



Haldex Barnes Finds Digital Displays More Reliable and Less Prone to "Interpretation"

PROVIDENCE, RI -- A major manufacturer of hydraulic gear pumps and power units has realized substantial productivity and quality improvements by switching from analog to digital display technologies in a variety of shop-floor gaging. According to Deb Miller, a quality professional at Haldex Barnes Corporation, Rockford, IL, machinists there are able to read the digital gages more accurately and with less subjective interpretation. As a result, downstream assembly operations that depend upon the machinists' shop-floor readings are being performed more accurately, resulting in better pump assemblies and fewer rejects.

Machinists at Haldex Barnes who machine the cast iron housings for the GC Series of gear pumps are responsible for maintaining control over multiple critical dimensions, including bearing bore diameters, gear pocket depths and diameters, and distance between bearing bore centers. The most critical of these is gear pocket depth, which machinists measure at several locations on each pump housing, using an LVDT electronic gaging probe, connected to a Model 832 Gaging Amplifier, both from Mahr Federal Inc., Providence, RI. The LVDT is clamped in a simple, flat, hand-held fixture that the machinist references against the part's mating surface. Taking the measurement is simply a matter of locating the LVDT contact on the feature, pressing down, and reading the amplifier display.

Haldex Barnes previously relied upon analog amplifiers in this application. Gage calibration technician Deb Miller says the analog displays left too much room for operator "interpretation," especially when the needle fell between two "ticks" on the dial. "We've eliminated assembly errors, because the digital display can't be misinterpreted," says Miller. She noted that the 832 amplifiers can be programmed to automatically classify parts into size categories using built-in indicator lights.

"Analog and digital displays both have their advantages," says Mahr Federal Sales Engineer Steve Cobert. "In order to select the right one, you have to understand the needs of the particular application. Analog displays tend to work better where you want to observe trends, 'explore' a surface, or approach a specification gradually. For Haldex Barnes' application, a digital amp was clearly the way to go, to eliminate subjectivity from the measurements."

Haldex Barnes made a clean sweep of analog gaging throughout the GC pump production area, replacing dial indicators on bore gages with Mahr Federal Maxum® electronic indicators, and exchanging analog air gages with Mahr Federal's Digital Dimensionair® air gages. The air gages, which are used to measure distance between bearing bore centers, are equipped with custom gage tooling, also from Mahr Federal. Finally, another Model 832 amplifier is used at a surface-plate setup to capture TIR (total indicated reading) data for flatness and parallelism of the parts' upper and lower surfaces.

"The gaging itself hasn't changed, but we're doing more accurate work and producing better product because of the switch to digital displays," says Deb Miller. "It also gives us the capability to capture measurement data electronically," she added, noting that all the digital display technologies from Mahr Federal support direct output to data loggers or computer networks.

Digital displays also commonly demonstrate greater physical reliability, which is a direct consequence of the absence of moving parts. "Prior to going digital, the gages in this department had to be calibrated every 30 days," said Miller. "Now, we calibrate every six months, and most of them don't require any adjustment at that schedule."

Mahr Federal is known worldwide for its expertise in providing dimensional measurement solutions. The ISO 9001-certified company manufactures and markets a wide variety of precision gaging products, including: dial and digital indicators; mechanical, air and electronic gaging; dimensional standards; instruments for surface finish and geometry gaging; and custom gages and systems. For additional information on Mahr Federal products

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