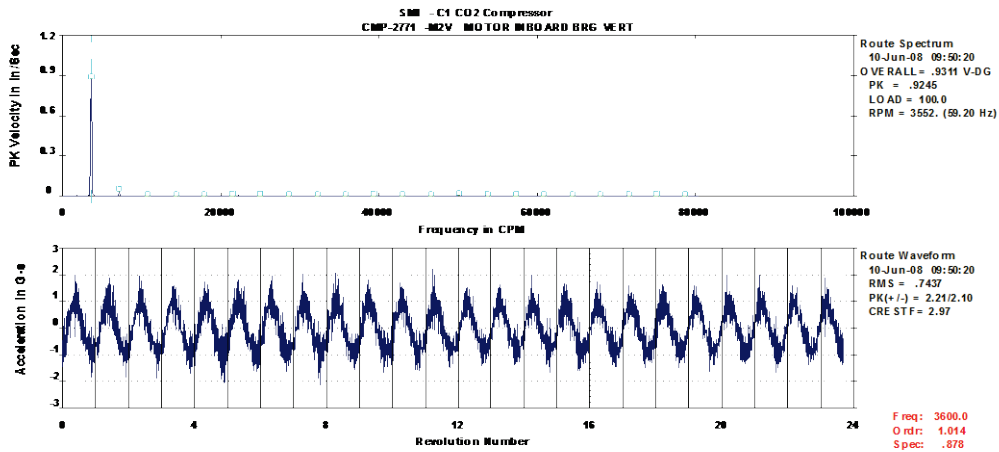


# CASE STUDY

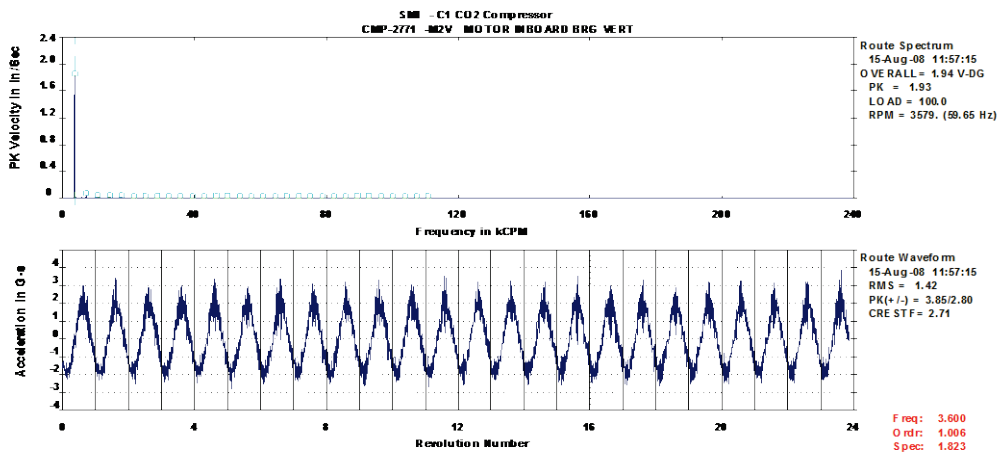
## Lamson blower

Steven A. Head

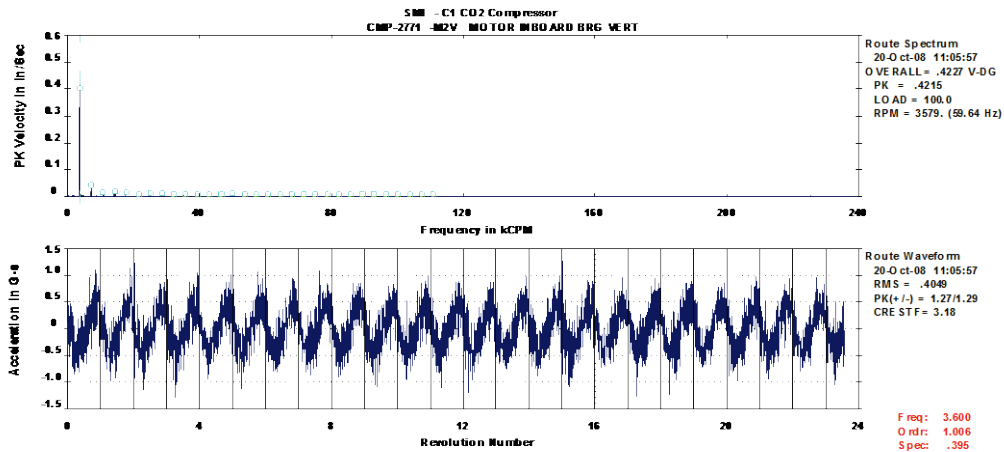
In June 2008 the Lamson motor was replaced. That month a validation of the new motor was conducted and the motor was found to be unsatisfactory. Vibration measurements revealed .9 in/sec in the motor inboard vertical position. Phase readings across the coupling were 155°. Maintenance personnel were informed of the findings and a recommendation was made to align the