

# **DAPRA** MARKING SYSTEMS **ENGINEERING SOLUTIONS**

## *Value-Added Application Story*

**Industry:** Automotive

**Problem:** A customer needs to identify pinions and ring gears so that they can track the parts through the manufacturing process. Because the pinions and ring gears are marked in different areas, the customer wants a dedicated marking solution for each part. The solution must be turnkey, including workstation, fixture, pneumatic clamping, marking system, and dual palm controls. To decrease the idle time of the operator, the dual palm controls only need to be active during the clamping process. The workstation has to be easily movable to allow for future changes to the production line.



*Marking gear on outside diameter*

To start, the operator will manually load and unload the parts. The customer, however, plans on adding a robot that will do the load and unload. The marking solution must be designed to work with either solution.

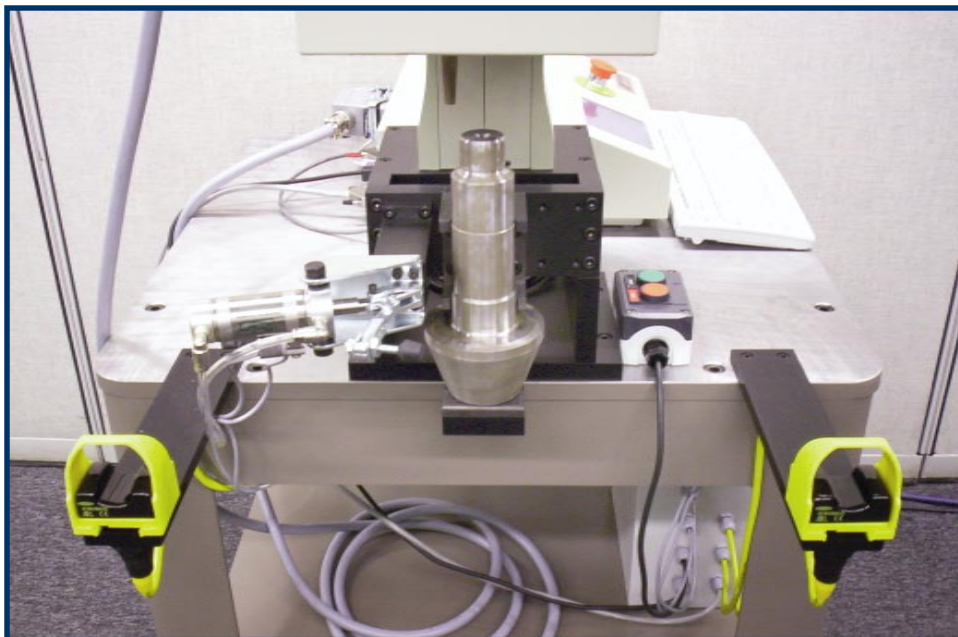
**Solution:** Dapra provided two complete marking solutions utilizing a 4" x 3" Dot Peen marking unit with Electronic Z axis and Autosense. Custom software was developed for the controllers to make sure the dual palm controls were active while the clamping was in process. Each system was provided with an industrial workstation painted to the customer specifications. The workstations were mounted on industrial casters with leveling feet. Under normal conditions the feet would be down, lifting the casters off the floor to make a stable marking platform. When the workstation needs to be moved, the feet are easily adjusted off the floor so the workstation can be rolled to its new location.

Custom fixtures were designed for both the pinion and ring gears. Each fixture included pneumatic clamping to hold the part securely in place during the marking cycle. To accommodate the various heights of the parts, the Autosense feature of the marking system is used to locate the marking surface. This greatly simplified the fixture design.

The dual palm controls protect the operator from injury. If the operator removes one or both hands from the dual palm control before the clamping is complete, the marking cycle stops and the clamp immediately returns to the open position. Once the clamps are closed, the operator is free to work on other things while the marking system marks the parts. Upon completion of the marking, the clamps are automatically opened.



*Marking pinion shaft (overall system)*



*Marking pinion shaft (close-up)*