Cape Advanced Engineering

efficiency through innovation

(PTY) Ltd.

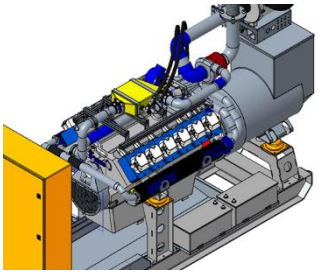
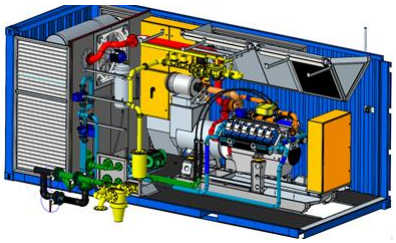
Renewable Energy Technology Development

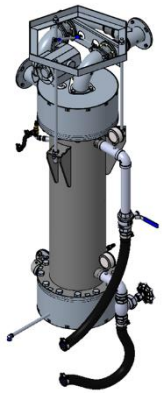
Hybrid Bio-gas and Solar PV Peaking Power Generation Plants

CAE is offering exciting opportunities for Engineers in the following areas of development :

- Bio-mass handling and pre-processing, and bio-digester design, construction and operation.
- Bio-gas systems including blowers, compressors, scrubbers, flame arrestors, flares etc.
- Bio-gas Energy Storage for Peaking Generation to support grid stability with PV and Wind plants.
- Combined Heat and Power (CHP) Generation units – with gas engines and heat recovery systems etc.
- Hybrid Solar PV systems, configured to be embedded with bio-gas storage and peaking generation.
- Bio-fertiliser production, handling, application, and related technology for Regenerative Agriculture.

Creative, motivated and hands-on *Engineers* seeking to participate in the development of local / SA technology, products, systems and complete power plants from concept, through design and manufacture to operation for water reclamation, sustainable food production and renewable energy generation are invited to apply and should highlight their areas of passion and competence.



Cape Advanced Engineering (Pty) Ltd has a rich engineering history as the centre of excellence in engine and fuel technology at Stellenbosch University between 1993 and 1999. CAE was privatised in 1999 and has since provided engine development products and support services to clients such as Volkswagen South Africa (VWSA), Ford, MBSA, Sasol, Chevron and BP, and equipment development services to Transnet and de Beers.

In 2007, CAE made a shift to renewable energy and now specialises in the development, design, construction, commissioning, operation, and maintenance of unique and varied bio-gas plants. Building on CAE's experience in the automotive industry, CAE's bio-gas plants include in-house developed combined heat and power (CHP) generation units which are modular, containerised and achieve overall energy efficiency exceeding 85% in electricity and heating output. CAE operates several plants in Southern Africa, now operational for up to 8 years, which have set new standards in municipal wastewater treatment and in agriculture, including proven crop enhancement at levels far exceeding what was thought to be possible.

CAE is motivated by the environmental benefits of waste beneficiation, water reclamation and reuse, reduced GHG emissions, renewable power, the exceptional impact achieved by it's bio-fertiliser products created through bio-digestion, now proven to significantly accelerate soil regeneration and increase plant health and crop yields and quality. Partnerships with progressive farmers are a key priority, towards increased farm profitability through renewable energy generation, soil regeneration, increased crop yields with lower input costs by using bio-fertiliser, also reducing the cost and carbon footprint related to synthetic

fertilisers, and the minimised need for expensive and controversial agro-chemicals. Additional farm revenue from energy export and increased crop yields are a key objective of our development.

