

# Artificial Lift Power to Lift™ Solution



## Integrated Natural Gas Driven Production Power

GE's Power to Lift solution (P2L) is a single, modular integrated oilfield power solution that brings together technologies from across GE to provide the industry with greater control and flexibility in powering production operations. Power to Lift technology utilizes natural gas rather than diesel fuel. The change from diesel to natural gas, a cleaner burning and less expensive fuel results in significantly improved operating economics and lower greenhouse gas emissions. With the flexibility provided by the Power to Lift system, operators no longer need to wait on grid availability or suffer the ill effects of poor quality grid power.

## How It Works

Natural gas from a well site or nearby location provides the primary fuel source for power generation that is then controlled and distributed via a proprietary, modular eHouse to multiple pumps and/or devices that require power on site. The eHouse provides the utility functions for the generating unit, including generator protection, power distribution, power quality optimization and auxiliaries.

A universal touch screen interface allows common control of all active devices across the Power to Lift solution. Through common integrated controls and design, operational reliability, power quality, and overall system performance is optimized to drive solution uptime. The modular offering has been designed for operational flexibility, allowing the solution to be redeployed to multiple locations as production power needs change.

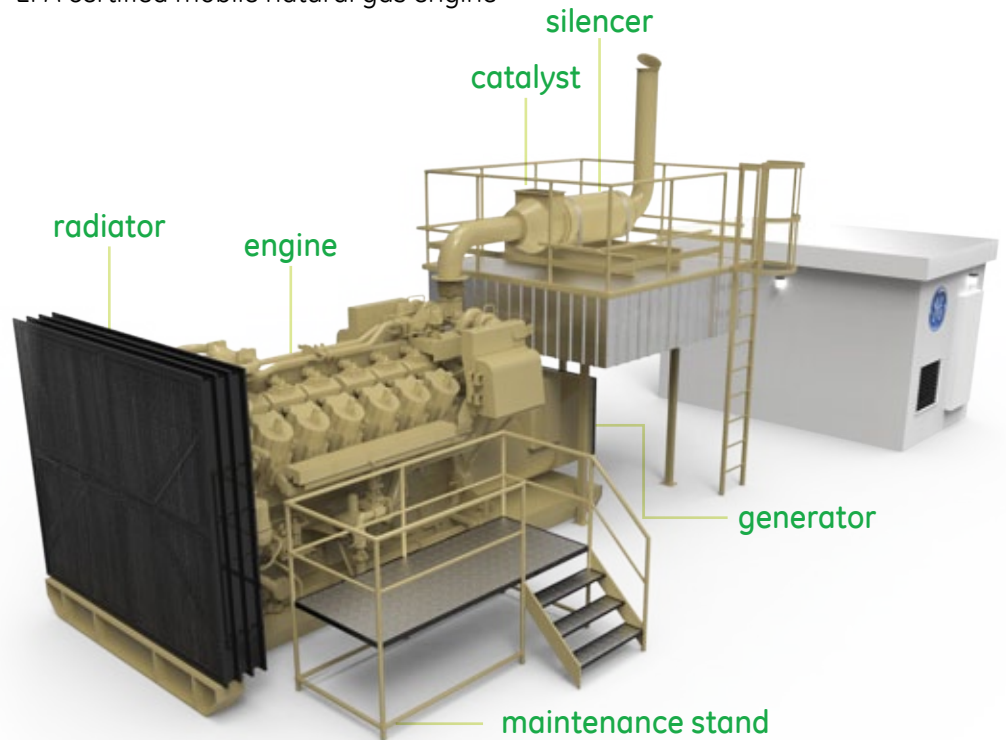
## A Fast, Modular, & Flexible Power Solution for Evolving Artificial Lift Needs

The Power to Lift 1MW Natural Gas Remote Power System is designed to meet the needs of oil and gas producers operating where grid power is unavailable or unreliable.

- Flexible – easily transported and scalable to power needs
- Reliable – low maintenance, long run times between cycles
- Efficient – operates on produced well gas, reducing fuel cost
- Environmentally friendly – EPA certified mobile natural gas engine

