JASON MACKENZIE *Project Manager*

PROFILE

Jason MacKenzie is a project engineer at ENERGYneering Solutions Inc. (ESI). Since joining ESI in 2008, Jason has developed a wide ranging portfolio including design and construction management of biogas collection systems, Biogas to energy projects, and biomass to energy projects. Jason has also assisted ESI through the development of multiple successful products designed to support the biogas industry including Flo-Wing® and the PolyGate Valve™.

EDUCATION

BS, Mechanical Engineering, George Fox University, Newberg, OR 2010

AFFILIATIONS

American Society of Mechanical Engineers

PROFESSIONAL EXPERIENCE

LANDFILL GAS-TO-ENERGY EXPERIENCE

Professional Service Capabilities

- Budget and Schedule Development
- Preliminary Design
- Detailed Design
- Construction Management
- Startup Assistance
- Operations Assistance

Reciprocating Engines

- CAT 3520
- CAT 3516

Alternative Prime Movers

- Stirling Cycle Engines

TECHNICAL EXPERTISE

- Software AutoCAD
  - Solidworks
  - Microsoft Office (Word, Excel, Project, etc.)
- Google Sketchup

SAMPLE PROJECTS

LANDFILL GAS-TO-ENERGY PROJECTS

- Prince William II LFGTE, Manassas, VA
  Design and construction management of a 4.8MW Landfill Gas to Energy (LFGTE) Faclity.
- San Marcos LFGTE, Escondido, CA
  Design and Construction management of a 1.8 MW Landfill Gas to Energy (LFGTE) retrofit project. Two inoperable landfill gas turbines were replaced with two CAT 3516 Gensets. Site Mechanical and electrical infrastructure were upgraded to support the new equipment.
- Roseburg LFGTE & GCCS, Roseburg, OR
  Design and construction oversight of a new landfill gas collection and control system (GCCS) as well as the 1.6MW landfill gas to energy facility consisting of one CAT 3520 Genset.
- Energy 2001, Lincoln, CA
  Design of a 2.46 MW LFGTE facility expansion to include three additional CAT 3516 Gensets.
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SAMPLE PROJECTS *(continued)*

- Coffin Butte GCCS, Corvallis, OR
  GCCS design, master planning performance analysis and budgetary projection assistance.
- Fajardo LFGTE and GCCS, Fajardo, Puerto Rico
  Design and construction oversight of a new GCCS and 800 kw LFGTE facility. Project includes provisions for seamless expansion to 4MW.
- Carolina GCCS, Carolina, Puerto Rico
  GCCS performance analysis, design and master planning. Compliance reporting to satisfy environmental quality board.
- Toa Baja LFGTE, Toa Baja, Puerto Rico
  Design and construction oversight of an 800 kw LFGTE facility. Project includes provisions for seamless expansion to 4MW.
- Cowlitz County, Castle Rock, WA
  GCCS master planning to support Solid Waste Permit Application.
- Lane County (Bethel-Danebo), Eugene, OR
  Lanfill gas investigation at closed landfill action plan and design

BIOMASS- TO- ENERGY PROJECTS

- Sisters High School Biomass Heating Project, Sisters, OR
  Design and construction management of a 1.3 Btu/hr biomass to thermal energy project. The system operates seamlessly with the High School's existing heating system and offers the financial and environmental benefits to the community. Significant cost savings is provided to the school district by offsetting heating oil consumption through the use of a low cost, locally available, and carbon neutral resource.