unit. Additionally, an acid cleaning of the blower was recommended to reduce imbalance in the blower.



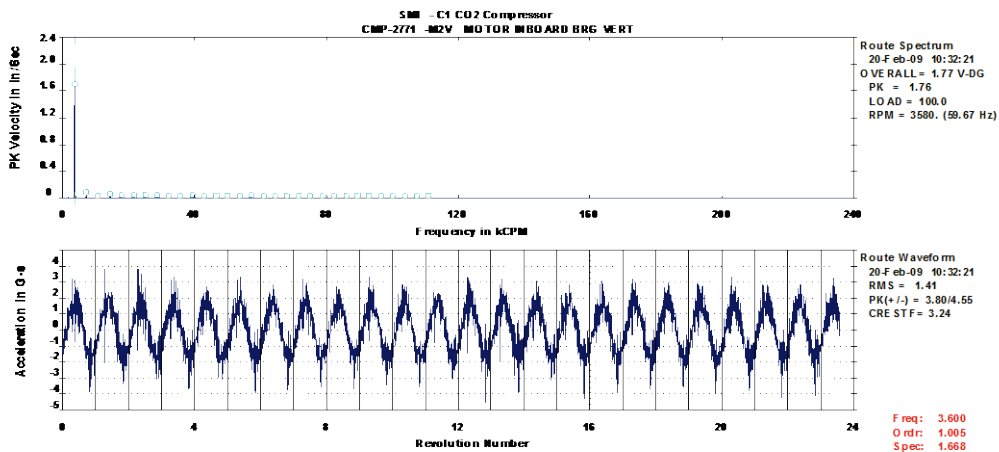
No action was taken to correct the deficiency in June, July or August and the vertical measurements increased to approximately 1.6 in/sec.



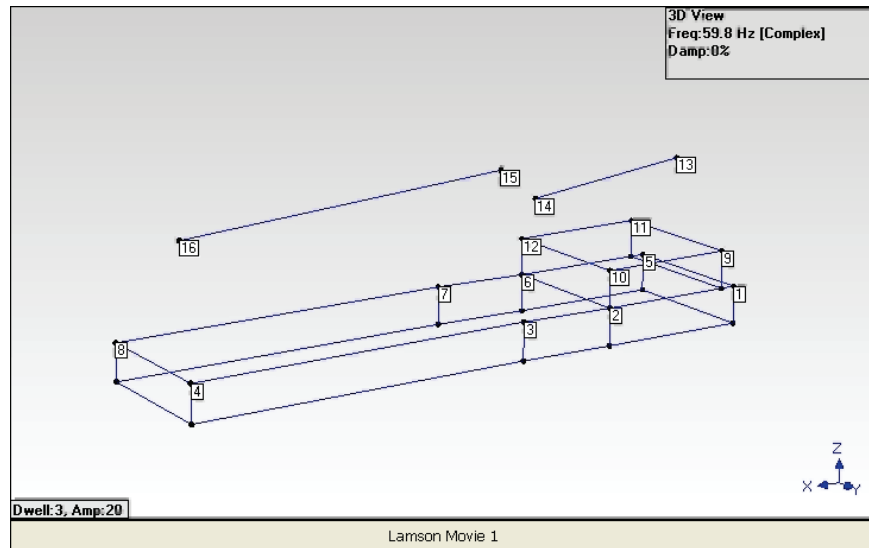
In September the unit was cleaned and aligned bring the vibration levels down to .39 in/second, which is within the company specification of .5 in/sec. and waveform P-P vibration was reduced from >6 g's to under 3 g's.



