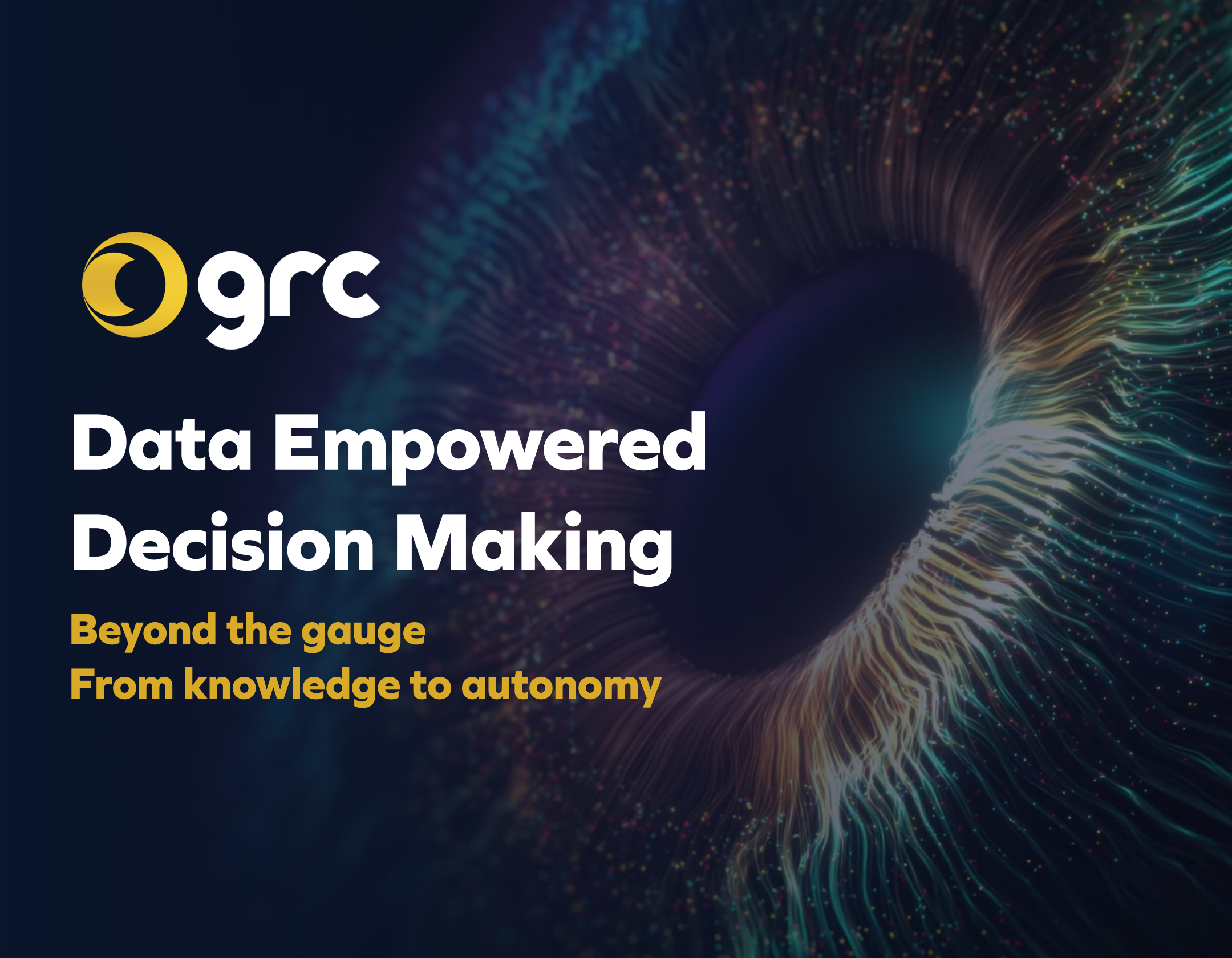

grc
Data Empowered
Decision Making
Beyond the gauge
From knowledge to autonomy

GRC Solutions

GRC delivers trusted intelligence - from gauge to knowledge. Technology from GRC provides accurate and reliable data, unbiased analytics and scalable digital intelligence, enabling operators to unlock new value and confidence to optimise performance and extend asset life.

