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.

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**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
## AGH Advanced Gas-Handling Device Specifications

<table>
<thead>
<tr>
<th></th>
<th>D5-21</th>
<th>D20-60</th>
<th>G20-40</th>
<th>G40-80</th>
<th>S70-100</th>
<th>H100-250</th>
<th>M190-350</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption with 1-sg fluid, hp at 60 Hz</td>
<td>13</td>
<td>13</td>
<td>38</td>
<td>45</td>
<td>53</td>
<td>102</td>
<td>117</td>
</tr>
<tr>
<td><strong>Shaft size, in [mm]</strong></td>
<td>0.687 [17.45]</td>
<td>0.870 [22.10]</td>
<td>1.000 [25.40]</td>
<td>1.000 [25.40]</td>
<td>1.000 [25.40]</td>
<td>1.180 [29.97]</td>
<td>1.37 [34.79]</td>
</tr>
<tr>
<td><strong>Shaft power rating, hp at 60 Hz</strong></td>
<td>200</td>
<td>410</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>637</td>
<td>1,280</td>
</tr>
<tr>
<td><strong>Bearing systems</strong></td>
<td>ES†, ARZ* abrasion-resistant zirconium</td>
<td>ES</td>
<td>ES, ARZ zirconium</td>
<td>ES, ARZ zirconium</td>
<td>ES, ARZ zirconium</td>
<td>ES, ARZ zirconium</td>
<td>ES</td>
</tr>
<tr>
<td><strong>Liquid flow rate, bbl/d at 60 Hz</strong></td>
<td>500 to 2,100</td>
<td>2,000 to 6,000</td>
<td>2,000 to 4,000</td>
<td>4,000 to 8,000</td>
<td>7,000 to 10,000</td>
<td>10,000 to 25,000</td>
<td>19,000 to 35,000</td>
</tr>
</tbody>
</table>

† Enhanced stability