

M-I SWACO Replacement Screens for NOV Brandt Venom shakers outperform competitor metal screens

“My solids control tech called me and told me that M-I SWACO’s dryer cuttings and screen life made his job much easier, to which I replied, all 4 M-I SWACO screens outlasted the current screens we are using by their competitor but also produced better results on cuttings and that is what we’ve been looking for. Not to mention the service M-I SWACO provided with a VSAT before the test and follow-up after the test”

Travis Leger, Drilling Superintendent, EQT Production

Well Information

Location	Green County, Pennsylvania / USA
Well Type	Gas producer
Hole Size	8½ in Csg. Formation shale/claystone
Depth at Time of Test.....	10,100 – 13,800 ft (3,080 – 4,205 m)
Total Depth.....	15,224 ft (4,640 m)
Mud Type/Mud Wt./Mud Temp. During Test.....	Water-base / 14.0 / 80 degF (27 degC)
GPM.....	483
Shaker Type.....	NOV Brandt Venom

The Situation

M-I SWACO conducted a lunch-and-learn presentation of the latest screen technology and services. The lead Drilling Superintendent for EQT Production asked that we conduct a side-by-side comparison on one of his rigs in an effort to better understand efficiencies of the M-I SWACO screen technology so he could visualize this first hand.

M-I SWACO conducted a full VIBRATORY SYSTEMS ANALYSIS AND TEST¹ (VSAT¹) on the two NOV Brandt King Cobra Venom™ flow line shakers in an effort to identify areas of opportunity to bring the shakers back up to manufacturer specifications. Minor repairs inclusive of spring replacements were noted and the rig quickly ordered parts. Upon conducting a follow-up inspection to ensure all repairs/replacements, M-I SWACO did note the shakers were working optimally and so the screen testing could begin.

The Solution

M-I SWACO Replacement Screens for the NOV Brandt Venom shaker outperformed the non-OEM competitor metal screens on several fronts:

1. Screen Life
2. Solids Conveyance
3. Liquid on Cuttings

The Results

The Drilling Superintendent said that he received three phone calls at the end of the test:

1. The company man on location called to say he was impressed with the fact that we ran a retort using the PVC Cutout Method capturing cuttings at the full length of the discharge end of the shakers for a balanced collection for testing. He was also impressed that mud from M-I SWACO screens came back as being 18% while mud from competitor screens came back at 30% liquid on cuttings after 12 hours of running. Then after 24 hours of running, mud on M-I SWACO screens showed liquid on cuttings at 17% and mud from competitor screen showed 29% liquid on cuttings.
2. Third-party fluids engineer called to say he appreciated the attention to detail M-I SWACO paid to the entire screen testing and liked the fact that at the conclusion of the test (29 hours of straight running), no M-I SWACO screens needed to be changed.
3. The company solids control rep called to advise that M-I SWACO screens made his job much easier producing dryer cuttings and not having to run back and forth changing screens out.

Additionally, EQT Production awarded M-I SWACO with screens on this rig with talks of seven additional rigs in the coming months.

Tests

(1) Glove Conveyance Test: stopwatch timed test (testing was conducted separately)

Competitor Screen



Glove placed on screen in Position #1 (Feed End / Possum Belly); travel time from Position #1 to the end of Position #4 (Discharge End) = 24.62 seconds.

M-I SWACO Screen

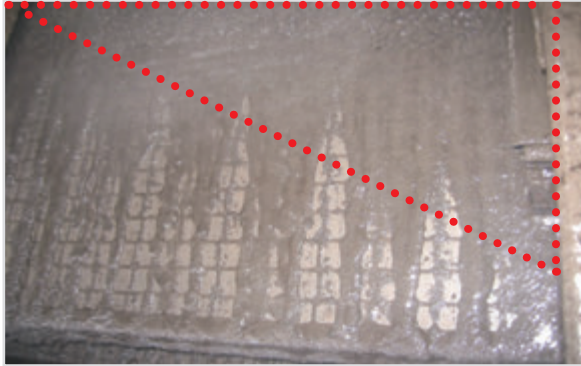


Glove placed on screen in Position #1 (Feed End / Possum Belly); travel time from Position #1 to the end of Position #4 (Discharge End) = 18.89 seconds.

Note: deck angles on both shakers were set at zero degrees during this conveyance test.

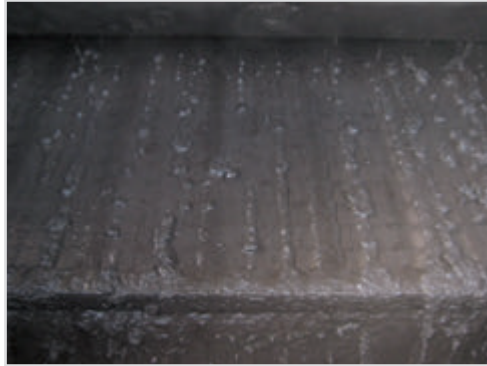
(2) Fluid Conveyance Test

Competitor Screen



Within first 8 hours, the competitor screens displayed uneven pooling to the right side.

M-I SWACO Screen



M-I SWACO screens displayed even conveyance of the fluid.

Deck Angles on both shakers were set at zero degrees during this portion of the screen test.

Fluid coverage was 75% (optimal coverage) prior to competitive screens pooling of to one side, at which time coverage on the competitive screens began to increase to 80 – 85%.

(3) LOC = Liquid on Cuttings

Twelve hours into the screen test, samples were recovered from the discharge end of both shakers so the mud engineer on location could run a retort.

Method of samples retrieval:

- a) PVC Pipe extending the entire width of the screen at the discharge end with caps placed on both sides of the PVC pipe. The pipe was cut to form a boat-like sample retrieval tool. This method ensures that no particular parts of cuttings are collected but rather all discharge area delivers cuttings to the sample tube.
- b) First retort at 12 hours, mud retrieved from competitor screens showed 30% LOC while mud retrieved from M-I SWACO screens showed 18% LOC.
- c) Second retort at 24 hours, mud retrieved from competitor screens showed 29% LOC while mud retrieved from M-I SWACO screens showed 17% LOC.

Conclusion

Significant competitor screen failures began at 22 hours of run time including:

- Rust, indicative of power coat failures
- Pillowing, indicative of cuttings getting under the top layer of mesh

M-I SWACO showed no evidence of failures after the total 29 hours of testing.

Testing Screens	12 Hour Retort LOC	24 Hour Retort LOC
Comp VNMxxx (API 140 Screens)	30% Liquid on Cuttings	29% Liquid on Cuttings
M-I SWACO JVEN200M (API 140 Screens)	18% Liquid on Cuttings	17% Liquid on Cuttings

Testing Screens	Timed Conveyance Test
Comp VNMxxx (API 140 Screens)	24.62 Seconds to Convey Media (glove)
M-I SWACO JVEN200M (API 140 Screens)	18.89 Seconds to Convey Media (glove)

Testing Screens	22 Hours into Test	29 Hours into Test
Comp VNMxxx (API 140 Screens)	50% (2 Screens) Changed due to failures Screens in Positions 1 & 3 were changed	50% (2 Screens) Changed due to failures Screens in Positions 2 & 4 were changed
M-I SWACO JVEN200M (API 140 Screens)	0% (No Screens Changed) Zero Failures	0% (No Screens Changed) Zero Failures



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