

AGH

Advanced gas-handling device

APPLICATIONS

- High-GOR wells that are too gassy for dynamic gas separators
- Subsea oil wells
- Gassy wells with deepset packers above the pump
- Gas well dewatering
- Gas-lift-to-ESP conversion wells

BENEFITS

- Increases production dramatically in wells previously considered too gassy for ESPs
- Prevents degradation of pump performance by conditioning gas liquid mixture
- Extends equipment life by eliminating pump cycling because of gas lock
- Provides superior reliability in sandy or abrasive environments

FEATURES

- No surging and gas lock in wells with up to 45% GVF and low bottomhole pressure
- Abrasion-resistant construction
- High-strength INCONEL® shafts

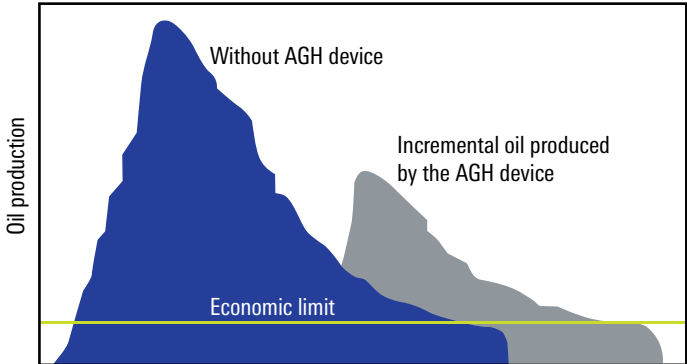
The AGH* advanced gas-handling device is a highly modified, multistage, high-speed centrifugal pump designed specifically for the gassy ESP market, where wells have up to 45% gas volume fraction (GVF) at low intake pressures. This device is normally installed in series below a center tandem multistage submersible REDA* ESP systems pump. The AGH device functions by reducing vapor bubble sizes and changing the gas-bubble distribution, homogenizing the gas-liquid mixture so that it behaves like a single-phase fluid before entering the pump. The AGH device can also be installed in series above rotary or vortex-type gas separators.

Production doubled

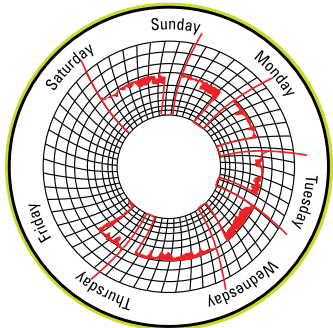
In Kuwait, a well consistently gas locked after 60 to 70 min of operation using a REDA systems pump with a rotary gas separator. An AGH device was added to the equipment string above the gas separator with no other equipment changes. Production increased to 2,100 from 900 bbl/d with no cycling because of gas lock.

New lift alternative

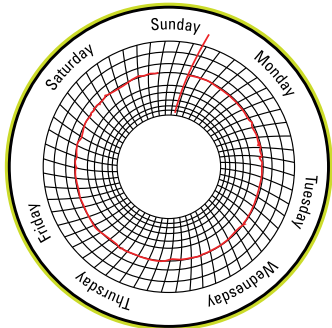
A well in Mexico was producing 4,774 bbl/d (258 ft³/bbl GOR at stock-tank conditions) with gas lift using 1 MMcf/d of gas. An ESP with an AGH device was installed below a packer with fluids having 29% GVF. Production increased to 9,409 bbl/d of oil — at 363 ft³/bbl GOR at stock-tank conditions — with no gas locking.



The AGH device can make a well more economical by increasing the drawdown and the amount of oil produced. This increases recoverable reserves and extends the economic life of the field.



Before AGH device installation



After AGH device installation

Case study showing the production results before and after installing AGH device.



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AGH Advanced Gas-Handling Device Specifications

	D5-21	D20-60	G20-40	G40-80	S70-100	H100-250	M190-350
Outside diameter, in [mm]	4.00 [101.60]	4.00 [101.60]	5.13 [130.30]	5.13 [130.30]	5.38 [136.65]	5.62 [142.75]	8.62 [218.9]
Length, ft [m]	6.3 [1.92]	6.3 [1.92]	6.3 [1.92]	6.3 [1.92]	6.3 [1.92]	5.7 [1.74]	6.5 [1.98]
Weight, lbm [kg]	135 [61.3]	135 [61.3]	272 [123.5]	272 [123.5]	284 [128.8]	229 [103.9]	1050 [476]
Power consumption with 1-sg fluid, hp at 60 Hz	13	13	38	45	53	102	117
Shaft size, in [mm]	0.687 [17.45]	0.870 [22.10]	1.000 [25.40]	1.000 [25.40]	1.000 [25.40]	1.180 [29.97]	1.37 [34.79]
Shaft power rating, hp at 60 Hz	200	410	600	600	600	637	1,280
Bearing systems	ES [†] , ARZ* abrasion-resistant zirconium	ES	ES, ARZ zirconium	ES, ARZ zirconium	ES, ARZ zirconium	ES, ARZ zirconium	ES
Liquid flow rate, bbl/d at 60 Hz	500 to 2,100	2,000 to 6,000	2,000 to 4,000	4,000 to 8,000	7,000 to 10,000	10,000 to 25,000	19,000 to 35,000

[†] Enhanced stability