

An offshore oil drilling rig is shown at sea during sunset or sunrise. The rig is a complex structure with multiple levels, cranes, and a tall derrick. A helicopter is visible in the sky near the rig. The water is dark blue with shimmering reflections from the low sun. The sky is a pale, hazy blue.

How CleanMud helped one of the largest drilling rig contractors in the world, extend the life of their drill rig components by over 52%

CASE STUDY

CleanMud
MAGNETIC FILTRATION
SYSTEMS

The problem

Oil & Gas Operators, Drilling Contractors and Fluid Suppliers are expected to reduce costs any way they can.

The solution

Our patented Magnetic Filtration Systems can reduce the wear contamination that causes component failure.

Oil & Gas Operators, Drilling Contractors and Fluid Suppliers have traditionally reduced costs by increasing speed. The problem is, increasing speed also increases temperature and pressure which causes *more* component failures and ultimately causes the opposite effect: *Increased* costs.

Until now.

CleanMud Magnetic Filtration Systems use a patented magnetic filter element (shown right) to capture ferrous and non-ferrous contaminants found in drilling fluids. In a recent project, we removed an average of 25 lbs of debris every 24hrs from the drilling fluids. Removing this debris extended the life of the operator's drilling components by over 52%.

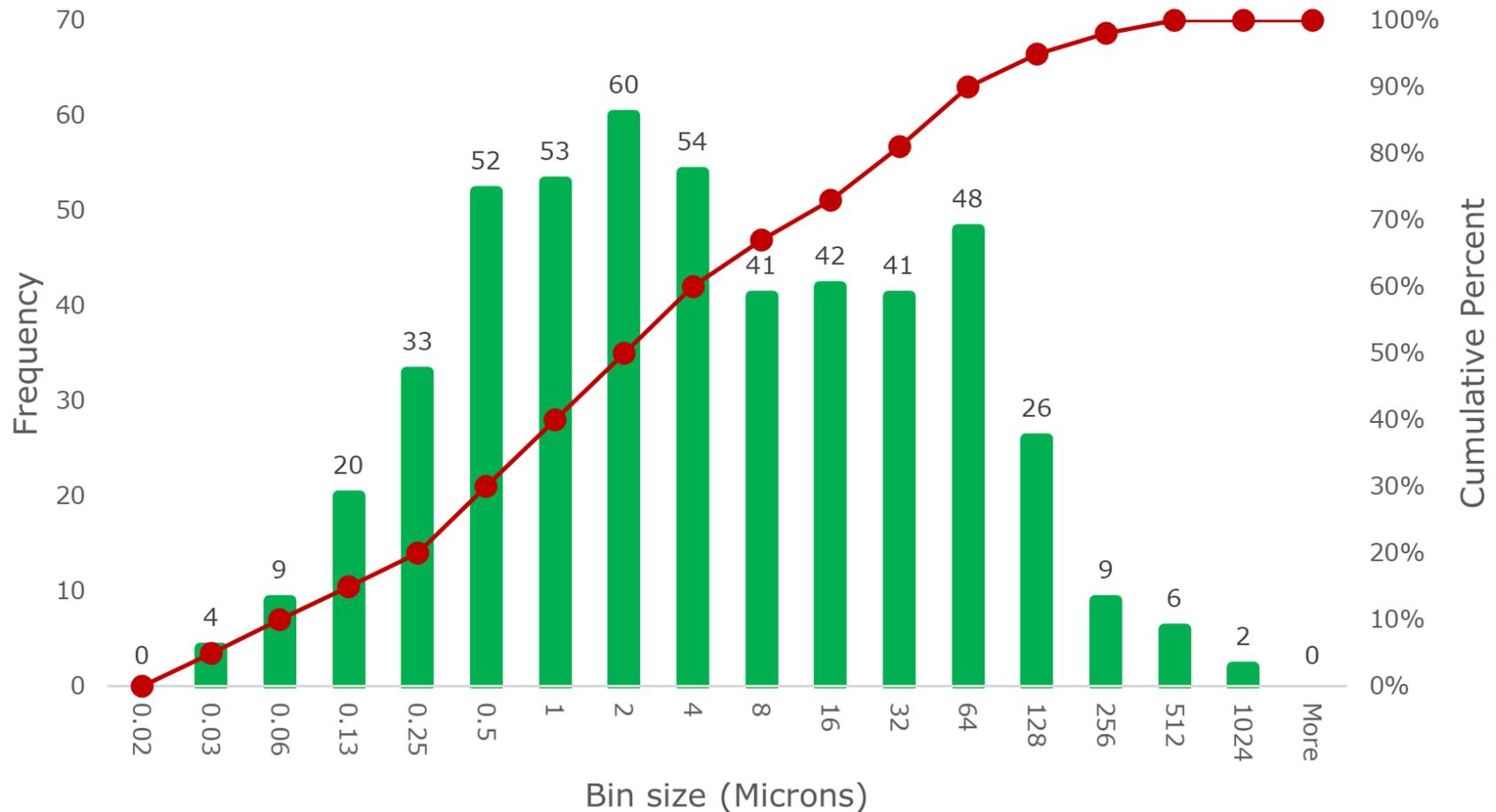
Our testing confirms that wear contamination below 4 microns accounts for approximately 1% of drilling fluids. 30% of the particles in the 1% were Silicon dioxide – one of the most harmful contaminants contributing to premature wear. The remaining 70% was mostly made up of iron, chromium, zinc, nickel, copper, lead, vanadium and steel.



Above: Our patented CleanMud magnetic filter element capturing ferrous and non-ferrous contaminants such as iron, chromium, zinc, nickel and steel.