Our vision is to take customers beyond the gauge - from knowledge to autonomy. By providing independent well intelligence, GRC is laying the foundation for a new era in production operations, where data-driven insights evolve into predictive, autonomous field optimisation.

Real Time Monitoring

ARTIFICIAL LIFT
Reservoir & Well Testing

ESP	Gas Lift, PCP, SRP
Spy Pro Series	Piezo Series
Surface Acquisition Units	Surface Acquisition Units

RESERVOIR
Drilling, Fracking, Coiled Tubing & Well Testing

Tubing Conveyed and Thru Tubing:
Reservoir, Build-Up, Drawdown, Interference

Piezo Series

Surface Acquisition Units

ELECTRIC SUBMERSIBLE PUMP

DATA INTERROGATION

SCHOOL OF GAUGES

Spy Pro ESP Systems

Monitor/Protect

The Spy Pro ESP monitors and protects your well from:

- decreasing the fluid level at the pump intake (Pi)
- increasing motor temperature (Tm)
- increasing mechanical imbalance (V, xy)
- increasing current leakage (A);
- decreasing pump lifting efficiency (Pd)
- increasing gas locking and sand slugging (Pd, Vz)
- increasing motor WYE point voltage imbalance (V, wye).

Features

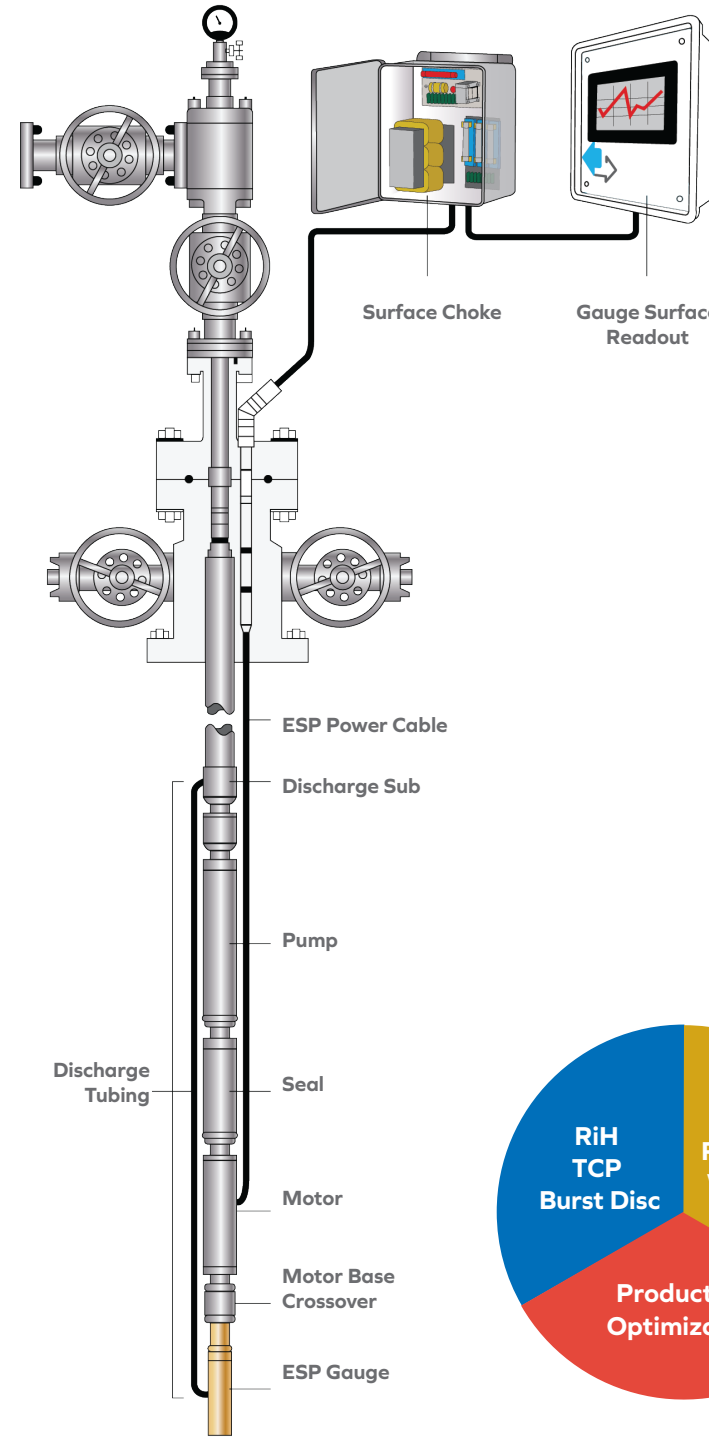
The new electronic features of the GRC Spy Pro ESP System include:

