



TITLE

Motion Amplification Study, KTG Memphis, TN

1: Executive Summary

Hi-Speed Industrial Service was called in to use its Motion Amplification Technology to inspect the emboss section of the Winder in LDC converting. Several videos were taken with components loading and unloading and with the winder operating at 200, 400, and 610 mpm.

2: Methodology of Data Acquisition

Video was taken at the north and south side of the emboss section of the winder. Unloading/loading videos were only taken on the north side.

3: Data Analysis & Results

Click on picture to open video link

North Side

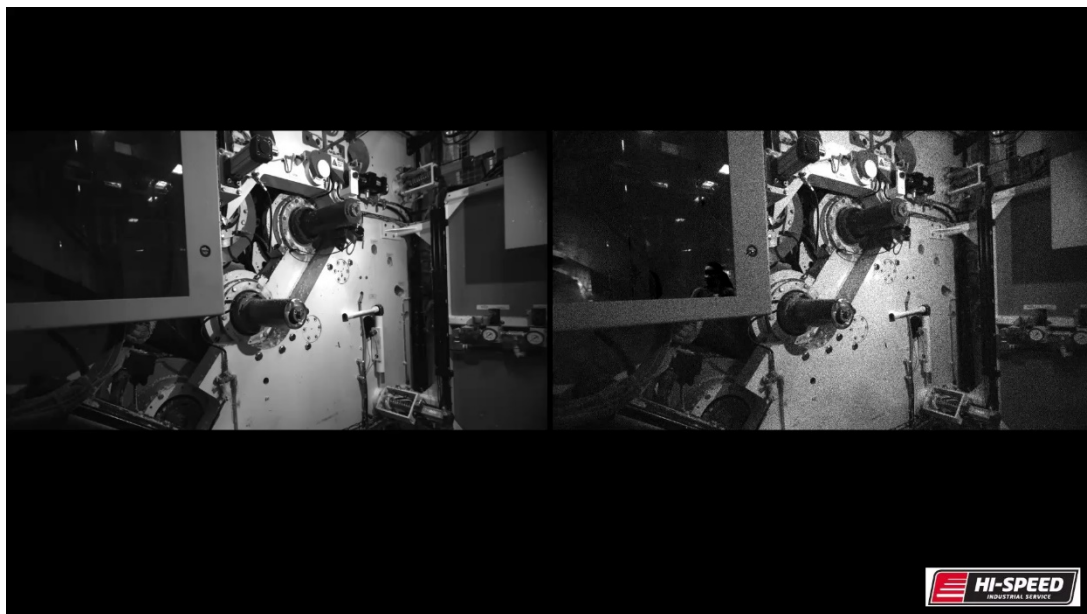


Figure 1: Motion Amplification, North side doctor chamber unloading

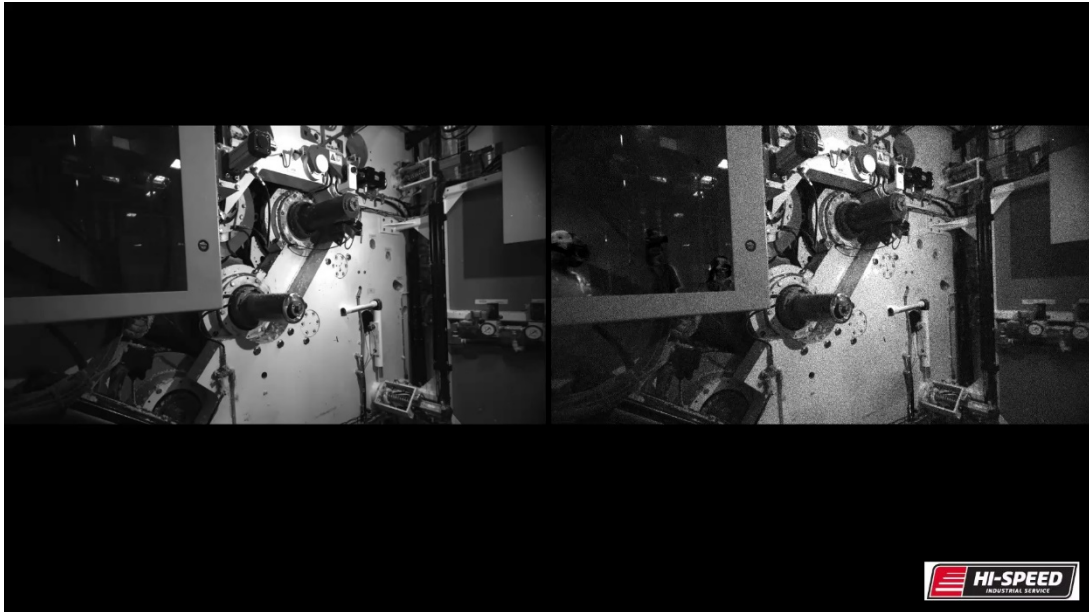


Figure 2: Motion Amplification, North side doctor chamber loading

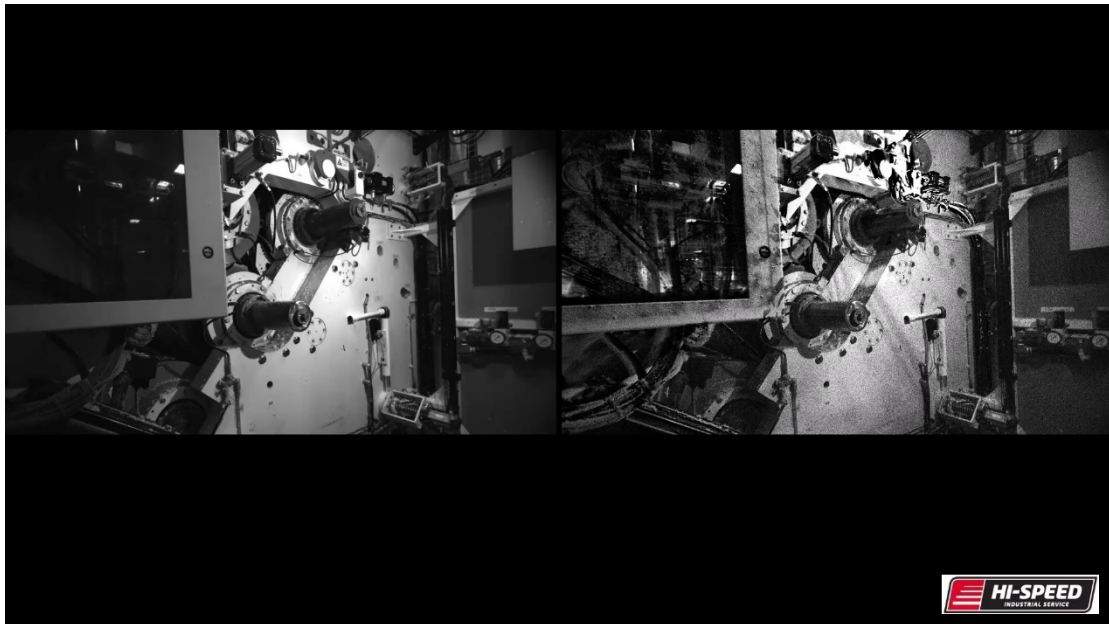