Engineering disciplines relevant to CAE's projects:

- Mechanical engineering
- Mechatronic engineering
- Electronic engineering
- Electrical engineering
- Process engineering – bio-technology processes
- Industrial engineering

Skills required:

- Independent creative thinking
- Hands-on approach
- Problem solving
- Able to work in multi-disciplinary and diverse teams
- Innovativeness
- Responsiveness
- Resilience
- Efficiency

Preferred qualifications:

- BTech, BSc/BEng, M.Sc. degree or relevant qualifications.
- Competent Artisans in NC Machining and Welding etc. are also required.
- PLC programming

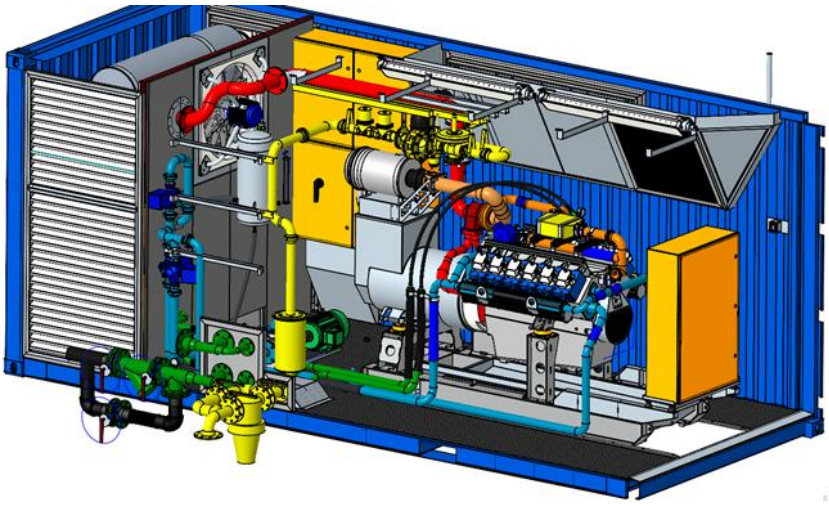
Employment Type:

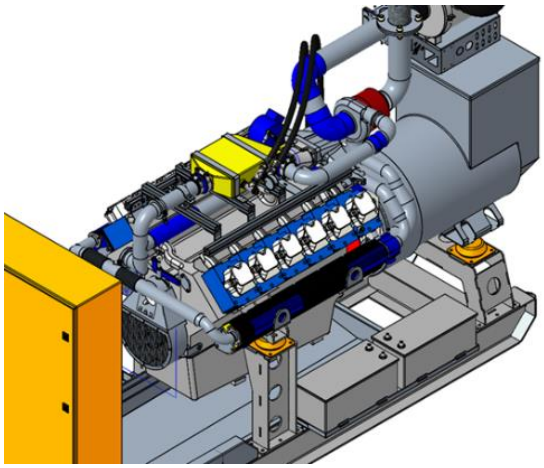
- Full-time

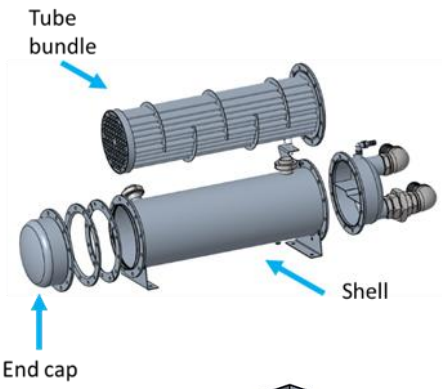
Persons applying for the positions described above should send a copy of their academic qualifications, curriculum vitae, identity document and driver's licence, as well as a cover letter, to: info@cae.co.za. Remuneration and contractual matters will be discussed in interviews. Only shortlisted candidates will be contacted.

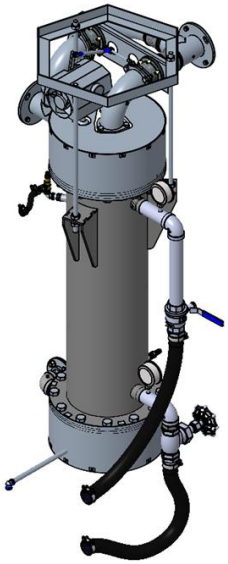
Examples of CAE's Waste Treatment, Water Reclamation, Bio-gas and Bio-fertiliser plants

Development and manufacture of bio-gas combined heat and power generation systems






Tube
bundle
Shell
End cap



Bio-gas development plant and technology validation facility near Cape Town (showing bio-gas vehicle engine and fuel technology development equipment)

Example of a CAE Peaking Power Generation plant

Bio-fertiliser production, processing and utilisation for regenerative agriculture

Food for thought.