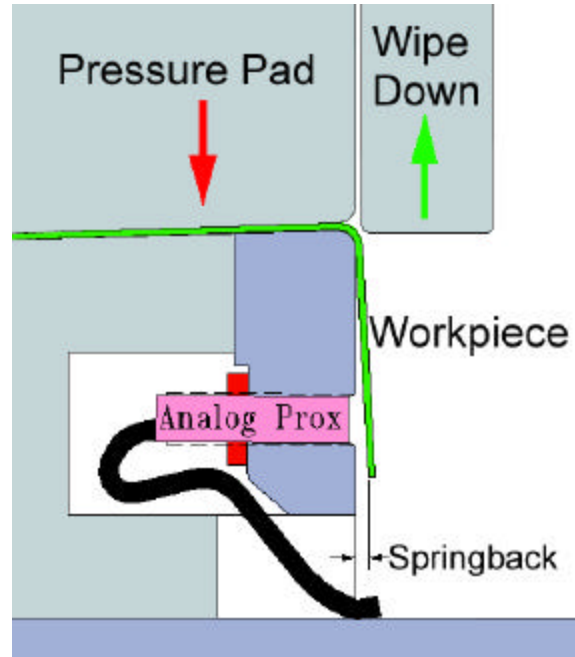# A Problem Solver Application Bulletin
Measuring Bend Angle on Every Hit

The **Signature Technologies SA-2000 "SAM"** module, and **Signature Technologies "SamView™"** software package can be used to monitor bend angles of manufactured parts

Instead of sampling selected parts using an off-line gaging fixture, the illustrated method can perform the same type of test every stroke of the machine so that each part can be individually verified as having been formed acceptably to tolerance. The measurement can either be calibrated, or comparative depending on the application. Calibrated measurements will give the dimensional variation at the sensing point.

The system works by measuring the displacement of the bent portion of the work piece relative to the dimensional sensor implanted into the forming die. Timing of the measurement is critical, since the measurement must wait until the part is no longer being held in an abnormal position by the wipe down iron.
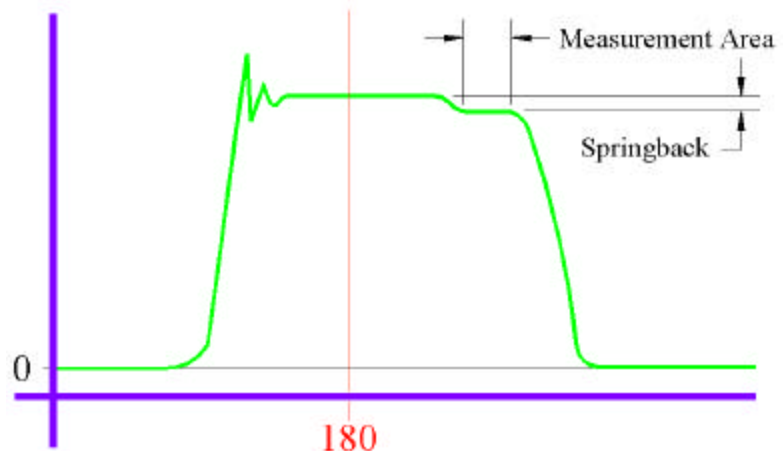

The **Graph** shows the measurement signature, indicating the area of the stroke where the part has been released by the forming tool, but is still held in registration by the pressure pads.

Two or more sensors can be used on wider work pieces to insure parallelism, or flatness of the formed portion. The **SAM™** module can handle inputs in groups of 8 up to 56 total points. If desired, **Signature Technologies** can provide controls to adjust the forming station(s) dynamically based on the dimensional measurements.

Signature Technologies can supply a wide variety of solutions to various manufacturing process problems dealing with measurement, verification of properties, tool condition, and machine health. We can also "close the loop" by performing process adjustments in response to specific variations in force, location, or shape of the work piece, as well as more simple controls which can track and reject specific parts which don't meet specific quality criteria.