Figure 3: Motion Amplification, North Side clamshell unloading

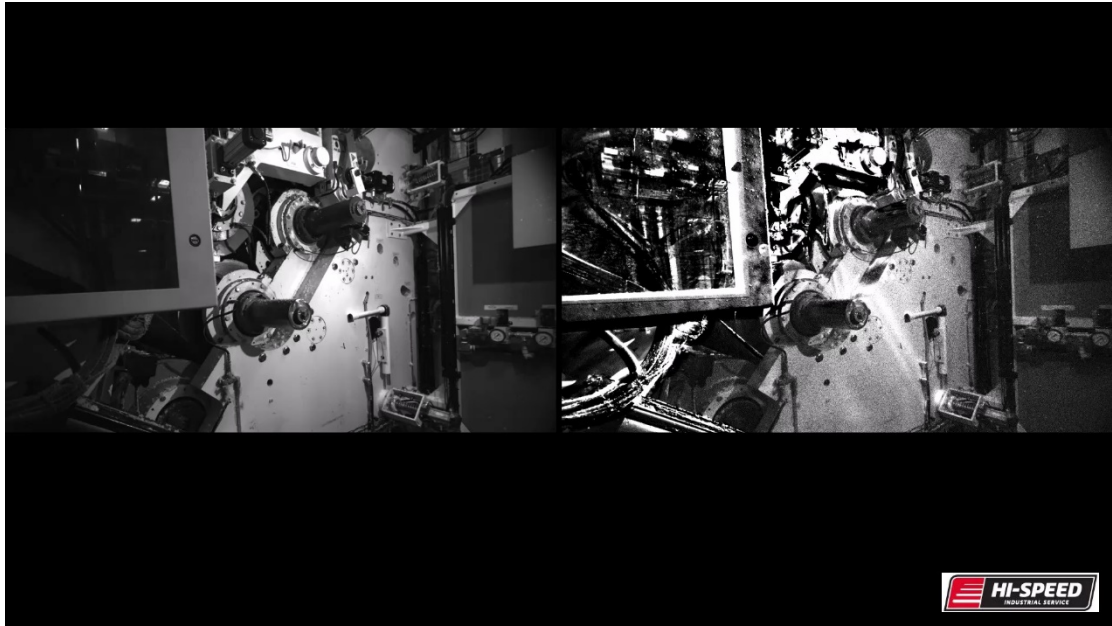


Figure 4: North Side Clamshell Loading

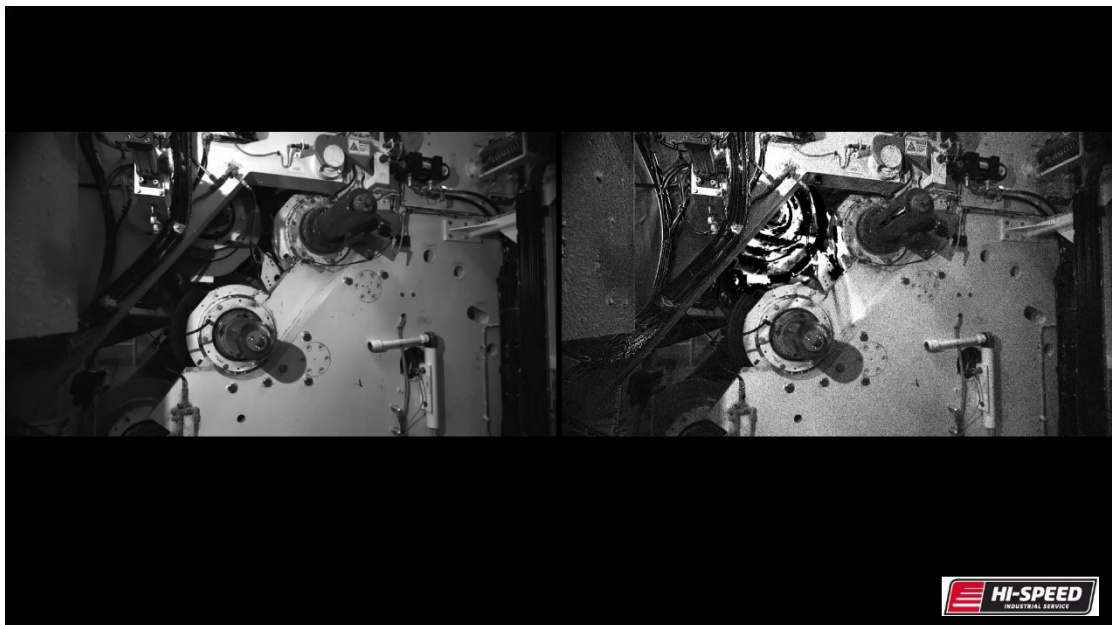


Figure 5: Marrying Roll Loading



Figure 6: Motion Amplification, Marrying Roll Unloading

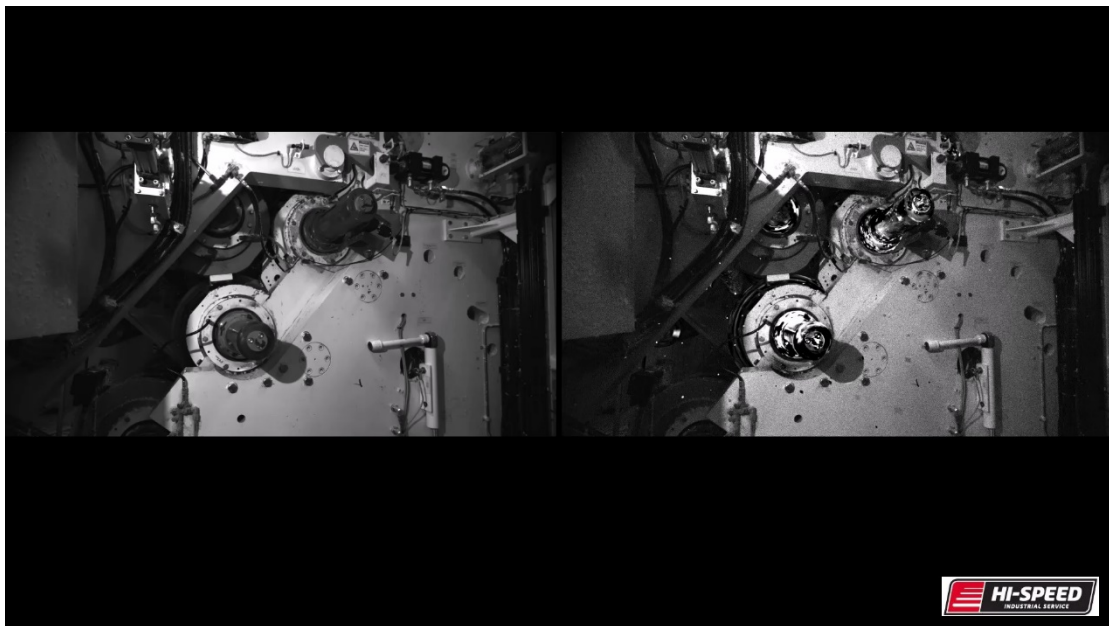


Figure 7: Motion Amplification, Operating at 200 mpm

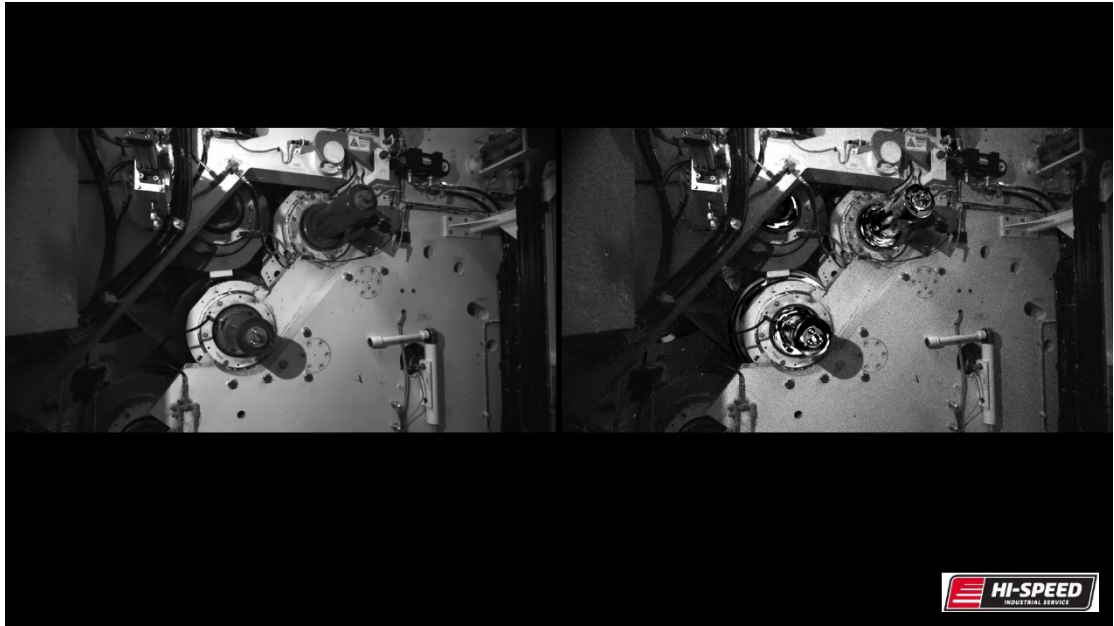


Figure 8: Motion Amplification, Operating at 400 mpm

