

# WASTEWATER PROJECT OPPORTUNITIES

## Biogas Production from Domestic Wastewater Treatment Sludge

### Multiple Sites in Turkey

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#### OVERVIEW OF WASTEWATER PROJECT:

The organic load method is the most commonly utilized method in biochemical treatment of wastewater, which results in the production of sludge. Industries and local governments confronted with the challenge of sludge management should seek to find ways to turn this problem to their economic advantage. One of these solutions involves the utilization of biogas resulting from sludge processing as a fuel source.

**ESTIMATED ANNUAL EMISSION REDUCTIONS: 2,200 MTCO<sub>2</sub>E**

#### Tokat Domestic WWTP Cogeneration Unit

- **Type(s) of anaerobic digesters used at plant:** Mesophilic complete mix and capacity (4683 m<sup>3</sup>)
- **Biogas generation rate or gas flow:** 37-45 m<sup>3</sup>/hour
- **Average methane content in biogas:** 75%
- **Biogas is used to produce:** Electricity and thermal
- **Type of reciprocating engine:** JMS 208 GS-B.L (X 1)
- **Electrical output kW el.:** 330 kW
- **Recoverable thermal output (85/65 °C):** 395 kW
- **Biogas treatment process:** Moisture is removed



#### Tubitak-Mam Biogas Cogeneration Unit

- **Type(s) of anaerobic digesters used at plant:** Mesophilic complete mix and capacity (1650 m<sup>3</sup>)
- **Biogas generation rate or gas flow:** 87 m<sup>3</sup>/hour
- **Average methane content in biogas:** 52%
- **Biogas is used to produce:** Electricity and thermal
- **Type of reciprocating engine:** JMS 208 GS-B.L (X 1)
- **Capacity of generation:** 319 kWh
- **Electrical output kW el.:** 330 kW/h
- **Recoverable thermal output (80/60 °C):** 395 kW/h
- **Biogas treatment process:** H<sub>2</sub>S is removed

## Konya Treatment Plant Biogas Cogeneration Unit

- **Type(s) of anaerobic digesters used at plant:** Mesophilic complete mix and capacity (28,000 m<sup>3</sup>)
- **Biogas generation rate or gas flow:** 731 m<sup>3</sup>/hour
- **Average methane content in biogas:** 65%
- **Biogas is used to produce:** Electricity and thermal
- **Type of reciprocating engine:** JMC 316 GS-B.L(X 3)
- **Provide capacity of generation:** 2.2 MWh
- **Electrical output kW el.:** 834 kWh
- **Recoverable thermal output (90/70 °C):** 912 kWh
- **Biogas treatment process:** H<sub>2</sub>S, moisture, foam, particulate matter are removed



## Kayseri Wastewater Treatment Plant

- **Type(s) of anaerobic digesters used at plant:** Mesophilic complete mix and capacity (6750 m<sup>3</sup>)
- **Biogas generation rate or gas flow:** 166-208 m<sup>3</sup>/hour
- **Average methane content in biogas (%):** Not measured
- **Biogas treatment process:** Moisture, CO<sub>2</sub>, siloxanes, other contaminants are removed
- **Biogas is used to produce:** Electricity and thermal



## Muğla Treatment Plant Biogas Cogeneration Unit

- **Type(s) of anaerobic digesters used at plant:** Mesophilic complete mix and capacity (3000 m<sup>3</sup>)
- **Biogas generation rate or gas flow:** 10 m<sup>3</sup>/hour
- **Average methane content in biogas:** 60-80 %
- **Biogas is used to produce:** Electricity and thermal
- **Type of reciprocating engine:** JMS 208 GS-B/N.L (X 1)
- **Electrical output kW el.:** 249 kWh
- **Recoverable thermal output (85/65 °C):** 293 kWh
- **Biogas treatment process:** H<sub>2</sub>S is removed



## 42 Evler WWTP of Kocaeli Metropolitan Municipality (ISU)

- **Type(s) of anaerobic digesters used at plant:** Mesophilic complete mix and capacity (5000 m<sup>3</sup>)
- **Biogas generation rate or gas flow:** 57 m<sup>3</sup>/hour)
- **Average methane content in biogas:** 60-70%
- **Biogas treatment process:** Moisture, CO<sub>2</sub>, siloxanes, other contaminants are removed
- **Biogas is used to produce:** Electricity and thermal
- **Electrical output kW el.:** 125 kWh
- **Recoverable thermal output:** 75 kWh



## TYPES OF COOPERATION SOUGHT

- Partnership and/or Developer
- Technical Assistance

## FOR MORE INFORMATION

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