How we improve the lifetime of components

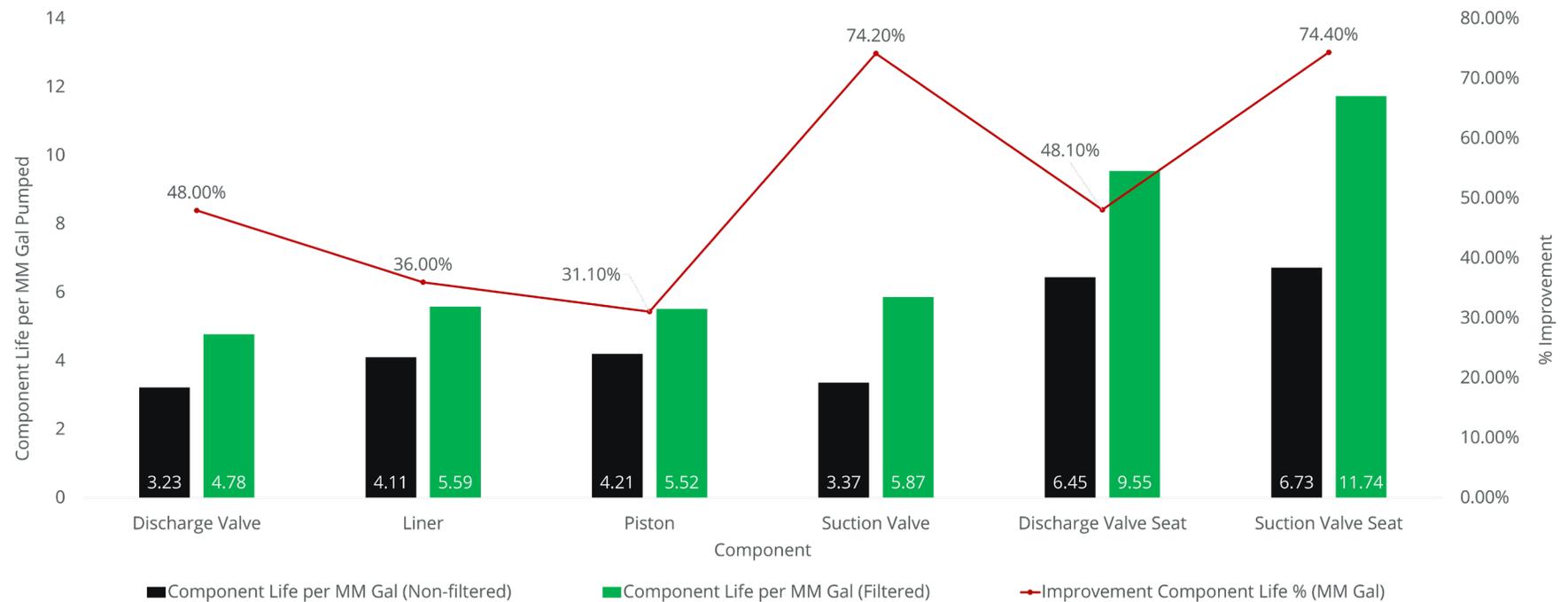
The graph below illustrates how frequently particles are captured based on their size. The red line represents the cumulative total particles based on size. **What you need to know:** 35% of particles found were below 1 micron in size. These tiny particles act as sandpaper and cause premature failure in drill string components.



How we tested our Magnetic Filtration System in the real world

Our CleanMud Filtration System was tested on three, 1500 horsepower rigs over 12 months in Texas and Louisiana. This analysis focused on component life extension and increased production. The results identified an average life extension over 52%. **That means you can realize the financial return in less than a year!**

The graph below illustrates the percentage of improvement for various pressure pumps and drill string components; some reaching nearly 70% improvement over 12 months. This data helps us identify the speed of ROI.



The unknown 1%

1% of drilling fluid is wear contamination below 4 microns in size. To put that in perspective, 1% of 58,000 gallons of drilling fluid is equal to the weight of two F-150 trucks!

30% of the contamination was Silicon dioxide (one of the most harmful contaminants contributing to premature wear) and the remaining 70% was made up of primarily iron, chromium, zinc, nickel, copper, lead, vanadium and steel.

Analysis of unfiltered drilling fluid

Product Type	Value (PPM)
Iron	3,400
Chromium	7.0
Nickel	15
Copper	14
Lead	44
Tin	<1.0
Cadmium	0.79
Silver	<0.20
Vanadium	12
Zinc	140

Wear contamination removed from drilling fluid

Product Type	Value (PPM)
Iron	52,000
Chromium	340
Nickel	77
Copper	60
Lead	59
Tin	3.0
Cadmium	0.91
Silver	<0.20
Vanadium	21
Zinc	200

Test protocols and results

Mud volume	58,000 Gal. (220,000 L)
Weight per gal	15.7 Lbs/Gal. (7.12 Kg/L)
Total mud weight	923,160 Lbs (418,738 Kg)
Total contamination removed	13,822 Lbs (6,270 Kg)
Percentage of contamination	1.5%

Highlighted benefits

In this case study we focused on wear contamination. Of all contamination captured, 35% is below one micron in size and you can extend the life of your components by over 52%. Finally, that you can fully realize the ROI of a CleanMud Magnetic Filtration System in less than one year.



Extends the life of all components in the fluid ends of pumps and drill string by over 52%.



Reduces wear of the drill and casing pipe; translating to fewer inspections and change-outs.



Increases production by reducing costly unplanned maintenance, NPT and/or downtime by over 30%.

CleanMud is a game changer: Increase your competitive advantage and keep your drill turning to the right! Please book a consultation with one of our experts to learn more.

Let's Talk