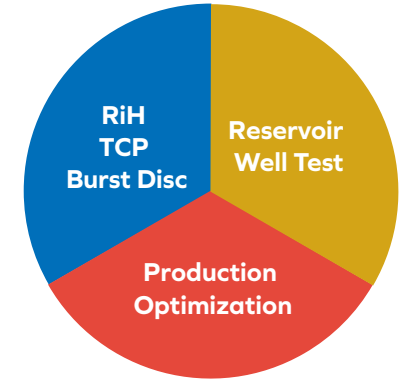
- Measure - an ESP motor WYE point imbalance true downhole measurement, which allows for the understanding of trends pertaining to the electrical health of your ESP.
- Monitor - users can easily determine if the gauge has failed, cannot communicate to the surface due to high imbalance, or is grounded.
- Perform - The motor winding temperature can be read with RTD and thermocouple options.

Customizable

The Spy Pro ESP System includes channels of customizable fit-for-purpose data: uCommand, High Speeds and Intake Pressure.

- Under VSD energized conditions or RiH, uCommand enables tailored channels of data to be collected, transmitted, and stored at the surface.
- High speeds of data extend the use of the gauge in reservoir and well testing applications, and improves root cause analysis while still in the hole.
- Intake pressure can be read internally from the motor oil, enabling auditing of the integrity of the seals, while remaining contact less with harsh well fluids.





ELECTRIC SUBMERSIBLE PUMP

DATA INTERROGATION

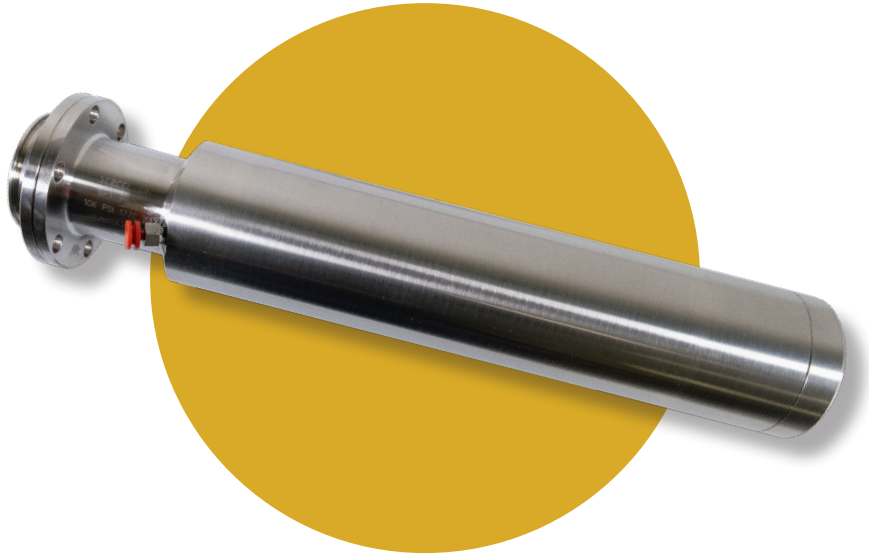
SCHOOL OF GAUGES

Spy Pro ESP Systems

- RTD or TC Motor Temp
- Internal Pressure Transducer
- WYE Point Voltage Imbalance
- Welded & Sealed
- Shorter & Lighter
- 10K psia Pressure
- uCommand
- 177 °C Temperature
- 3.75" Slim OD

Unique Mechanical Concept

GRC's Spy Pro ESP Systems offer a unique mechanical concept. Its precision welded (sealed) design eliminates the need of re-dressing and contamination. In addition, its shorter, slimline design improves deployment in dogleg severity and rigless applications.



