Oil and Gas

Filtration of Well Completion Fluids for Higher Production Yields

Market Application Publication

Customer Value Proposition

When an oil well is determined to be viable, it must be made ready for production. This process is known as completing the well. In the completion process, a casing pipe is lowered into the well and cemented to the bottom and sides of the hole, temporarily sealing off production. A perforation jet gun is then lowered into the hole and perforates the casing and cement at intervals. The oil and gas can then enter the well bore through these perforations.

During well production, the flow of oil and gas can be stimulated by two methods; fracturing and acidizing. The fluids used for fracturing or acidizing are called completion fluids. In fracturing, fluids are pushed under high pressure providing a path for oil and gas to flow into the well.

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In acidizing, acids dissolve part of the rock permitting oil and gas to flow into the well bore.

Parker has several filtration solutions for completion fluids to optimize well production. In most cases, a two stage filtration skid can be used. The first filter or pre-filter removes particles in the 2-10 micron range; while the second or polishing filter removes the finer particles.

The filters for these systems are available in both traditional 2.5" OD formats and 6" large diameter formats. An example of a large diameter system is the Parker ParMax™ filters. These filters have the advantage of high flow rates and high dirt holding capacity.

In areas where costs of equipment space are at a high premium, the use of a ParMax large-diameter cartridge and housing offers a smaller footprint which is advantageous on offshore oil rigs.

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The Application

If poor quality or unfiltered completion fluids are used, the formation supplying the oil or gas can become plugged with particles. Plugging comes from not only unfiltered completion fluids, but also particles swept in from surface equipment, and the well itself.

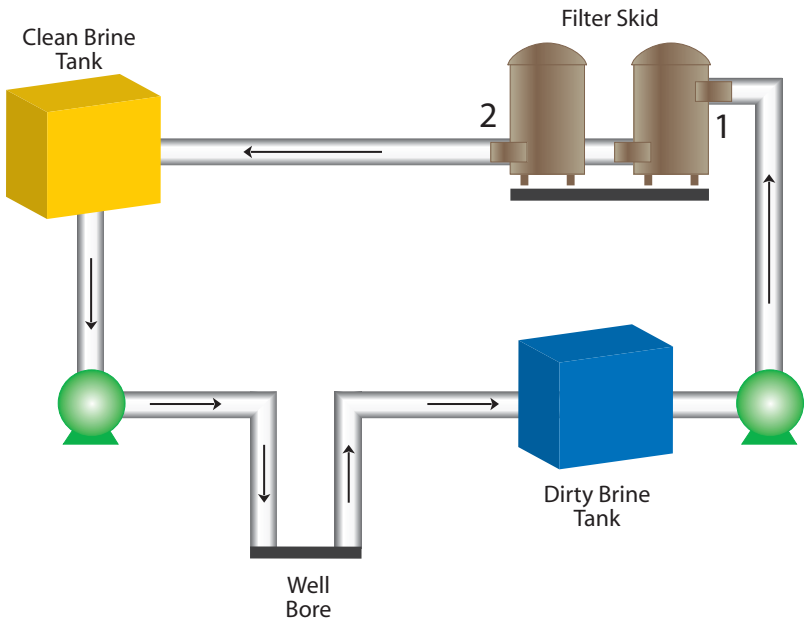
The particulate contained in the completion fluid from these varied sources can plug a new formation by 50%. When completion fluids are filtered, plugging is significantly reduced. Ten micron absolute filtration will reduce the plugging from the unfiltered 50% range down to about 24% plugging[1]. The well performance improves with finer filtration. Two micron absolute filtration will allow enough contaminant to pass to cause only about 8% plugging. Half micron absolute filtration will prevent the rock formation from being plugged and results in the best yields.

The following Parker products can be used effectively in the final filtration of well completion fluids:

- ProBond Resin Bonded Depth Cartridges | 2-10 micron
- PCC Pleated Cellulose Cartridges 2-10 micron
- Glass-Mate Pleated Microfiber Glass Cartridges | 0.5 -10 micron
- ParMax Select Microfiber Glass Cartridges | 0.5 -10 micron

[1] Reza Hashemi, Scott Caothien, *"Benefits of Solids Filtration Evaluated"*; Technology (Oil & Gas Journal); January 27, 1986.

Filtration of Well Completion Fluids



High quality filtration using Parker filters for oil well completion fluids can increase production yields by measurable percentages. Space efficient designs and a variety of filter selections are available to match your specific filtration requirements. Consult your Parker Representative or Parker Technical Services for the best recommendation and product selection for your application.

POSITION	APPLICATION	PURPOSE	FILTER	MICRONS
1	PRE-FILTRATION DIRTY BRINE	PARTICULATE REDUCTION	PROBOND PCC GLASS-MATE PARMAX	2-10
2	FINAL FILTRATION DIRTY BRINE	PARTICULATE REDUCTION	PROBOND PCC GLASS-MATE PARMAX	0.5 - 2

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