



Overview

The Unico gas-powered artificial lift system combines a power source and advanced well automation control into a compact unit specifically designed for oil and gas production. The unique system provides a fully integrated solution for customers with pumping applications remote from electrical service or those that want to minimize gas flaring and eliminate electrical utility costs. The unit is easy to install and maintain.

Improves Operations

The Unico gas-powered artificial lift system gives operators a tool to improve their oil and gas production operations. The unit has been uniquely integrated to optimize well production while minimizing fuel consumption and maximizing the engine service interval.

Eliminates Utility Costs

Customers in areas of high utility cost, frequent power outages, and/or damaging voltage transients can all benefit from the technology. Electrical utility costs, which can be as much as half or more of the operating cost of a well, can be completely eliminated to improve the economics of marginal wells.

Multidrive Operation

A sealed electronic enclosure accepts multiple universal well automation controllers, each of which can operate a specific type of artificial lift as well as auxiliary motor-control operations such as surface pumps. Up to four controllers can be used, provided the total power requirement does not exceed that of the engine/generator.

Universal Application

Each universal well automation controller can be configured for electric submersible (ESP), progressing cavity (PCP), or sucker-rod (SRP) pump operation. The well controller has evolved over thousands of installations into the most advanced artificial lift automation system available today.

Remote Monitoring and Control

Optional wireless communication by radio link, cellular phone, or satellite provides continuous remote monitoring and control of pumping operations.

Extended Run Life

The engine/generator has been specifically designed for continuous operation rather than standby. This provides extended service intervals and long run life that substantially exceed other units in the market.

Unattended Operation

The system can automatically switch between wellhead natural gas and liquid propane tank fuel sources. Protective features and automatic restart control maximize uptime without pumper intervention. Starts, stops, faults, warnings, and other events are automatically logged for analysis.

Features & Specifications

Engine/Generator Specifications

Output		Engine		Enclosure	Weight	Consumption		
kW	hp	cc	rpm	H x W x D	lb	LP scf/h	LP gal/h	NG scf/h
8	10	725	2,800	42" x 33" x 42"	620	82	2.3	180
24	30	1,600	2,700	42" x 42" x 42"	1,130	120	3.3	288
32	40	1,600	3,600	42" x 42" x 42"	1,170	160	4.4	384
32	40	3,000	2,100	42" x 42" x 55"	1,500	160	4.4	384
40	50	3,000	2,700	42" x 42" x 55"	1,560	200	5.5	480
40	50	3,000+	2,100	42" x 42" x 55"	1,500	200	5.5	480
48	60	3,000+	2,400	42" x 42" x 55"	1,560	240	6.6	576
48	60	4,300	2,100	48" x 36" x 88"	2,070	240	6.6	576
56	70	4,300	2,400	48" x 36" x 88"	2,110	280	7.7	672
64	80	4,300	2,700	48" x 36" x 88"	2,150	320	8.8	768
72	90	5,700	2,400	60" x 44" x 104"	2,560	360	9.9	864
80	100	5,700	2,700	60" x 44" x 104"	2,600	400	11.0	960
96	120	8,100	2,100	60" x 44" x 104"	3,000	480	13.2	1,152
112	140	8,100	2,400	60" x 44" x 104"	3,100	560	15.4	1,344
128	160	8,100	2,700	60" x 44" x 104"	3,150	640	17.6	1,536
144	180	8,100+	2,100	60" x 44" x 104"	3,200	720	19.8	1,728
160	200	8,100+	2,400	60" x 44" x 104"	3,250	800	22.0	1,920

The kW output is the generator electrical capacity operating from natural gas (NG). The generator output kW with liquid propane will be approximately 10% higher. The hp output is the mechanical load that can be driven by an induction motor with an efficiency of approximately 95%.