Financial Benefits

- Reduces well intervention, risk, liabilities and costs for all parties involved.
- Optimizes pump performance, run life and oil production.
- Protect your people, the pump and reservoir.
- Eliminates pump shutdown with sensor troubleshooting.

ELECTRIC SUBMERSIBLE PUMP

DATA INTERROGATION

SCHOOL OF GAUGES

Spy Pro ESP Systems

Material
Carbon Steel 1026 or 17-4PH Stainless Steel per NACE MR0175

Make-up Length & Weight
19.875 in. & aprox. 32 lb

Outside Diameter
3.75 in. (without motor base connection)

Motor Base Connection
375 or 456 Series Flange Universal Motor Base

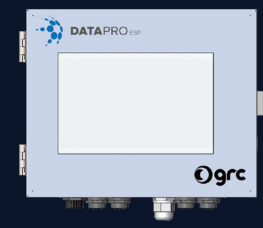
Sensor Type
Piezoresistive

Tested Insulation Rating
5,000 VDC

High-voltage Coupling Requirement
Surface Choke

Surface Data Acquisition Options
SPS-1500, SPS-1500P, GCC, Nexus & Data Pro's

Monitoring Options	Spy Pro 8	Spy Pro 10	Spy Pro 11	Units	Resolution	Accuracy
Primary Parameters for Essential Pump Surveillance and Protection						
Intake Pressure	5,000 or 10,000			psia	0.1	±0.1% FS
Discharge Pressure	N/A		5K or 10K	psia	0.1	±0.1% FS
Intake Temperature	150 or 177	125	150 or 177	°C	0.1	±1
Motor Winding Temperature	0-260			°C	0.1	±1
Vibration - X Y Z Axis	0-40			g	0.1	±1% FS
Predictive Parameters for Application and User Needs						
Current Leakage	0-50			mA	0.001	±2
Line Voltage	0-80			V	0.1	±10% FS
Motor wye Point Voltage Imblance	0-400			V	0.1	±18% FS
Data Customization and User Needs						
uCommand	N/A	Enabled				
Baker Centinel Protocol	Enabled	N/A				
Sample Rate	30 sec	4-30 sec	4-34 sec			



Surface Acquisition Units

Surface Choke

Downhole

GAS LIFT

SUCKER ROD PUMP

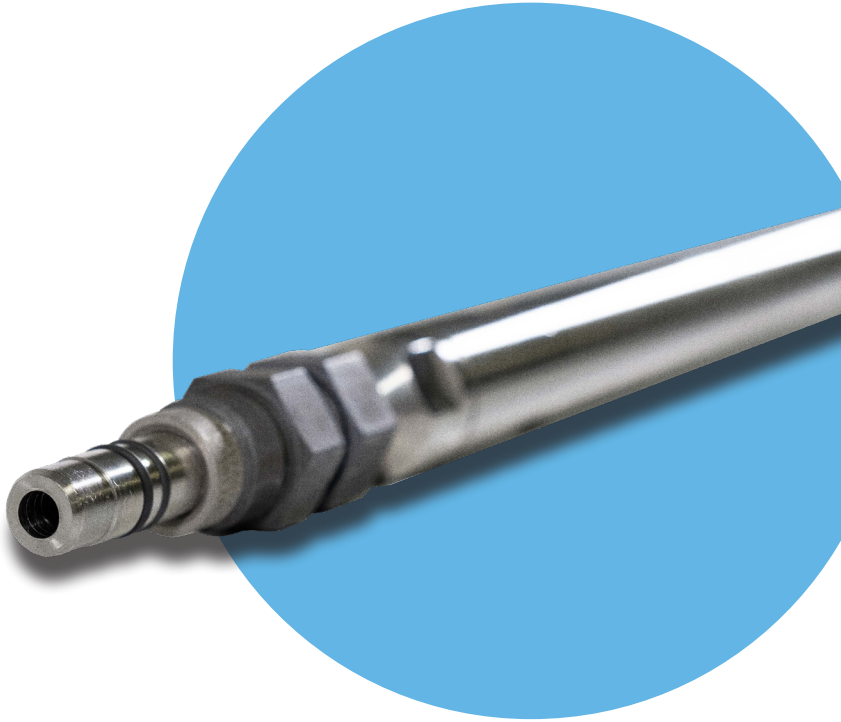
PROGRESSIVE CAVITY PUMP

DATA INTERROGATION

SCHOOL OF GAUGES

Amerada® Permanent Downhole Gauge Systems

Digital FSK Smart Gauge



Monitor, Protect and/or Cruise Control

The Amerada P-Series Permanent Downhole Suite of Gauges protects your well from:

