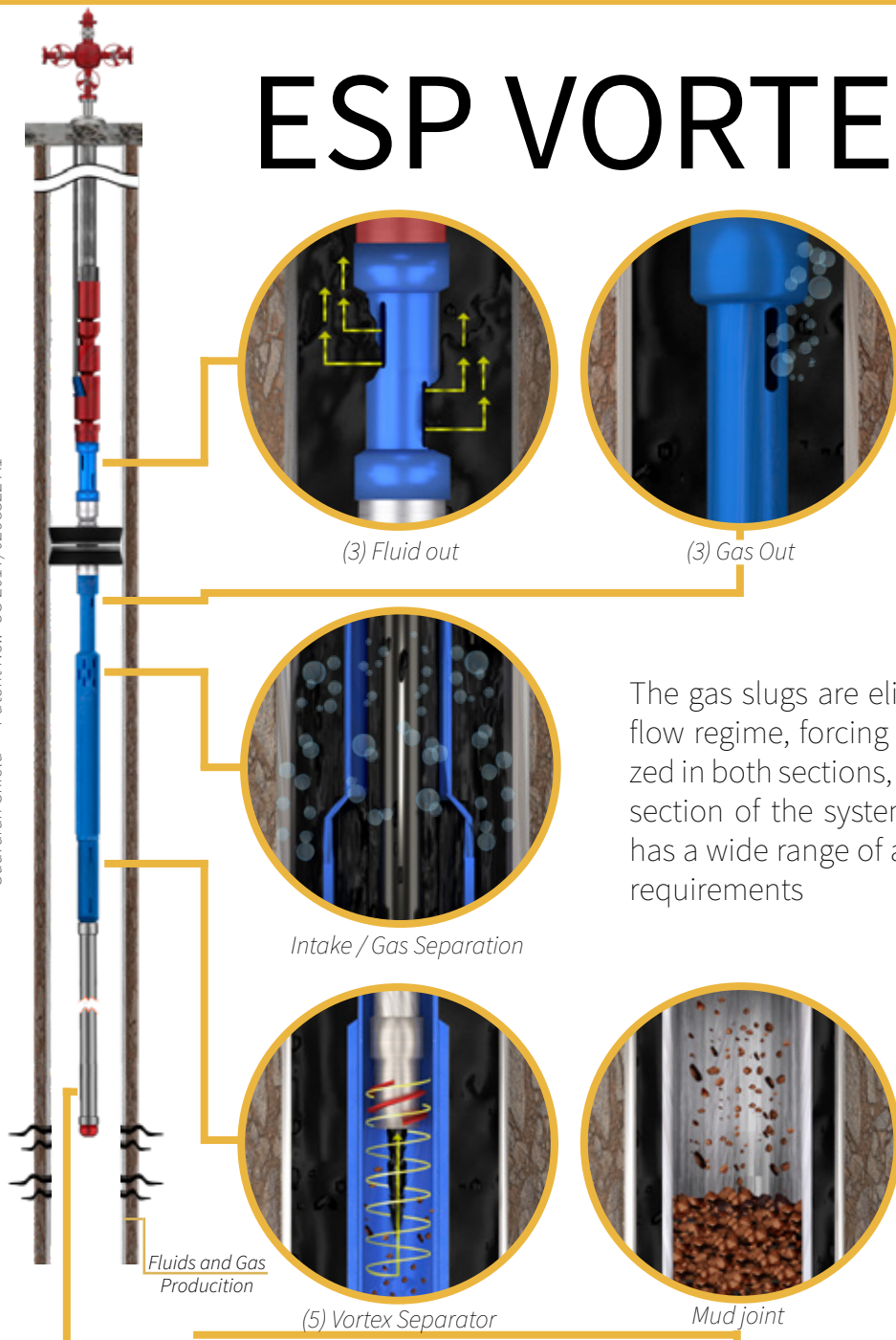


# ESP VORTEX REGULATOR™

Guardian Shield™ Patent No.: US 2017/0268322 A1



ESP Vortex Regulator is a new technology specially designed to separate sand and regulate the gas slugs delivering a clean and mix fluid to the ESP.

Its functionality prevents mechanical damage to the pump and downtime due to overheating or gas lock.

The gas slugs are eliminated through the change of the flow regime, forcing the gas bubbles to be re-solubilized in both sections, the slotted intake and the outlet section of the system. Its installation is easy and has a wide range of applications with minimum requirements

## BENEFITS

- Reduces the downtime due to solid issues.
- A Cap string can be set below the packer and below the ESP Vortex Regulator
- Less interventions and less investment in CAPEX.
- Stable pump parameters: Vibration, frequency, voltage and motor current.
- Avoid the premature failures of the pump components caused by the sand.

## Features

- *Highly efficient solid separator design.*
- *Eliminate the gas slugs, changing the flow regime*
- *New Dual Flow System™ technology, that simulates the impellers and diffusers.*
- *Separate the solid particles before reaches the pump.*
- *New Vortex Separator design.*

| ESP Vortex Size         | Packer (OD) | Capacity       |
|-------------------------|-------------|----------------|
| 2 - 3 / 8" x 3          | 4 - 1 / 2"  | 0 - 2000 BFPD  |
| 2 - 7 / 8" x 3 - 1 / 2" | 5 - 1 / 2"  | 0 - 5000 BFPD  |
| 2 - 7 / 8" x 4          | 5 - 1 / 2"  | 0 - 7000 BFPD  |
| 3 - 1 / 2" x 5 - 1 / 2" | 7"          | 0 - 10000 BFPD |

