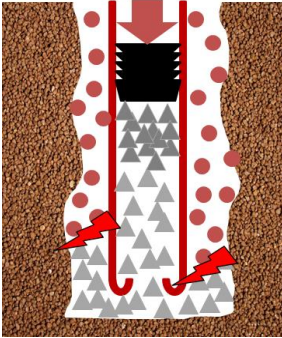


EROSION IS THE KEY

Power Spacer: Premium mud removal



In oil well cementing, the incompatibility of **drilling mud** and **cement slurry** is a well-known problem (left). **Spacer systems** are commonly applied to separate these two fluids and to remove mud and its filter cake from the borehole (right). Here, spacer efficiency is essential for the quality of the subsequent cement job and – even more important – for the integrity of the well.

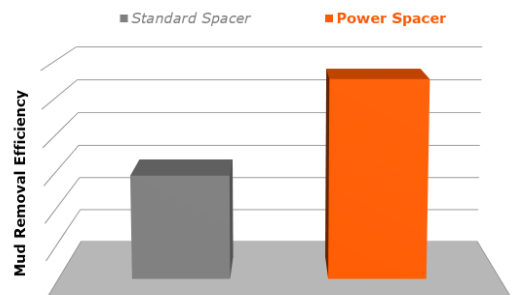


The **Power Spacer** contains abrasive particles enhancing the mud removal efficiency of this system. This state-of-the-art product helps delivering an excellent cement job, hence an optimal zonal isolation.

Excellent mud removal efficiency

Lab experiments included

- Dynamic filter cake build up (mud)
- Dynamic filter cake removal (spacer)
- Modified cement crushing test (left)
- Fluids compatibility check



Qualitative and quantitative evaluation of Power Spacer effectiveness

Customized recipe

The following can be fine-tuned

- Spacer composition
- Particle concentration
- Fluid density and viscosity

Specially adjusted in FES-laboratories employing standard additives



Wide application range

Power Spacer is applicable for

- Casing, plug and liner cementing
- Plug and abandonment applications
- Wellbore filter cake cleaning

Easy to handle on site



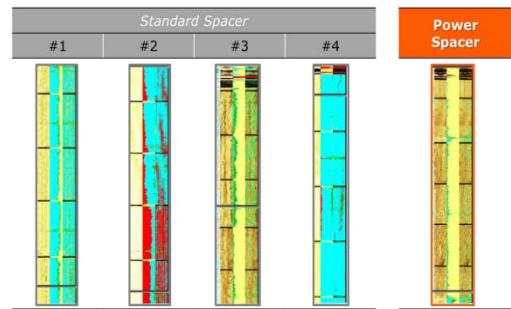
Premium cement sheath

Poor bonding may occur

- In highly deviated wells
- In large washout zones
- When using high viscous muds

Power Spacer helps solving these problems

9 5/8" Liner overlap wireline logs from 5 different wells



State-of-the-art product

Added value of the Power Spacer

- Sophisticated abrasive particles
- Optimized viscosity
- Improved wellbore cleaning

Power Spacer: Erosion is the key

Premium mud removal capacity
Optimized fluid design
Wide application range
Enhanced mud filter cake erosion
Remarkable cement bond

S P A C E R

Benefits

- ✓ Excellent cleaning and mud removal efficiency
- ✓ Well-established and specially adjustable recipes
- ✓ Recommended system where zonal isolation is crucial
- ✓ Optimal preparation for premium cementing applications

READY FOR SERVICE

Dr. Nils Recalde Lummer

New Technologies &
Business Development

+49 4471 98008-25

+49 151 41425882

nlummer@fangmanngroup.com

fangmannenergyservices.com

