



## PCP Applications & Limitations

### Typical PC Pump System

- Surface drive
- Sucker rod or continuous rod
- Progressing Cavity Pump  
(Stator connected to the tubing)  
(Rotor connected to the rod string)
- Accessory Equipment

### PC Pump System Advantages

- High System Efficiency (to 85% w/o gas)
- Tolerant of solids (50% sand slugs)
- Multiphase pumping : oil, water, solids, gas
- Low power consumption
- Low capital cost
- Low maintenance costs
- Low surface profile for visual and height sensitive areas
- Simple installation, quiet operation
- Portable surface equipment
- Horizontal / Directional wells

### PC Pump Applications

- Heavy Oil and Bitumen (less than 12° API) with sand cuts up to 50%
- Medium Oil (from 12 to 23° API) with limited H<sub>2</sub>S content
- Sweet Light Oil (over 24° API) with limited aromatics content
- Dewatering Coalbed methane
- Water Source Wells
- Evaluation and testing of new areas

## PC Pump System Limitations

- Depths to 11,000 feet (3,400 M)<sup>1</sup>
- Volumes to 4,000 BPD (635 M3 / Day)<sup>1</sup>
- Temperatures
  - To 300° F (150° C) in oil
  - To 185° F (85° C) in water
- Aromatics and some produced fluids
- Low volumetric efficiencies in high-gas environments
- Potential tubing and rod coupling wear in deviated wells (guides or Corod™ required)
- Requires constant fluid level above pump

(<sup>1</sup> Depth and volume limited by drive system torque )

## PC Pump System Application Considerations

	Typical	Maximum <sup>2</sup>
Operating Depth	2,000' – 4,500' TVD 600 – 1,400m TVD	11,000' TVD 3,440m TVD
Operating Volume	5 – 2,200 BPD 1 – 350m <sup>3</sup> / day	Over 4,000 BPD Over 635m <sup>3</sup> / day
Operating Temp	75-185° F 24 - 85° C	300° F 150° C
System Efficiency	60% - 80%	85%
Prime Mover Type	Electric Motor or Internal Combustion Engine	
Solids Handling	Excellent	
Gas Handling	Good	
Fluid Gravity	Below 45° API	
Wellbore Deviation	N/A	Build Angle < 15° / 100' (15° / 30m)
Offshore	Good footprint, SSSV issues, Surface hand handling	
Service & Repair	Requires Workover or Pulling Rig	

(<sup>2</sup> Special Analysis Required )