

CASE STUDY



IVC
TECHNOLOGIES



Title: Tissue Machine Winder Special Analysis

Industry: Paper | Machine: Winder and Winder Frame | Technology: Vibration Analysis

Purpose: This case study highlights testing performed on several rolls in the winder and on the winder frame of a paper products manufacturer.

Overview: Impact testing was performed on several rolls in the winder and on the winder frame. The results of the test showed the natural frequency of each part tested.

Findings: The frequencies were found to be within acceptable ranges. The natural frequencies for the parts are listed below for future reference.

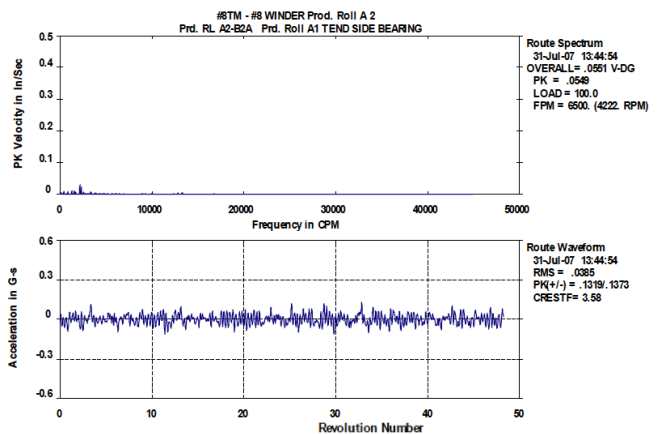
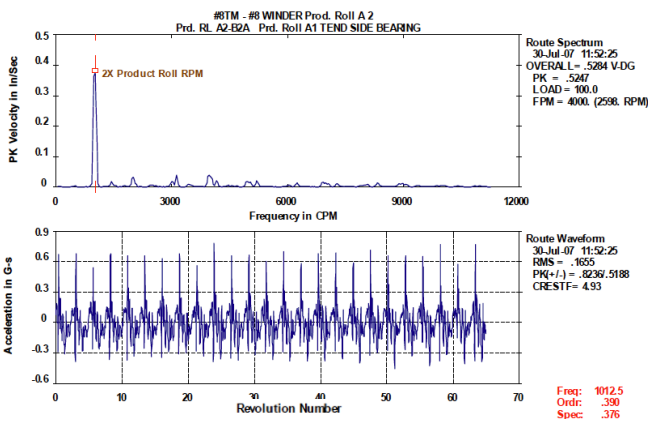
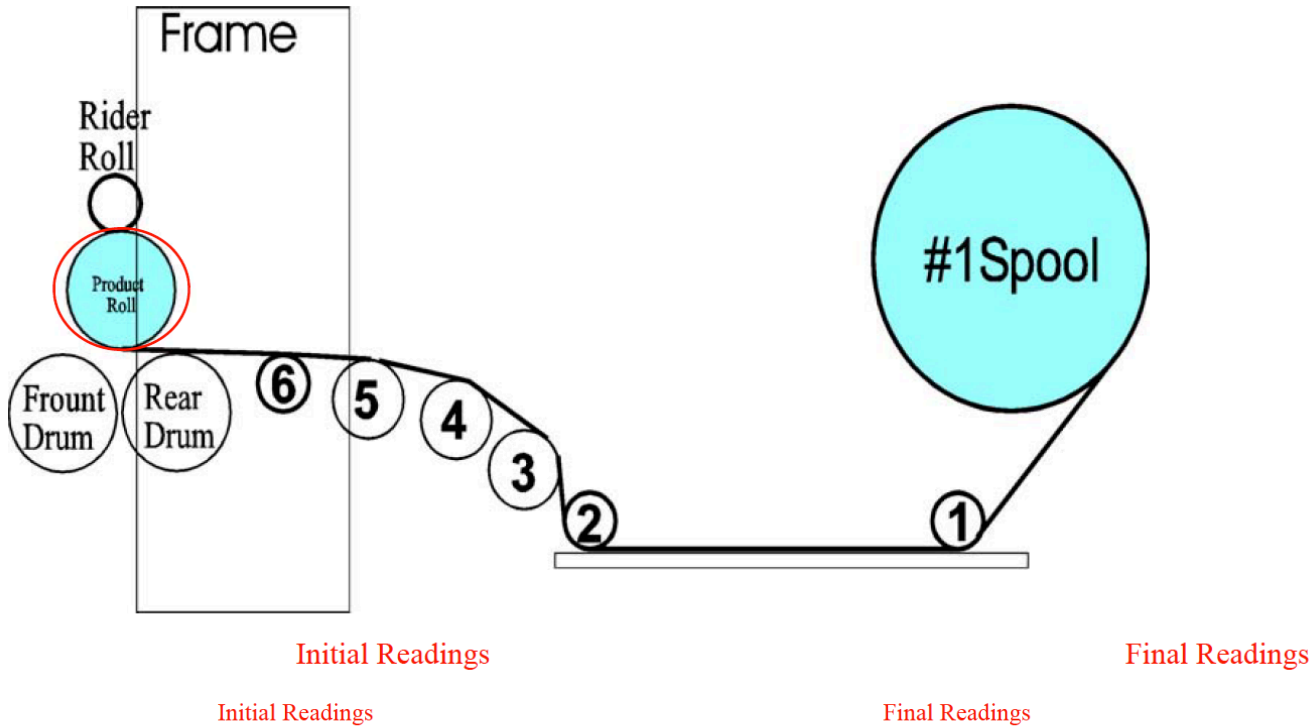
- Roll # 6: 5419 CPM
- Rear Drum: 4482, 8857 CPM
- Front Drum: 4519, 8493 CPM
- Product Roll: 2906 CPM
- Rider Roll: 2063 CPM
- Frame Position 1: 15263 CPM
- Frame Position 2: 13088 CPM

