

22.5 TPD COMPRESSED BIOGAS PLANT

SURATGARH, RAJASHTAN



Overview

Keller successfully delivered an optimal and sustainable foundation solution to support the proposed large size digester structures of Compressed Biogas plant. The foundation design was tailored to the site's geotechnical challenges, ensuring long-term stability and performance for these critical infrastructure components.

• The project

M/s Reliance Bio Energy put forth plan to build Compressed biogas plant across India and a part of this development they have awarded design & construction of 22.5TPD Suratgarh plant to M/s GPS. M/s GPS in turn awarded M/s Keller to execute the foundation works for proposed digester units.

• The challenge

The proposed site was situated in a low-lying area that was waterlogged, presenting significant geotechnical challenges. To achieve the required Finished Ground Level (FGL), the entire plot was elevated by placing approximately 2 meters of good quality soil. The native subsoil profile comprised silty sand at the top, followed by firm clay extending up to 10 meters below the EGL, underlain by dense silty sand. One of the primary challenges was the freshly filled soil, in addition to closely spaced digester units which led to excessive settlements and offered low bearing capacity, making it unsuitable for supporting heavy digester units without specialized foundation solutions.

• The solution

As the proposed digester units permitted relaxed settlement criteria, an open foundation system supported on vibro stone columns was employed. This solution was selected based on site-specific geotechnical conditions and the need for a cost-effective yet reliable foundation. The vibro stone columns provided significant ground improvement, enabling a safe bearing capacity of 150kPa and ensuring post-construction settlements remained within the permissible limit of $\leq 100\text{mm}$.

Application

Settlement Control & Bearing Capacity enhancement

Technique

Vibro Stone Column

Market

Renewable Energy

Client

GPS Renewable Pvt Ltd.
Reliance Bio Energy Pvt Ltd.

Main contractor

Keller Ground Engineering
India Private Limited

Contract Value

NA

Keller business unit (s)

Keller Ground Engineering
India Pvt. Ltd