- Pump Off
- Over Temperature
- Wear and Tear
- Rod Breakage
- Rotor
- Elastomer Damage
- Gas Lift Re-injection
- Bubble-Point & Auto Choke Optimization
- Valve Operation

Features

The new electronic features of the Smart PDHG include:

- Calibration coefficients loaded in-factory, making it a Plug & Play to any GRC surface acquisition unit - without the need of laptops, calibration coefficients or special tools.
- Frequency Shift Key (FSK) enables communication of up to 6 PDHGs (P&T) to a single use GRC surface acquisition unit.
- ASIC technology allows for increased reliability and a reduced number of components.

AMERADA
digital interrogation

GAS LIFT

SUCKER ROD PUMP

PROGRESSIVE CAVITY PUMP

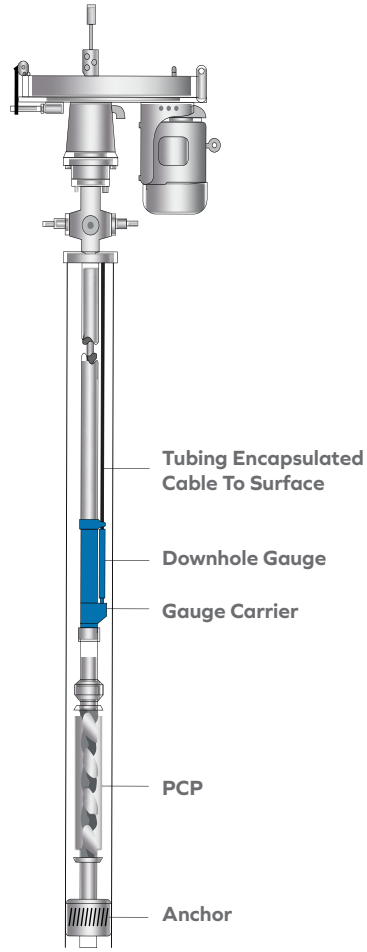
DATA INTERROGATION

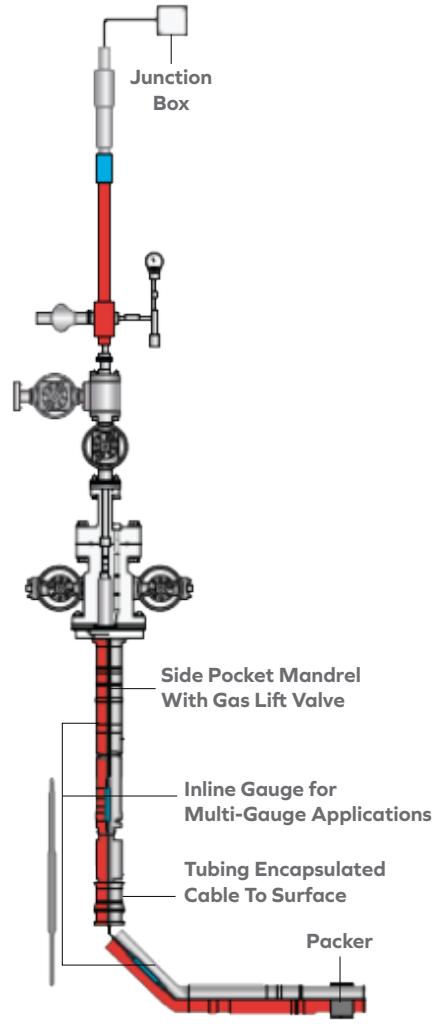
SCHOOL OF GAUGES

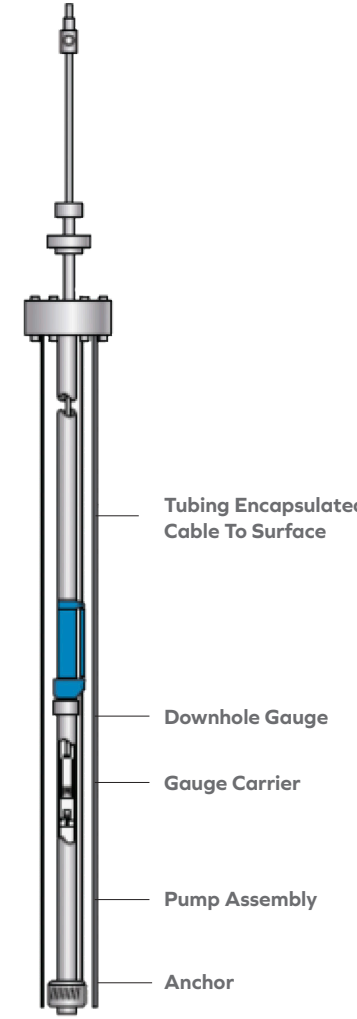
