Variable Frequency Generator®

Innovative Solutions for Moving Fluids to Power the World
With a highly experienced team, possessing both state-of-the-art manufacturing experience and a deep commitment to customer service, Canadian Advanced ESP is able to deliver superior high pressure pumps and leading Variable Frequency Drive Systems to the global oil and gas industry.

We specialize in Electric Submersible Pump Systems for artificial lift applications, Horizontal Pump Systems for a variety of high pressure surface applications and innovative Variable Frequency Drive Systems.

Engineered  Performing sophisticated production processes in challenging well conditions, extreme climates and remote locations requires reliable pumping systems. Our systems are the industry’s preferred choice, possessing greater flow and head, better efficiencies and wider operating ranges than most of our competitors’.

Canadian Advanced ESP creates high quality, innovative, safe and environmentally sound solutions through the application of advanced state-of-the-art technologies, strict quality management and superior engineering capabilities. Our detailed knowledge of applications and processes has allowed us to develop several patented engineering solutions as well as custom designed systems when required.

Quality and Safety  All our operations are certified to ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 standards in order to ensure the highest product quality with the greatest value for our customers worldwide. Quality assurance begins with a contract review and continues throughout the entire manufacturing process. All products are inspected and performance tested according to relevant specification criteria, including API, before leaving the factory.
Variable Frequency Generator (VFG)®

© Global Patent

The VFG is a new innovation in GenSet technology brought to you by Canadian Advanced ESP. It provides variable frequency sinusoidal power to Electric Submersible Pump (ESP), Horizontal Pump System (HPS) or conventional electric motor loads. It has a proven ten year track record with both diesel engines and natural gas engines, operating continuously in both extremely hot desert environments and in extremely wet jungle environments without requiring the replacement of any major components. The VFG can be tailored around customer specifications for customer needs.

Features and Benefits

> **Innovative Technology**

Outputs a pure sinusoidal waveform without harmonics across the entire ranges of variable speed and power.

> **Proven System Components**

Designed using proven system components with excellent and long industry standings.

> **Efficient, Cost Effective Solution**

Provides higher electrical efficiency (6-10%), reduced energy consumption (8-12%) and competitive initial and operating costs when compared with conventional GenSet Variable Frequency Drive (VFD) Systems of the same rating. Specifically, it provides proven fuel cost savings when a bi-fuel (natural gas/diesel) system is used in conjunction with a diesel engine, and it eliminates fuel cost when field gas is used with a gas engine.

> **Low Maintenance**

Pure sinusoidal output waveform significantly reduces wear on all electrical and mechanical system components, resulting in an extendend Mean Time Between Failures (MTBF), decreased down time and lower maintenance costs when compared with GenSet Variable Frequency Drive (VFD) Systems. Specifically, the need for spare parts can be reduced by approximated 90%.

> **Eliminates GenSet Oversizing**

Fully exploits both the engine and generator’s ratings in order to meet the system’s power requirements.

> **Wider Operating Range**

Can continuously operate as low as 35% of the engine’s load factor, while GenSet Variable Speed Drive Systems are limited to operating only between 85% and 100% of their rated power.

> **Production Benefits**

Increases production by more than 7% when compared with conventional GenSet/VSD System of the same load.

> **Higher Starting Torque for Stuck Pumps**

Able to provide voltage boost in the presence of hard-start conditions in order to break the pump free.

> **Smaller Footprint**

Eliminates the need for relatively large components (i.e. VFD’s, transformers, harmonic filters, etc.).

> **Portable, Recoverable Asset**

Easily relocated, making it an ideal choice for powering ESP Systems in remote locations.

> **Expert Advice**

Custom designed to meet the requirements of your specific pumping system.
Canadian Advanced ESP provides a broad range of pumping systems.

**Electric Submersible Pumps (ESP)**
We manufacture a wide range of ESPs for fluid production in various industrial applications. Many of our engineered solutions provide equipment that is tailored for specific operating conditions - such as our Super Duty Sand Pump that can master even the toughest abrasive conditions.

**Horizontal Pumping System (HPS)**
We manufacture a range of HPS for high discharge pressure applications, such as crude-oil transfer, pipeline booster, water injection and saltwater disposal. HPS technology distinguishes itself as a cost-effective alternative to other designs, such as multi-stage barrel, split-case and segmental pumps. It is based on proven multi-stage centrifugal pump technology that is used in our ESP product range.

**Variable Frequency Generators (VFG)**
We design and manufacture a unique power-supply system that eliminates the need for Variable Frequency Drives (VFDs), harmonic power filters and step-up transformers. It outputs a pure sinusoidal waveform and significantly extends both the MTBF and the production rate. Combined with an improved electrical efficiency, the VFG reduces both capital and operating costs.

**Speciality Engineering & Testing**
We also specialize in the design of custom-engineered products for unique process solutions. Our extensive testing facilities ensure that each of these products is properly verified prior to being shipped to the field.

**Variable Frequency Drive (VFD)**
Canadian Advanced ESP is proud to introduce our third generation of VFDs as part of our Advanced Control Technology (ACT) product line. They are supplied with the latest high-performance drive technology from Mitsubishi. With superior starting torque, precise speed control, multiple control modes and detailed logging and trending, our VFDs rival all other drive technologies in the ESP industry today.

**Advanced Monitoring Technology (AMT)**
Our Advanced Monitoring Technology (AMT) is a remote surveillance system that was specifically developed for the needs of the Artificial Lift Industry. AMT provides real-time information about equipment and production data for the purpose of viewing, trending and alarming. It allows operators to manage their fields remotely and prioritize interventions proactively.

Please visit our website at [www.cai-esp.com](http://www.cai-esp.com) for further information on our products and services.

---

**Head Office**
5307 – 72A Avenue, Edmonton, AB, Canada T6B 2J1
Main: +1.780.469.0770  Fax: +1.780.450.4592  Toll Free: 1.888.480.7867

**Other CAESP locations:**
- Calgary Sales Office
- Estevan Sales and Service Center
- Germany Sales and Service Center

**ISO**
- ISO 9001:2008
- ISO 14001:2004
- OHSAS 18001:2007

**Contact**
sales@cai-esp.com to find a CAESP distributor near your location.