Sasquatch™
PLUNGER VELOCITY SENSOR

FIELD TRIAL RESULTS

PROBLEMS

Producers are currently using the rise time of a plunger and the associated average velocity (v = well depth/rise time) for both safety and production optimization. Unfortunately, this assumes that the plunger started at bottom and that it travels at a consistent velocity towards surface. Without measuring the velocity at surface, the operator is unaware of the actual velocity of the plunger as it strikes the spring inside the lubricator. In many cases, plungers, springs, and lubricators can sustain damage or even fail altogether causing increased equipment costs, lost production, and additional safety concerns.

FIG 1 - Lubricator cap damaged by high velocity impact from a plunger

FIELD TRIAL RESULTS

ETC has worked with a number of producers across North America to not only prove the operation of the Sasquatch, but to gather data that shows how a plunger behaves at surface.

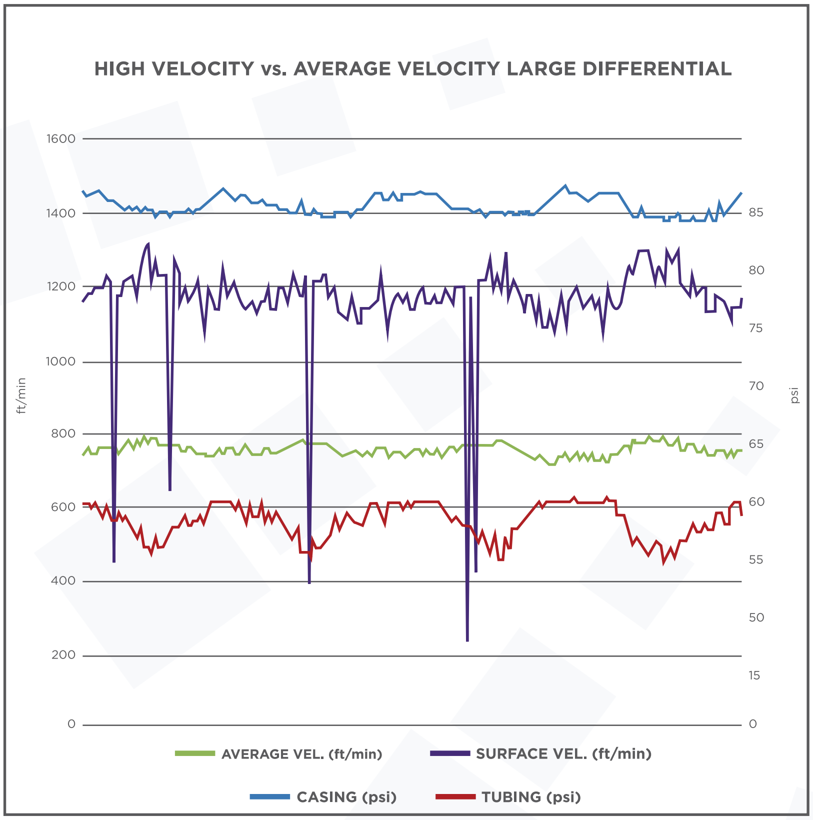


FIG 2 - High Velocity vs. Average Velocity Large Differential

CASE #1

In one instance, we worked with a major producer in the San Juan Basin to install the Sasquatch on a well that they believed was operating optimally. On this well, the controller was optimizing to a target average velocity of 750 ft/min. Using the Sasquatch, the automation system recorded surface velocities greater than 1200 ft/min, 60% higher than the average velocity.