Amerada® Permanent Downhole Gauge Systems

Capabilities

The GRC Permanent Downhole Gauge System extends various monitoring capabilities, including dual pressure on a single assembly; rigless, thru tubing install; reservoir and well testing; and production optimization







AMERADA
digital interrogation

GAS LIFT

SUCKER ROD PUMP

PROGRESSIVE CAVITY PUMP

DATA INTERROGATION

SCHOOL OF GAUGES

Performance with Value

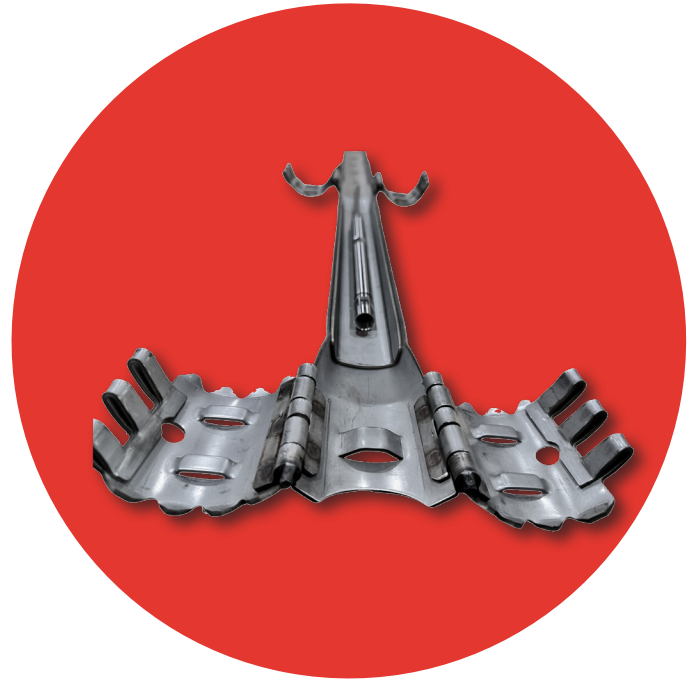
Amerada® Permanent Downhole Gauge Systems P-3.5K

Digital FSK Smart Gauge

At subsurface, it offers a robust low-cost design for on-shore 125C wells, that can be paired with low-cost mandrels or clamp type gauge carriers.

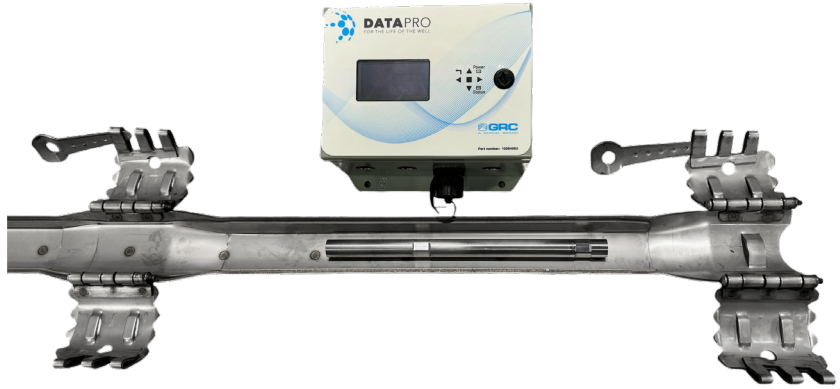
At surface, it can be paired with an FIC-1500 or GCC Interface Card or a low-cost Data Pro Lite Stand Alone Panel.