The operator interface features a graphical display



Engine/Generator Features

- Specifically designed for continuous operation
- Operation from natural gas or liquid propane
- Automatic switchover between wellhead and propane tank
- Integral drip-proof environmental base
- Liquid propane fuel vaporizer
- Fuel conditioning system
- Fuel input pressure monitor
- Fuel-specific engine control
- Induction-hardened intake valve seats
- Sintered powder metal exhaust valve seats
- Durable high-silicon-content pistons
- Heavy-duty deep discharge battery
- Battery power management
- Specially formulated synthetic engine oil
- Oversize engine oil pan
- Oversize engine air filter
- Enhanced ignition system
- Engine speed optimization
- Integrated lift drive control
- Multidrive configuration
- Drive energy recirculation
- Power demand limiting
- Automatic shutdown protection and engine restart
- Wireless remote monitoring and control by radio, cell phone, or satellite

Features & Specifications (continued)

Drive Control Features

Common Artificial Lift Features

- Improves production, efficiency, and reliability
- Automated system parameter identification
- Density and flow loss calculations from fluid and gas properties
- Manual, preset, and remote speed control
- Pump flow monitor and production accumulator
- Casing and tubing pressure compensation
- Pump intake and discharge pressure monitors
- Fluid level monitor and control
- Input power meter and energy efficiency monitor
- Input, motor, rod, and lift power monitors
- Peak and regen power limiters
- Power and torque smoothing control
- Automatic restart from faults and fuel outages
- Time-stamped event, warning, and fault logging
- Motor voltage, current, and frequency monitors
- Pump speed optimization
- Pump flow monitor and production accumulator
- Pump intake and discharge pressure monitors
- Gas interference monitor
- Input power meter and energy efficiency monitor
- Input, motor, and lift power monitors
- Sensorless fluid level and fluid flow estimation
- Optional casing and tubing pressure sensor inputs
- Pump intake and discharge pressure monitors
- Rod, tubing, casing, pump, fluid, and reservoir models
- Extend range operation to twice base speed
- Motor voltage, current, and frequency monitors
- Pump flow monitor and production accumulator
- Input power meter and energy efficiency monitor
- Input, motor, and lift power monitors
- Standard ANSI and Modbus RTU serial communications
- User-programmable multichannel data sampler
- Optional ControlNet, Modbus Plus, Profibus, and Ethernet
- Optional 900 MHz and 2.4 GHz wireless communications
- Optional interface for multichannel analog data logging
- Optional 1 gigabyte mass storage memory
- Windows computer and Palm-type handheld interface software
- User-programmable Excel spreadsheet report generator software



Electric Submersible Pump (ESP)

- Downhole motor/pump speed monitor and limiter
- Optional downhole pressure and surface flow sensor inputs
- Programmable pump-off control
- Casing and tubing pressure compensation
- Pump differential pressure monitor and limiter
- Embedded drive, transformer, and cable models
- Embedded tubing, casing, and ESP models

Features & Specifications (continued)



Progressing Cavity Pump (PCP)

- Pump speed and power flow optimizers
- Coordinated dual motor control for large pumps
- Motor and rod speed monitors and limiters
- Motor and rod torque monitors and limiters
- Downhole pump speed and torque monitors
- Optional downhole pressure and surface flow sensor inputs
- Pump differential pressure monitor and limiter
- Dual speed pump-off control prevents sand-in
- Low torque and speed fault detection

Sucker-Rod Pump (SRP)

- Pumping unit, rod string, and downhole pump models
- Tubing, casing, fluid, and reservoir models
- Conventional, phased crank, beam balance, and air balance geometries
- Mark II, Reverse Mark, and Rotaflex geometries
- Rod string weight and resonance calculator
- Deviated well compensation
- System simulation mode
- Pump speed and power flow optimizers
- Extend range operation to twice base speed
- Single-, dual-, or triple-speed operation
- Rotaflex racetrack mode with automatic cornering control
- Programmable crank angle speed-change set points
- Motor voltage, current, speed, and torque bar graph meters
- Gearbox torque monitor and limiter
- Counterbalance monitor and assistant
- Crank angle and speed monitors
- Operates without rod load and position sensors
- Optional load cell and inclinometer inputs
- Pump fill monitor and optimizer
- Dual speed pump-off control prevents sand-in problems
- Motion profile optimizer to reduce gas interference
- Downhole pump position, velocity, and load monitors
- Rod position and velocity monitors
- Rod load monitor and limiter
- Rod/pump friction monitor
- Actual surface and pump dynamometer graph generators
- Predicted surface and pump dynamometer graph generators
- Stored surface and pump dynamometer graphs
- Bridle separation monitor and minimum rod load control
- Belt-slip monitor and diagnostic alarm

UNICO-Worldwide



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Specifications subject to change without notice.

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