

FishVA

EFFICIENT SALT PRODUCTION RESTORED

EV's real-time camera provides valuable insight and live visual data to assist with complex operations

SALT CAVERN ISOLATED

Frisia Zout, a leading salt producer in the Netherlands, were hit with an unexpected setback in their salt cavern well. The well produces high-quality vacuum salt, using a borehole brine process. Following a collapse of the cavern formations, the outer 11 ¾ inch casing was sheared, creating a fish that completely isolated the cavern, thereby preventing salt production.

In response, the operator planned an intervention to clear the fish by cutting the affected casing sections, and dropping the fragments into the cavern. Real-time, visual confirmation was required at each stage of the operation, to provide the critical verification needed to proceed to the next stage.

REAL-TIME VISUAL CONFIRMATION

With multiple cuts required, EV's Optis® R125 camera was deployed on Electric-line to provide real-time visual confirmation of success at each stage of the operation. The camera was run downhole to the target depth, where the detailed real-time footage confirmed the 7 inch casing was successfully cut (**Fig.1**).



Figure 1: Downview image confirming successful 7 inch casing cut

⚠ THE CHALLENGE

Frisia Zout, a leading salt producer in the Netherlands, were hit with an unexpected setback in their salt cavern well. Following a collapse of the cavern formations, the outer 11 ¾ inch casing was sheared, creating a fish that completely isolated the cavern, thereby preventing salt production.

💡 THE SOLUTION

EV's Optis® R125 camera was deployed on Electric-line to provide real-time visual confirmation of success at each stage of the operation. The Optis® R125 camera was provided as the ideal option, as it acquires real-time footage at 25 frames per second, to assist with visual confirmation of the multiple cuts throughout the operation.

✅ THE RESULTS

The detailed real-time footage confirmed the 7 inch casing was successfully cut (**Fig.1**). The sideview footage revealed the cut in more detail, and proprietary Visual Analytics processes enabled a 360 degree continuous image to be generated, providing a complete profile of the successful cut (**Fig.2**). After cutting the 11 ¾ inch casing, the camera was run again, and the real-time downview footage immediately revealed the successful casing cut (**Fig.4**). With this confirmed, the operator successfully cut the 7 inch casing again to allow room for a liner assembly to be installed (**Fig.5**). With the liner assembly successfully installed, efficient salt production was restored.



Figure 2: 360 degree stitched image providing a complete profile of the successful cut for clear and concise confirmation

The sideview footage revealed the cut in more detail (**Fig.3**), showing no anomalies. By applying proprietary Visual Analytics processes, a 360 degree continuous image was generated, providing a complete profile of the successful cut for clear and concise confirmation (**Fig.2**). Less than 10 metres below, the tail pipe was located standing upright within the 11 ¾ inch casing. With this visual confirmation, the operator was able to proceed with an operation to cut the 11 ¾ inch casing.

After cutting the 11 ¾ inch casing, the camera was run again to inspect the area. The real-time downview footage immediately revealed the successful casing cut (**Fig.4**), with the detailed sideview footage confirming a clean cut.

Upon running the camera deeper into the cavern, the dropped tail pipe was also found at the bottom of the cavern. With this confirmed, the operator planned an operation cut the 7 inch casing to allow room for a liner assembly to be installed.

The final camera run confirmed the 7 inch casing cut, with the sideview footage confirming another successful cut (**Fig.5**). Upon running the camera deeper into the cavern, a clear passage to the bottom of the cavern was confirmed for the installation of a liner assembly.

SALT PRODUCTION RESTORED

By providing critical, real-time visual support throughout the operation, the casing fish were successfully relocated and the blockage to the salt cavern was successfully removed.

Finally, the operator installed a liner assembly at the bottom of the 7 inch casing, enabling successful restoration of efficient salt production.

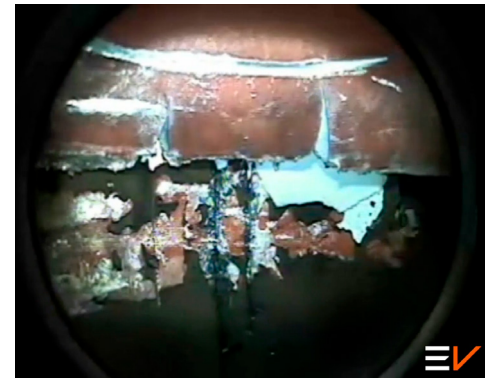


Figure 3: Sideview image confirming clean 7 inch casing cut



Figure 4: Downview image confirming 11 3/4 inch casing cut



Figure 5: Sideview image confirming final 7 inch casing cut