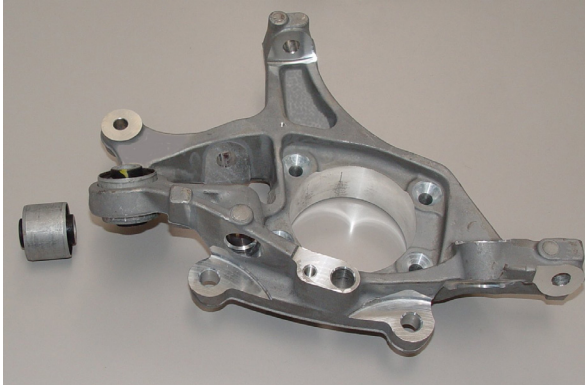


STEERING KNUCKLE BUSHING PRESS

Challenge

Assembly of bushing into the right and left steering knuckles that are being used today in the automobile industry.



Solution

Initially this process was performed using a hydraulic press. The specification calls for a total tolerance of +0.5mm on the position of the bushing relative to a datum point on the casting. This tolerance must be held despite the fact that the steering knuckle castings vary in thickness. Without any closed-loop feedback, this tolerance could not be held using hydraulics. How do you make an assembly to a tolerance when the steering knuckle castings vary in thickness and the bushing has to be pressed relative to a miscellaneous datum point on the part?

Using closed-loop feedback from an external position transducer built into the fixturing/tooling, the Promess Electro-Mechanical Assembly Press (EMAP) measures the assembly as it is being made and compensates for variations in the individual parts, making an assembly within tolerance every time. Typically, the bushing position is held to better than +0.1mm.

Additional benefits the customer received from using an EMAP system is as follows:

- The Promess system functions as both a press and a gauge. The system measures while it makes the assembly. It does both functions simultaneously and stores the information for later analysis.
- The Promess system also includes the feature of force versus position signature monitoring to ensure the press fit of each bushing is up to specification. This information is also stored for later analysis.