Its rugged ASIC driven PCB guarantees reliable data during the life of your downhole monitoring applications.



Financial Benefits

- Reduces well intervention, risk, liabilities and costs for all parties involved, which, in turn, reduces your total operational cost.
- Optimizes pump performance, run life and oil production.
- Protect your people, the pump and reservoir.
- Eliminates pump shutdown due to sensor troubleshooting.



GAS LIFT

SUCKER ROD PUMP

PROGRESSIVE CAVITY PUMP

DATA INTERROGATION

SCHOOL OF GAUGES

Amerada® Permanent Downhole Gauge Systems

P-4000 & P-5000

Unique Mechanical Concept

GRC's Permanent Downhole Gauge (PDHG) Systems present a precision welded (sealed) design that eliminates the need of re-dressing and contamination. In addition, its dual cable head design provides cable strain relief for superior sealing, using metal-to-metal primary seal, with dual O-ring backup for increased reliability. The carrier nose reduces time and risk of gauge installation.

Offer the long-lasting robust design of a typical off-shore permanent gauge across its full product line of PDHG at on-shore market prices.

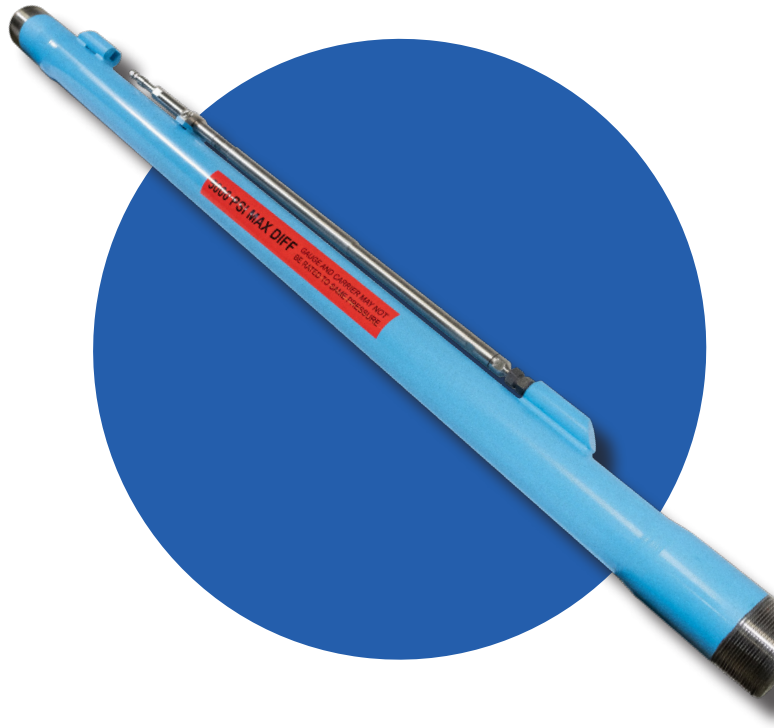
A unique mechanical concept, with new electronic features, and channels of fit for purpose data, that paired to the proper Surface Acquisition Unit, extends the monitoring capabilities of a typical PDHG sensor to now serve a full cycle of monitoring applications needs required during the life of the well.

Fit for Purpose

Fit for purpose, the PDHG analyses discharge pressure, which allows monitoring pump efficiency when the gauge is installed above the pump. Annulus and tubing pressure can also both be measured with a single gauge for gas lift applications. Its vibration X and Y axis allows for downhole monitoring of mechanical imbalance.

Financial Benefits

- Reduces well intervention, risk, liabilities and costs for all parties involved, which, in turn, reduces your total operational cost.
- Optimizes pump performance, run life and oil production.
- Protect your people, the pump and reservoir.
- Eliminates pump shutdown due to sensor troubleshooting.