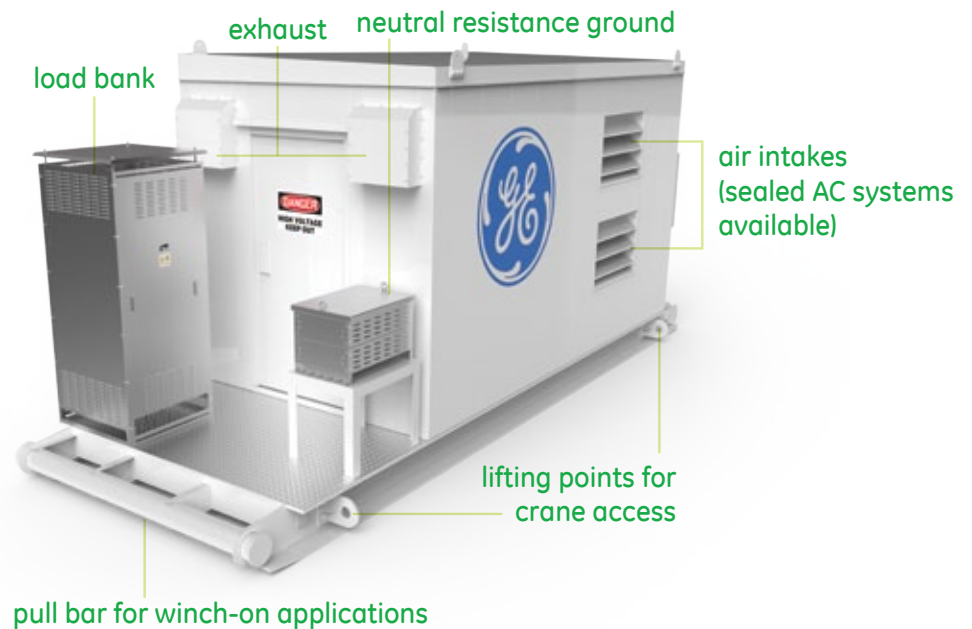
### Generator Skid

GE Waukesha EPA certified rich burn natural gas engine provides capability of running with flexible fuel quality, low emissions, low maintenance requirements, and high reliability.



### eHouse Skid

Provides high resistance grounding, high capacity feeders to segment and distribute clean power downstream, the ability to parallel systems, and a load bank to protect engine operation. With full RM&D capability.



## System Attributes

### Overall

- Capable of powering multiple pumping systems and methods simultaneously
- Quickly connectable power and data cables for rapid set-up
- Parallel operations capability with automatic load stabilization (grid or other generators)
- Transportable with standard methods
- Integrated communication package for video and data monitoring of well site

### Generator skid

- Fault protected generator (per NEC recommendation)
- Uses Non-Selective Catalyst Reduction (NSCR) technology for very low NO<sub>x</sub>, CO and VOC values
- Enclosed engine package for cold weather environments
- Uses Non-Selective Catalyst Reduction (NSCR)
- Longer run time between scheduled maintenance (approximately 83 days vs. 14 days for diesel systems)

### eHouse skid

- Independent isolation and protection of each major load
- Harmonics mitigation and PF correction built in for reduced system stress, improved effectiveness and reliability
- Auxiliary power connections for “black start,” lighting, security and service tools
- Oversized electrical components to handle demands of remote unmanned operations such as isolated power and harmonic disturbances

## Scope of Supply

Power to Lift 1MW Remote Power Systems ship in three pieces:

- 1 generator skid consisting of a natural gas engine, generator and radiator (33'L x 8'W x 10'H [10.06m L x 2.44m W x 3.05m H] – 55,000 lbs [24,947 kg]. approx.)
- 1 eHouse skid consisting of switchboard with generator protection relay, 4 x 400 amp protection slots, motor control center, transformer for internal eHouse power systems, active harmonic filter, engine control panel, and automation panel for remote monitoring and control (23'L x 8'W x 10'H [7.01m L x 2.44m W x 3.05m H] – 23,000 lbs. [10,432 kg] approx.)
- Misc Accessories: Data & power cables, cable trays, maintenance stands, and battery

### Operating Parameters

- Wide operating range 0.1 to 1MW
- Rated to 120°F (49°C) ambient temperature
- Rich burn engine operates within 850-1650 BTUs and variety of NG content with full power at up to 8,000 ft (2,438.4m)

### Standards

- IP44/ Nema 3R rated ehouse
- EPA Certified suitable for operation anywhere in US (Additional cert. required for CA)
- Built to regional standards (IEC, NEC, ATX)



## Commercial Options

Benefits	Rent/Lease	Lease to Own	Purchase
Minimize Capital Expenditure (CAPEX)	✓	✓	
Discount pricing when P2L tied to GE Loads (ESP/Surface Pumps & etc)	✓	✓	✓
Increased "uptime" (vs. diesel)	✓	✓	✓
Reduced environmental emissions (vs. diesel)	✓	✓	✓
Installation/commissioning included	✓	✓	✓
Customer staff training (available)	✓	✓	✓
Periodic inspection & calibration	✓	✓	■
In-region service/support	✓	✓	■
Remote monitoring and diagnostic for P2L and individual loads	✓	✓	■
Standardized Design and available fleet	✓	✓	
Customized Design to suit existing customer requirements		■	✓

■ = optional

NOTE: All options may not be available in all countries or regions



GE Oil & Gas  
 Artificial Lift  
 5500 SE 59th St.  
 Oklahoma City OK 73135  
 USA  
 Phone: +1 405 671 2400  
 Email: [powertolift@ge.com](mailto:powertolift@ge.com)  
 Web: [geoilandgas.com/P2L](http://geoilandgas.com/P2L)