas plant utilizing membrane separation technology at the Dairy Cluster Gas Processing Facility in Visalia, California.

California Bio Energy – South Tulare - Design, construction & commissioning support for a 3,300 scfm dairy digester gas to pipeline quality renewable natural gas plant utilizing membrane separation technology at the Dairy Cluster Gas Processing Facility in Tulare, California.

California Bio Energy – Kern - Design, construction and commissioning of a 3,300 scfm dairy digester gas to pipeline quality renewable natural gas plant utilizing membrane separation technology at the Dairy Cluster Gas Processing Facility in Kern, California.

California Bio Energy – West Visalia - Design, construction and commissioning support of a 1,500 scfm dairy digester gas to pipeline quality renewable natural gas plant utilizing membrane separation technology at the Dairy Cluster Gas Processing Facility in West Visalia, California.

California Bio Energy – Hanford - Design, construction & commissioning support of a 1,500 scfm dairy digester gas to pipeline quality renewable natural gas plant utilizing membrane separation technology at the Dairy Cluster Gas Processing Facility in Hanford, California.

AgPower Jerome LLC - CAMCO - Design of a 1,400 scfm dairy digester gas to pipeline quality renewable natural gas plant membrane separation technology at the Dairy Gas Processing Facility in Jerome, Idaho.

City of Fresno - Design of a 1,500 scfm municipal wastewater treatment facility digester gas to pipeline quality renewable natural gas plant utilizing membrane separation technology at the

Fresno/Clovis Wastewater Reclamation Facility in Fresno, California. Gas is combusted in an on-site gas turbine, offsetting natural gas consumption.

Dallas Clean Energy - McCommas Bluff - Engineering modifications for multiple site unit operations at the McCommas Bluff Landfill in Dallas, Texas.

Orlando Utilities Commission - Engineering & construction management of blower flare facility, transmission pipeline, and landfill gas supplemental fuel co-firing injection to coal burning boilers at the Stanton Energy Center in Orlando, Florida.

Biofuels Energy, LLC - Point Loma – Design, construction and operation and maintenance services for a municipal wastewater treatment facility digester gas to pipeline quality renewable natural gas project at the Point Loma Waste Water Treatment Plant in Point Loma, California.

University of Iowa - Conceptual process engineering design and calculations for a gas processing facility in Iowa City, Iowa.

Other Projects

Canton Renewables LLC - Sauk Trail Hills - Management, design, and construction management of a biomethane plant producing pipeline quality renewable natural gas utilizing CO₂ water wash, catalytic O₂ removal and biological H₂S removal technology at the Sauk Trail Hills Landfill in Canton, Michigan. Project completed in under a year. Several novel patents filed as inventor along with an overall process patent.

Canton Renewables LLC - North Shelby - Design of a biomethane plant producing pipeline quality renewable natural gas utilizing CO₂ water wash, catalytic O₂ removal and biological H₂S removal technology at the North Shelby Landfill in Millington, Tennessee.

Tesoro - Cerritos Channel Pipeline; Long Beach, CA. Sub-Sea Water Crossing Emergency Response Project.

Occidental Petroleum / California Resources Corporation - Management, engineering and construction management of several design/build projects ranging from \$1MM to \$4MM competed on the Grissom, Chaffee, and Freeman Long Beach Oil Islands in Long Beach, California.

HYUNDAI Uzbekistan - Gas to Liquids (GTL) Plant; Kashkadarya, Uzbekistan. A \$4.5 billion project adjacent to the existing Shurtan Gas Chemical complex in the Kashkadarya region in Southern Uzbekistan.

Saudi Aramco Oil Company - Fadhili Gas Plant; Khursaniyah, Saudi Arabia. Front End & Design (FEED) project package.

British Petroleum (BP) / Tesoro - Process safety management program (PSM) updates: As-built P&ID's development – Sour Water System. Claus Sulfur Plant, Reformer 1-3, & Tail Gas Units for a refinery in Carson, California.

Nuvera Fuel Cells - Design and evaluation of 10kWe – 90kWe Hydrogen Generating hydrocarbon fuel processor systems and sub-components for Hydrogen & Fuel Reforming Projects in Boston, Massachusetts.

Miscellaneous

Winner of the 2013 Engineering Society of Detroit Alpha Engineering Award for the groundbreaking Biogas Processing Plant design.

Successful Utility negotiation of gas interchangeability for pipeline injection of biomethane into DTE gas pipelines.

Successful coordination, negotiation, and execution of, and compliance with Utilities & Government bodies such as the Port of Long Beach (POLB), Department of Transportation (DOT), Department of Homeland Security (DHS), Utility coordination for Harbor Development Plans (HDP's).

Patents & Applications

1. United States Patent No. US12,070,730, Gas Mixing And Product Production Systems And Methods, Granted on August 27, 2024.
2. United States Patent Application No. US20240278177, Biogas Acid Removal Systems And Methods, Filed on April 12, 2024.
3. United States Patent Application No. US2024269602, Biogas Acid Removal Systems And Methods, Filed on February 15, 2023.
4. United States Patent No. 8,535,429, Caustic Scrubber System and Method for Biogas Treatment, Granted September 17, 2013.
5. United States Patent No. 8,690,993, Caustic Scrubber System and Method for Biogas Treatment, Granted April 8, 2014.
6. United States Patent No. 8,460,437, Method for Biogas Treatment, Granted June 11, 2013.
7. United States Patent No. 8,574,888, Biological H₂S Removal System and Method, Granted November 05, 2013.
8. Canadian Patent No. 2,852,281, Caustic Scrubber System and Method for Biogas Treatment, Granted April 14, 2014.
9. United States Patent Application PCT/US12/60886, Caustic Scrubber System and Method for Biogas Treatment, Filed October 18, 2012.
10. United States Patent Application No. 20130095438A1, Regenerative Thermal Oxidizer for the Reduction or Elimination of Supplemental Fuel Gas Consumption, Filed October 18, 2011.
11. United States Patent Application No. 20150024328A1, Regenerative Thermal Oxidizer for the Reduction or Elimination of Supplemental Fuel Gas Consumption, Filed October 18, 2014.
12. Canadian Patent Application No. CA2852254A1, Regenerative Thermal Oxidizer for the Reduction or Elimination of Supplemental Fuel Gas Consumption, Filed October 18, 2012.
13. United States Patent No. 9,005,337, System for the Treatment and Purification of Biogas, Granted April 14, 2014.

14. United States Patent Application PCT/US12/60882, Regenerative Thermal Oxidizer for the Reduction or Elimination of Supplemental Fuel Gas Consumption, Filed October 10, 2012.
15. United States Patent Application Provisional App. No. 61/729,269, System for the Treatment and Purification of Biogas with Deaeration of Scrubber Liquid, Filed November 21, 2012.
16. United States Patent No. 8,669,095, Method for the Treatment of Process Gas for Biological H₂S Removal, Granted March 11, 2014.
17. United States Patent Application No. 20140134710A1, System for the Treatment and Purification of Biogas with Elimination of Airflow from a Scrubber System, Filed November 9, 2012.
18. United States Patent Application United States Provisional App. No. 60/949,316, Cartridge with Reciprocating Substance Delivery and Removal, Filed July 12, 2007.