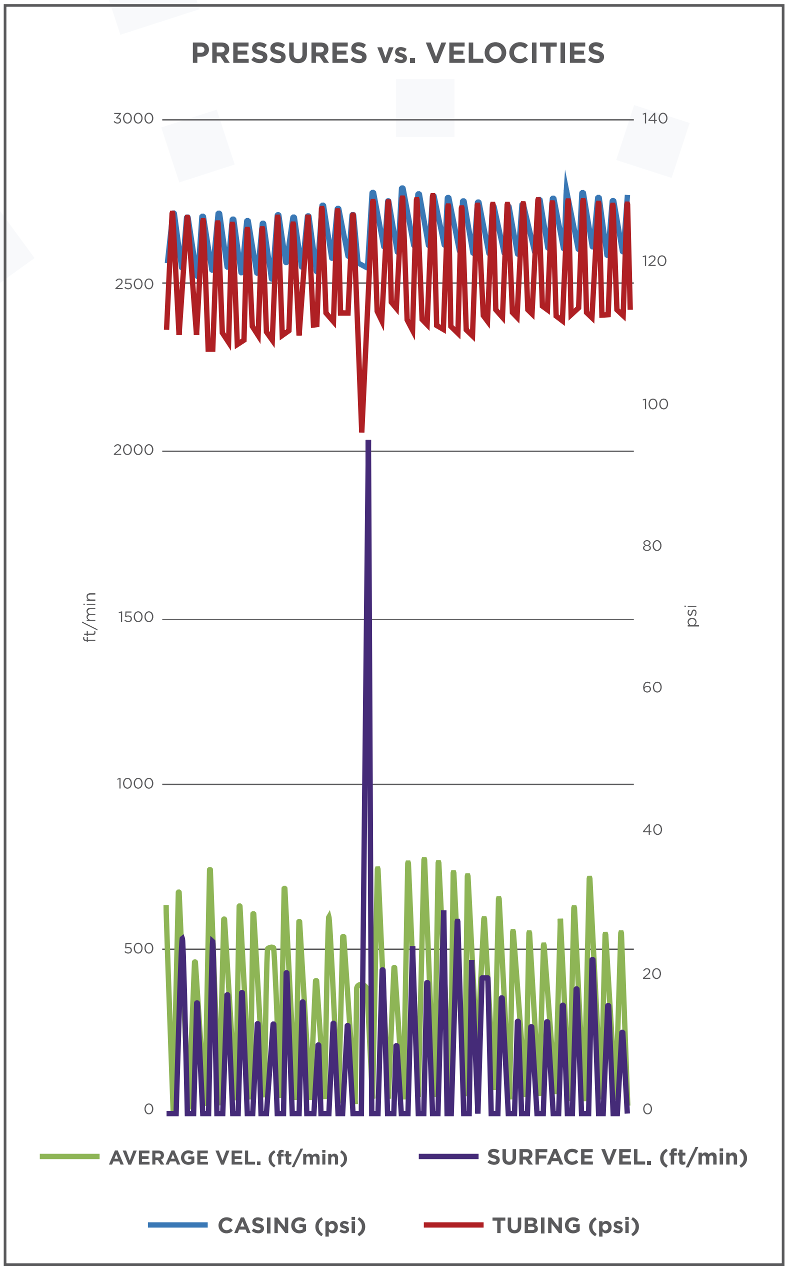
Once the faster surface velocity was identified on this well, it allowed the operator to adjust the control parameters to ensure that the surface velocity was safe given the equipment specification. Also, identifying that the surface velocity could change dramatically on some cycles showed that more fluid was being produced on these cycles. This is an opportunity to increase production and reduce maintenance by spreading the fluid load evenly across all cycles.

CASE #2

We were working with the same producer in the San Juan on another well where they believed the system was optimized. In this case, the Sasquatch showed that the surface velocity (400 ft/min) was lower than the average velocity (750 ft/min) each run. On occasion the surface velocity would spike over 2000 ft/min while the average reported 400 ft/min.

The Sasquatch helped identify that the plunger was impacting the spring at a velocity much higher than the equipment rating. System parameters were adjusted to prevent a potential failure ahead of time. Looking closer at the data, it appears that the surface pressure slowly increased per cycle creating back pressure on the plunger. The control system had to wait longer than usual for the plunger and eventually vented the well. This rapidly decreased the back pressure, accelerating the plunger. The average velocity was reported low because it is calculated from the rise time which had increased.

FIG 3 - Pressures vs. Velocities



ABOUT EXTREME TELEMATICS CORP.

Extreme Telematics Corp. (ETC) is a Canadian engineering firm specializing in low power controls and sensors for hazardous locations. ETC started out in 2001 to deliver certified plunger lift controls that would operate reliably in Canada's often harsh conditions. Today, ETC plunger lift controls and sensors dominate the Canadian market, and are already the top choice for many top producers in the United States. In addition to the Sasquatch plunger velocity sensor, ETC's plunger lift product line includes the well-known Cyclops plunger arrival sensor and ALiEn² plunger lift controller.