

## PerforationVA

# OPTIMIZING PERFORATION PRODUCTIVITY

EV's Optis Infinity Hybrid provides a complete 360° image of the well while substantially reducing operating time and cost

### DECLINING INJECTIVITY PERFORMANCE

Injection log data suggested that a number of perforations may have become plugged, resulting in poor injectivity performance. Possible explanations included salt precipitation, scaling or a build up of injected solids.

With multiple possible scenarios, the operator needed a clear and detailed understanding of the situation downhole, to select and execute the most appropriate remedial action.

### PRESENCE OF SALTS

EV's Optis Infinity Hybrid system was deployed on E-Line to reveal the status and condition of the perforations downhole. With the ability to record 360 degree sideview video to memory, combined with simultaneous transmission of live video to surface, Optis Infinity Hybrid provides comprehensive answers in real-time, directly at the well site.

The camera was run in hole to a depth of 3200m, where the detailed real-time video footage confirmed the presence of salts across all of the perforated intervals. The 360-degree perspective provided by the four sideview cameras revealed the condition of each perforation in detail, and the extent of the salt build up (**Fig.1**).

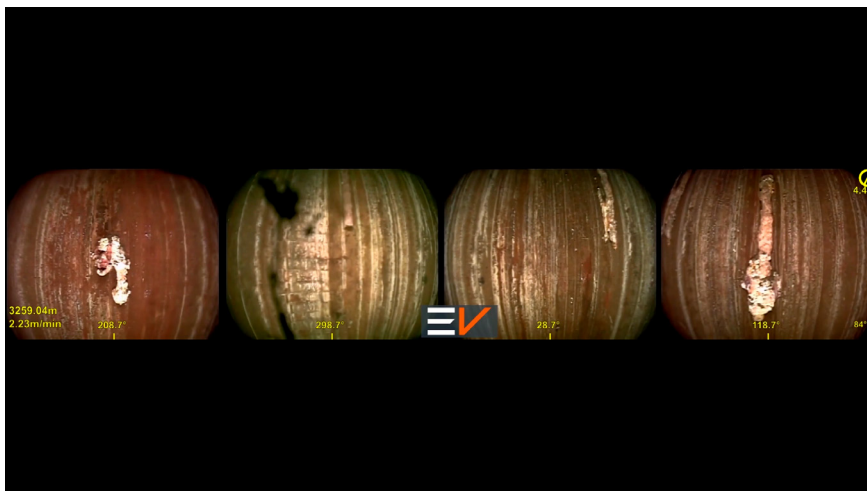


Figure 1: Sideview footage revealing perforations plugged by salts

### ⚠️ THE CHALLENGE

A Canadian operator experienced declining injectivity performance in a Carbon Dioxide disposal well. Injection log data suggested that a number of perforations may have become plugged. Possible explanations included salt precipitation, scaling or a build up of injected solids. With multiple possible scenarios, the operator needed a clear and detailed understanding of the situation downhole, to select and execute the most appropriate remedial action.

### 💡 THE SOLUTION

EV's Optis Infinity Hybrid system was deployed on E-Line to reveal the status and condition of the perforations downhole. With the ability to record 360 degree sideview video to memory, combined with simultaneous transmission of live video to surface, Optis Infinity Hybrid provides comprehensive answers in real-time.

### ✅ THE RESULTS

The detailed real-time video footage provided by the four sideview cameras confirmed the presence of salts across all of the perforated intervals (**Fig.1**). A 360 degree mosaic image of the area of interest was created, helping to visualise the perforations and salt deposits (**Fig.2**). Further image processing generated a 3D view of the area of interest (**Fig.3**). An EV analyst evaluated the extent of the plugging within each individual perforation, and results revealed that over 93% of all perforations across the 4 intervals were plugged by salt (**Fig.4**).



Figure 2: 360 degree mosaic image of plugged perforations

### ADVANCED INFORMATION

Through a process known as ‘mosaicing’, a continuous 360 degree view of the area of interest was created, helping to visualise the perforations and salt deposits (Fig.2). Further image processing enabled the generation of a 3D view of the area of interest. This advanced visual information also confirmed that no other anomalies were present within the well (Fig.3).

To complete the PerforationVA process an EV analyst examined the video data and evaluated the extent of the plugging within each individual perforation. Results revealed that on average, over 93% of all perforations across the 4 intervals were plugged by salt (Fig.4).

### TARGETED REMEDIATION

With the advanced information provided by PerforationVA, the operator was able to select the most effective method to remove the salt, and restore the injectivity performance of the well.

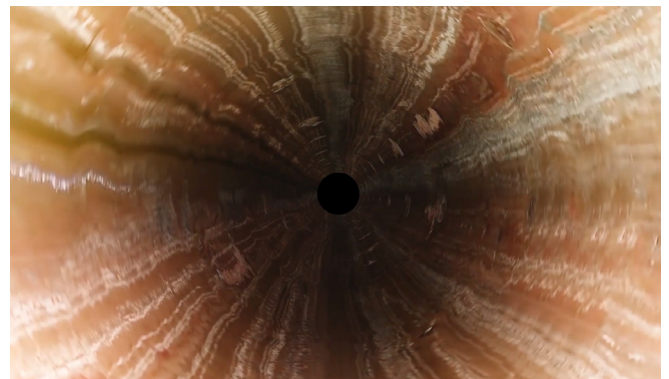


Figure 3: 3D view of area of interest

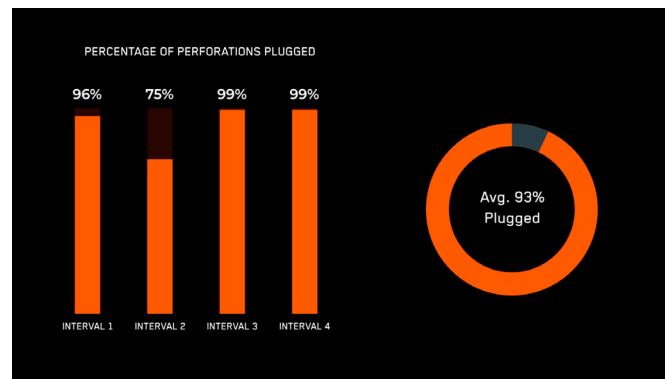


Figure 4: Quantified data revealing avg. 93% of perforations plugged by salts