Application Note
Rotating Machinery Analysis
Anti-aliasing filters

Application:
Condition Monitoring, Rotating Machinery Analysis
Anti-Aliasing Filter

Kemo Product:
Din Rail - DR1200/1kHz/01 LP

Application:

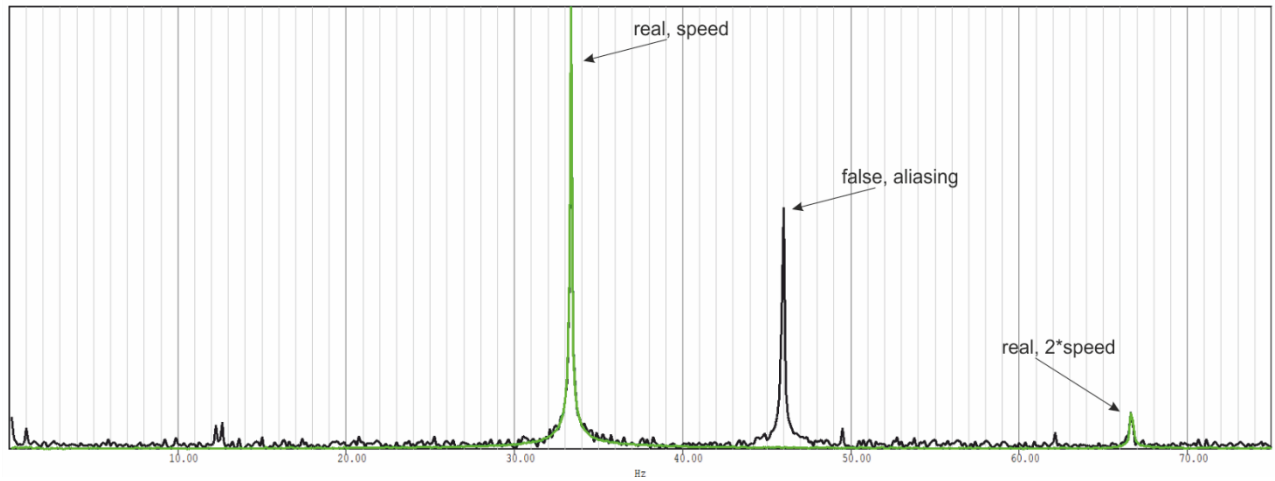
The measurement of vibration on rotating machines is a common method of condition monitoring. By constantly monitoring the vibration levels and the fundamental rotational speed the data can be analysed to provide early indications of possible bearing and equipment failure. This is surprisingly common and can be found in equipment from wind turbines right through to hard disc drives used in cloud computing.

As with any type of analysis there are a number of potential issues when carrying out an FFT analysis to view vibration data in the frequency domain to show fundamental speed and amplitude.

One of these issues is a phenomenon called **aliasing.** This occurs when a sampled signal is reconstructed from digitised data in a way which is different to the original data, causing incorrect analysed results. This is usually caused by insufficient sample rates, but can be caused by other sources.

The customer in this application was seeing just such an issue, when analysed it appeared the rotating machinery was running with frequencies of 33.3Hz, 46Hz and 66.6Hz. Based on experience and common sense the engineer recognised the 46Hz frequency peak as being anomalous and required a filter to remove it to ensure in process analysis was not in error.

Kemo supplied a DR 1200/1kHz/01 LP which was a 1kHz low pass filter with an anti-aliasing elliptic type response, 94 dB/Octave, - 90 dB stopband. In the diagram below the black line shows the 3 original peaks and the green line shows the analysis with the filter installed before the analysis takes place.



For more details and to discuss your cable requirements, please contact us sales@kemo.com

Kemo Limited
First Floor, 33 King Street, Thetford, Norfolk, IP24 2AW, United Kingdom
+44 (0)1474 705168
www.kemo.com **sales@kemo.com**