GAS LIFT

SUCKER ROD PUMP

PROGRESSIVE CAVITY PUMP

DATA INTERROGATION

SCHOOL OF GAUGES

Permanent Downhole Gauge Systems

Sensor Type
Piezoresistive

Surface Data Acquisition Options
FIC-1500,FIC-1500P,GCC,Nexus & Data Pro's

Monitoring Options	P3.5K	P4K	P4.5K	P5.5K	Units	Resolution	Accuracy
Primary Parameters for Essential Pump Surveillance and Protection							
Intake Pressure	5,000	N/A			psia	0.1	±0.5% FS
Intake Pressure	N/A	5,000 or 10,000			psia	0.1	±0.1% FS
Discharge Pressure	N/A			5K or 10K	psia	0.1	±0.1% FS
Intake Temperature	125	150			°C	0.001	±0.3
Vibration - X Y Acis	0-16	0-18			g	0.055	±1% FS
Data Customization and User Needs							
Sample Rate	1 Sec						
Mechanical							
Material	17-4 PH SS	17-4 PH SS per NACE MR0175					
Outside Diameter	0.75	1		1.125	in		
Make Up Length	11.74	27.5		43	in		

ELECTRIC SUBMERSIBLE PUMP

GAS LIFT

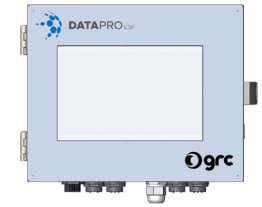
SUCKER ROD PUMP

PROGRESSIVE CAVITY PUMP

DATA INTERROGATION

SCHOOL OF GAUGES

Surface Acquisition Units



Monitoring Options	SPS-1500P	FIC-1500P	SPS-1500	FIC-1500	GCC	Data Pro ESP	Data Pro Lite	Data Pro GCC
Purpose of Use	Run in Hole		Interface Card			Stand Alone		
Gauge Type	Spy Pro	PDG	Spy Pro	PDG	Spy Pro & PDG	Spy Pro	PDG	Spy Pro & PDG
# of Gauges	1	1	1	1-6	1-6	1	1-6	
Enclosure Type	IP67		Din Rail			IP56	NEMA 4X	
Enclosure Material	NK-7 Polyproylene		Polycarbonate Thermoplastic				16 gauge steel	
Weight	6 lb		0.5 lb			7 lb	6 lb	
Dimensions (LxWxH)	12.53x10.13x13.6 in		3.5x3.7x2.3 in			11.5x9.8x4.3 in	8x6x3.5 in	13x9.8x8.8 in
Power	100-264 VAC 50-60 Hz		12-28 VDC; 0.5A 110mA fuse	12-24 VDC; 2A No fuse	12-28 VDC; 2A 160 mA fuse	100-240 VAC 50-60 Hz	9-32 VDC; 160mA	
Operating Temperature	-20 TO 70 °C					-40 to 60 °C	-40 to 75 °C	-20 to 70 °C
Display	2x16 Backlit LCD				4x20 Backlit LCD	7 in Color Touchscreen	8x24 Backlit LCD	
Analog Inputs	N/A					2x 0-20 mA 2x 0-5 VDC	3x 4-20 mA	3x 4-20 mA
Analog Outputs	N/A					4x 0-20 mA	2x 4-20 mA	2x 4-20 mA
Relay Outputs	N/A						2x 0.5 A	2x 0.5 A
Ethernet Ports	N/A					N/A	10/100	
Modbus Ports	1x RS-485/422 ISO					RS-485	1x RS-232 D-Sub 1x RS-485 Connector	1x RS-232 iso 1x RS-485 ISO TCP-IP
USB Ports	1x USB-B to RS-232 N/ISO				1x USB-C to RS-232 N/ISO	N/A	N/A	1x USB
Memory Capacity	N/A					128 MB	512 MB	16 GB
Wifi Access	Enabled	N/A						
Configuration	Software				USB-C	Built-in	Software	
Data Plotting						Built-in	Software	
Data Export							Software	

GRC Tehcnologies LLC
17300 Park Row, Suite 100
Houston, TX 77084-5935 USA

www.grctechnologies.com