Phase Analysis / Run-up Testing: This test was performed using live mode to look for any critical speeds that the winder may cycle through. There were no major resonance induced peaks found in the vibration spectrum while performing the test.

Cross Channel Phase Analysis: Using a photo-tachometer and one vibration sensor placed on each end of the product roll we were able to monitor the phase change between each end of the roll. The initial results of this test indicated misalignment induced by looseness, showing a 180-degree phase change when the vibration was the most severe on the product roll.



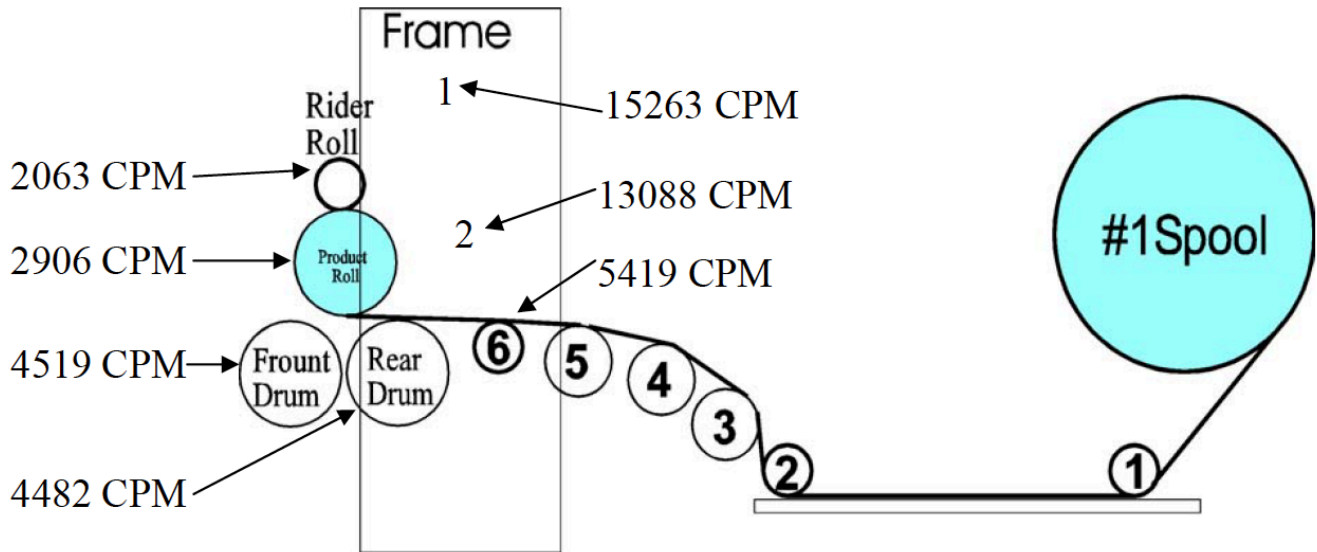
Winder:



Analysis: The initial reading taken on the product roll showed a high 2x run speed peak which was misalignment induced by the loose fit on the product roll stub shafts. The final reading shows a significant reduction in vibration after tighter fighting hubs were installed. There is still a slight amount of looseness visible which should go away when a new set of stub shafts are installed.

Recommendation: Install new stub shafts when available. Periodically measure the fit on the stub shafts and the product roll bore. Continue to monitor and watch for any signs of looseness.

Impact Testing Results:



Analysis: Impact testing was performed on several of the rolls and the frame to acquire their natural frequency. All of the frequencies were found to be within acceptable limits. Also, live mode run-up testing was performed to monitor for resonance that the winder may cycle through.

Recommendation: All frequencies were acceptable, and no resonance frequencies were found during the run-up test

About IVC Technologies

IVC Technologies is dedicated to helping our customers achieve optimal efficiencies through condition-based monitoring (CBM) utilizing our highly experienced and certified CBM analysts, cutting-edge PdM technologies, and equipment with unsurpassed analytic capabilities. Our Advanced Testing Group (ATG) is comprised of the foremost leading experts in the diagnosis of the most complex problems plaguing industry today.