By February 2009 the symptoms had returned to the original levels. Again a Cleaning and alignment was recommended as they had corrected the original problem with the added recommendation of leveling the frame and checking the unit for a soft foot condition.

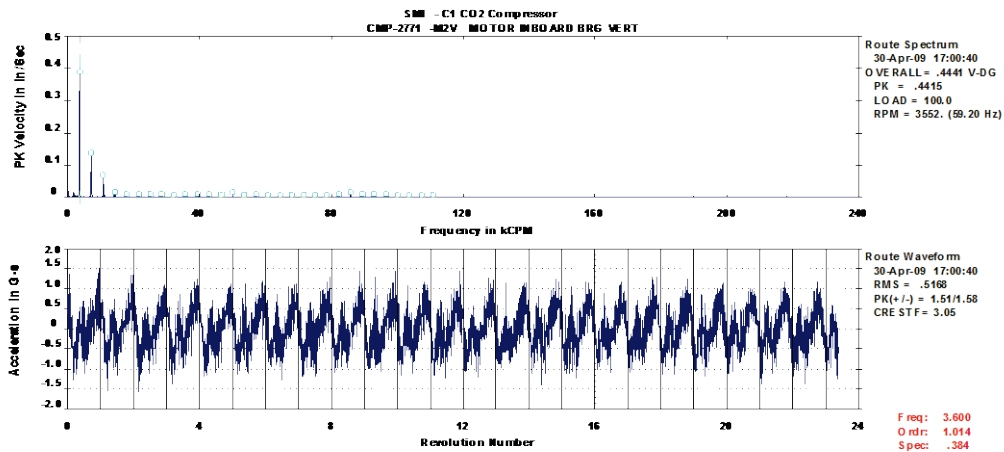


In Mach an independent ODS was performed to analyze the frame. The results revealed that the motor and blower were off-set misaligned and thus inducing heavy vibration.

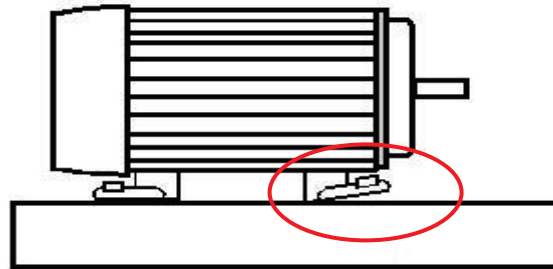


In April 2009 an in-depth analysis with corrective action was undertaken to include: frame leveling, aligning, cleaning, and checking for soft foot. Vibration levels in the vertical plane were in excess of 3.3 in/sec (not a typo) with phase readings of 178° across the coupling. The alignment was checked on the spot and found to be well within tolerance.

A new approach was needed to identify the source of the problem. The motor feet were loosened one foot at a time and when the right foot closest to the coupling was loosened the vibration dropped to .38 in/sec. Initial thought was it had an undetected soft foot. Shims were placed under the foot and the foot tightened. After two attempts to shim the motor failed to bring the vibration level within acceptable limits, it was noted that tightening the foot bolt, raised the vibration levels back over 3 in/sec.



With the motor bolt removed, a visual inspection was conducted and found the motor foot to be bent approximately  $5^{\circ}$ . It was determined that the motor bolt, when tighten, distorted the motor frame thus inducing the high vibration levels.



The company is researching to determine if the motor is still under rebuild warranty.