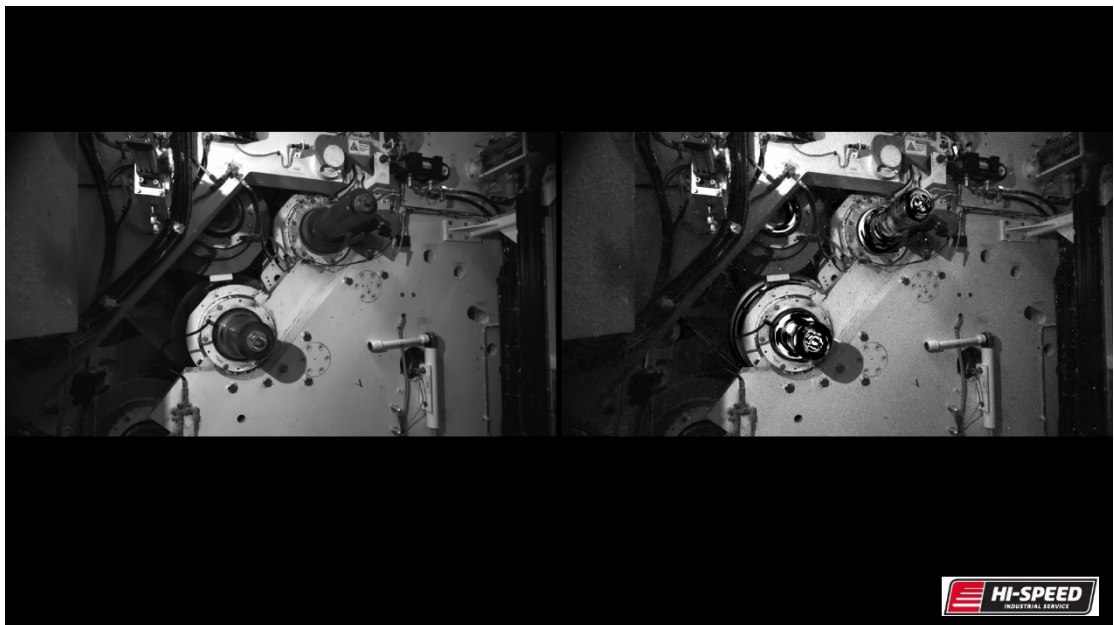


Figure 9: Motion Amplification, Operating at 610 mpm

South Side

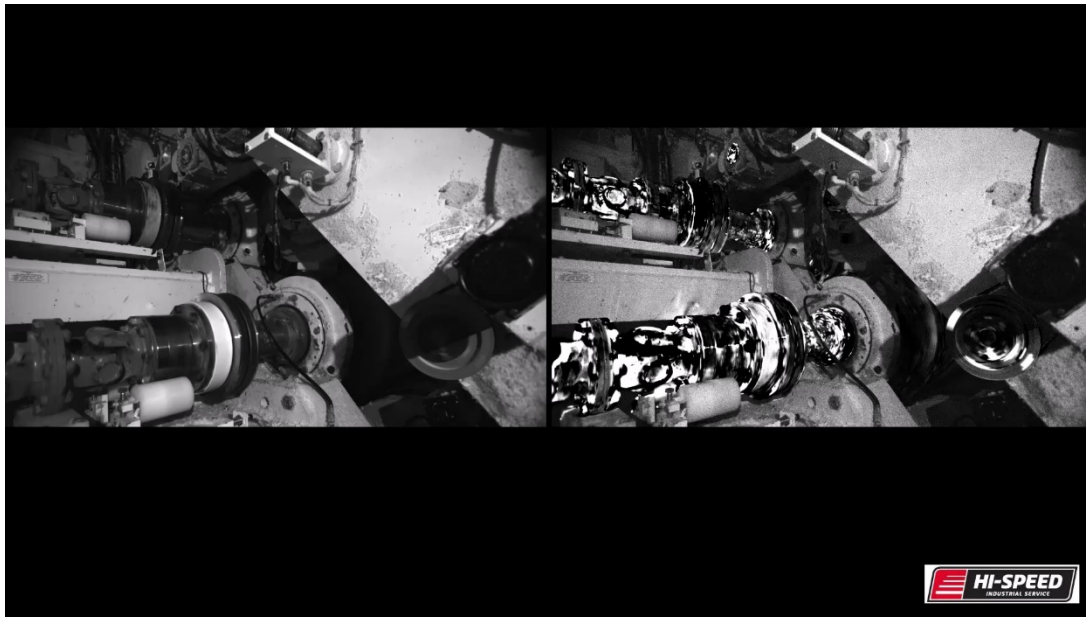


Figure 10, Motion Amplification, Operating at 200 mpm



Figure 11, Motion Amplification, Operating at 400 mpm

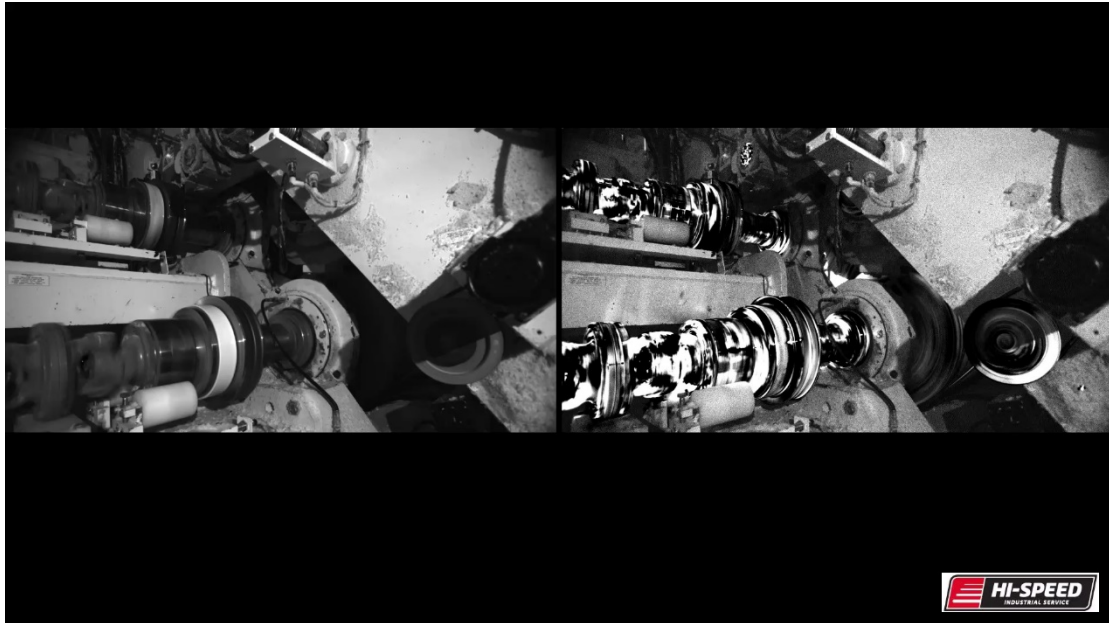


Figure 12, Motion Amplification, Operating at 610 mpm

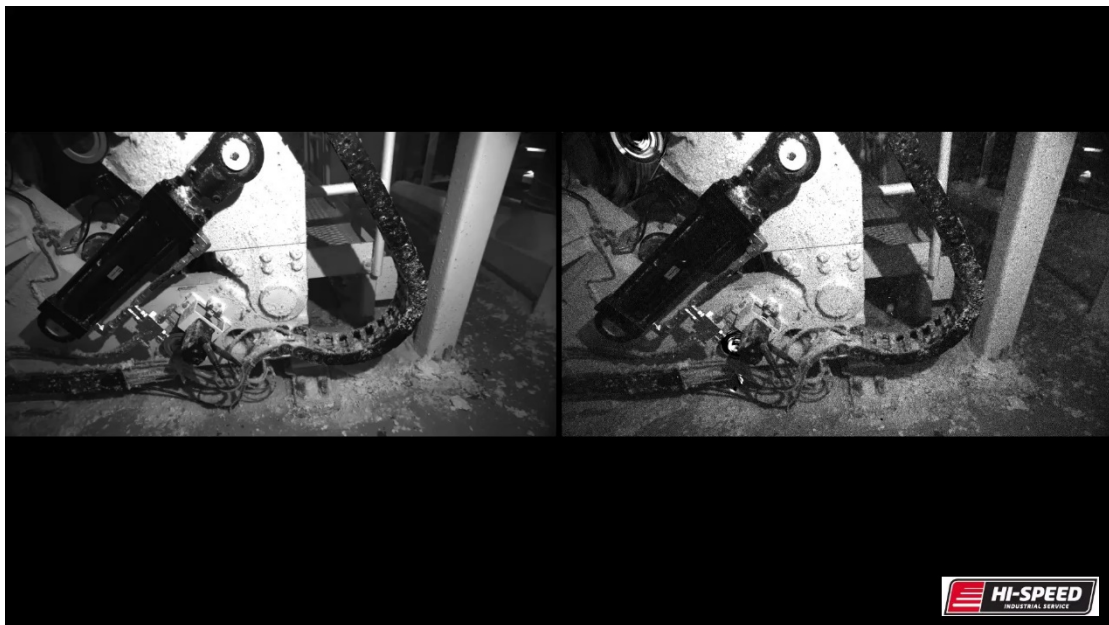


Figure 13, Motion Amplification, South Side Pivot Point

4: Conclusion(s) and Corrective Action(s)

In conclusion, there appears to be little to no movement in the emboss section in question. Motion was amplified up to 50 x and showed no evidence of excessive movement. The videos of the clamshell loading and unloading may show some movement; however, there appears to be an anomaly present that shows excessive movement of the entire right side of shot. This is likely not accurate data.

There does appear to be some movement of the clamshell section on the south side video, especially with the winder operating at 610 mpm. This may be a slight resonance; however, we do not believe this would cause the issues in question. Apparently before we arrived to collect video data, mechanics had checked fasteners on the unit and found loose fasteners. They tightened all fasteners before we were able to perform any collections. It is possible that this could have been causing some of the issue; however, we are not certain of this.

Given the evidence of no excessive movements being shown in motion amplification video, we do not recommend adding stiffeners/bracing to the structure. Please do not hesitate to contact us for any questions or comments. We thank you for allowing Hi-Speed Industrial Service to provide our Motion Amplification services to KTG USA Memphis.