SIGNAL CONDITIONERS
vs.
LOOP POWERED VIBRATION TRANSMITTERS
EXPLAINED

WHEN RELIABILITY MATTERS
CONNECT TO CONFIDENCE

With the changes that are slowly occurring in manufacturing, many companies are moving from active data acquisition via route-based data collection to a more passive type of set up.

One method that many vibration monitoring professionals feel provides better constant monitoring utilizes permanently installed and powered sensors outputting overall vibration signal via 4-20 mA systems.

Two of CTC's most popular 4-20 mA output solutions, the LP202 loop powered transmitter and the SC Series signal conditioner, share similarities and differences, making one option preferable to the other depending on the specific application.

LOOP POWERED VIBRATION TRANSMITTERS

Loop powered vibration transmitters, generally referred to as LPs, use a standard type of IEPE accelerometer that would normally be used to take dynamic data. However, before the data is transmitted, the data is converted on the internal circuit board to an overall 4-20 mA output with a preselected set of fixed parameters.

These preselected parameters include the full scale range of the vibration, whether the 4-20 mA output is proportional to peak or RMS values, and will also include a filtered frequency span. A sample description might be: 0-2 inches full scale range, RMS, 3 Hz - 2,500 Hz frequency span.

LP202-1R1-1E
Loop Power Sensor, Velocity, 4-20 mA Output, Top Exit

SIGNAL CONDITIONERS

CTC's SC Series signal conditioners operate on a slightly different principle than the Loop Power Vibration Transmitters.

With signal conditioners, a standard dynamic accelerometer is utilized. The signal conditioner, operating on 24V DC power, supplies IEPE current to the sensor which provides its full dynamic output to the signal conditioner. The signal conditioner then transforms the signal from a field-selectable frequency band into an overall value that is output as a powered 4-20 mA signal to the PLC or other control system.

Caution should be exercised in connecting the signal conditioner to whatever monitoring system is used. The control system should not supply power to the output loop from the signal conditioner, and the common wire from the 4-20 mA loops cannot be shared and must remain isolated from other commons on the same control card or input series. This may require some technical assistance in determining the exact card to use for a given application.

SC Series
Premium, Field Configurable Vibration and Temperature Signal Conditioners

SELECTING THE RIGHT OPTION FOR YOUR APPLICATION

There are three important pieces of information to consider when selecting between a loop powered vibration transmitter and a signal conditioner:

- Machine accessibility
- Process criticality
- Baseline operating vibration

If the machine is easily accessible, process critical, and has a good baseline vibration history, a loop power vibration transmitter can usually be easily specified that will provide a 4-20 mA loop to the PLC or other system. In this scenario, if the machine goes into alarm, then a qualified vibration technician will be able to access the machine with a portable accelerometer and data collector to gather dynamic vibration data for diagnostic purposes.

If the machine in question is not readily accessible or does not have a baseline vibration history, but is still process critical, then a signal conditioner with a permanently mounted accelerometer will probably be justified. Dynamic acceleration data for diagnostics can be accessed directly from the BNC on the front of the signal conditioner and can be adjusted in the field after a good baseline vibration history is established.

Whichever choice is made, 4-20 mA signals will add confidence that important, process-critical machinery is continuously protected.