2010 Sucker Rod Pumping Workshop

Optimizing Production and Reducing Costs by Solving Rod Pumping Problems With The Beam Gas Compressor™
The **Beam Gas Compressor™** is a Beam-Mounted gas compressor based on a simple theory. If the back pressure on the formation face of a well is reduced, additional oil and gas will enter the well bore and the well’s productivity will increase. It’s a theory that works extremely well.
The *Beam Gas Compressor™* enables a pump jack to bring more oil to the surface with each stroke. The beam-mounted compressor utilizes the energy from the pumping unit to drive the compressor, thus eliminating additional motors or engines as drivers. Produced with high-grade alloys and engineered with advanced technology, it has been proven in the field to vastly improve the production levels of many existing wells.
Marginal, as well as, those with high productivity wells, are candidates for dramatic improvement from the Beam Gas Compressors™ capabilities.

Depending on the well, this productivity increase can be the result of one or more of these factors:
• Increased efficiency of the down hole pump
• Decrease of back pressure on the formation
• Reduction of gas locking in the down hole pump
• Purging of fluids in the flow line
• Can be used in sour gas applications
• Can solve solution or flare gas problems

Units are sold complete, with all mounting brackets and hardware. Transferable to other pumping units. Easily installed in 6–8 hours. Environmentally friendly — no motors or engines required to drive the compressor. Quiet operation. Inexpensive to maintain compared to small wellhead compressors.
Rod Pumping Problems

1. To increase fluid flow to the well bore.
2. Reversing decline curve.
3. Gas interference (gas lock) in the Down Hole Pump
4. Compressing low pressure gas to the production facilities
5. Making a marginal well to become economical.
6. To reduce gas compression energy consumption
7. To Reduce gas compression noise
8. Reducing operational costs due to premature pump, rod or tubing failure
To increase fluid flow to the well bore

**Before the BGC**

Restricting Back pressure holds back the flow of Hydrocarbons into the well bore.

**After the BGC**

Back pressure is relieved from the face of the formation allowing more hydrocarbons to flow into the well bore.
All producing Oil Wells have a Decline Curve. By using the Beam Compressor at the point when bottom hole pressure (BHP) equals or comes close to surface pressure and "old dog can be taught new tricks". Look at the graph above and you can see how a well that was thought to be ready for sale or plugging was revitalized and entered a second phase of production without a tremendous capital expenditure or tertiary method of recovery.
Gas interference (gas lock) in the Down Hole Pump

Card Above is Before BGC™ installed
Card Below is After BGC™ installed
Installation Bakersfield, California

Above picture courtesy of Ecometer and Lynn Rowland.

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Compressing low pressure gas to the production facilities

Low bottom hole pressure wells have a problem to move the gas into higher pressure production lines and facilities because of this gas pressure builds up in the casing restricting flow of fluids to the well bore.
Making a marginal well to become economical

<table>
<thead>
<tr>
<th>Before Back Pressure Reduced</th>
<th>After</th>
<th>$ Increased Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>STROKES PER MINUTE...........................</td>
<td>6.77</td>
<td>6.89</td>
</tr>
<tr>
<td>TIME CYCLE IN % (.00)..........................</td>
<td>84%</td>
<td>85%</td>
</tr>
<tr>
<td>SUCTION PRESSURE GAUGE.........................</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>DISCHARGE PRESSURE GAUGE.......................</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>OIL PRODUCTION - BPD...........................</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>GAS PRODUCTION - MCFD...........................</td>
<td>12</td>
<td>18</td>
</tr>
</tbody>
</table>
To reduce gas compression energy consumption

This location had been renting a skid mounted natural gas engine driven compressor by releasing it and purchasing a “Beam Operated Compressor” the operator reduced costs by $4,500 per month ($3,000 per month rent/ 20mcf/d gas consumption) or $54,000 per year
To reduce gas compression noise

One of the problems with compressing gas where the production is in close proximity to residential or noise sensitive areas is the noise generated by the compressor and its motor.
Reducing operational costs due to premature pump, rod or tubing failure

Work over repairs to Down Hole Pumps, the Rod String, and Tubing failure due to fluid pounding and rod buckling increases operating expenses of the well. Lost production during this work-over also results in the loss of revenue.
In conclusion:

• By utilizing the energy derived from the Pumping Unit to operate the BGC™ to compress casing head gas you can save on the energy cost of compression.
• The BGC™ joins with the reliable pumping unit as its prime mover.
• By utilizing the reliable Pumping Unit as the BGC’s™ prime mover operators enjoy a steady increase in production with a reliable compression system that is considered THE GREEN MACHINE™ by the industry.
• Combining a BGC gas compressor to the Beam Pump system can increase the performance of the pumping system and solve many of the problems associated with rod pumping systems.
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