Multistep Marking Applications Streamlined and Simplified

Challenge

Marking a part on more than one side, in more than one location, or over an extended surface, all have a common need to coordinate the marking action of a laser marker with precise part re-positioning, often involving multiple axes. The accurate coordination of machine motion and laser process adds complexity, absorbs engineering resources, and adds significantly to the overall development cost. Laser marking is typically characterized by low unit cost and multistep marking solutions can easily be cost-prohibitive if developed as custom machines.

Solution

The Visual Laser Marker (VLM) software package supplied with every Coherent PowerLine laser marker provides a simple and flexible alternative for these multistep marking applications. Using VLM, the marks are designed and defined through the user-friendly graphics editor. All the marking content is created in a single 2D drawing. Parts of the segmented image are then assigned locations on a 2D projected map of the three-dimensional part.

VLM then does all the rest. It automatically determines and stores the optimum sequence in which to create the various marks, together with the timing and ordering of all the detailed part motions (translations and rotations) and laser scanning operations, in order to accomplish the entire marking task in the shortest possible time. VLM controls axes connected to the laser marker's supply unit via CAN or EtherCAT and ensures precise matching of laser coordinates and machine kinematics.

Benefit

Diverse marking applications across quite different industries can all now benefit from this automated streamlined approach to multistep marking tasks. Successful examples already include circuit breakers where the plastic housing is marked on several sides; instrument boards from helicopters with areas as large as 600 x 600 mm, where the area is clipped into multiple marking fields; and cylindrical parts for medical instruments, where automated stitching ensures the edges of the field always meet exactly at 0 and 360°.

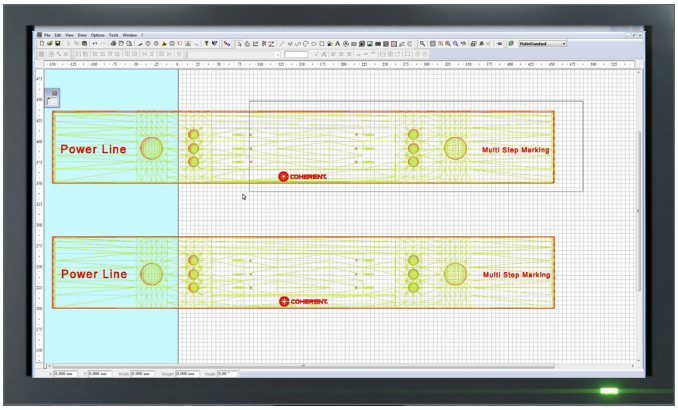

Figure 1. For large workpieces, one marking layout is sufficient. Individual segments of the marking are precisely joined together.

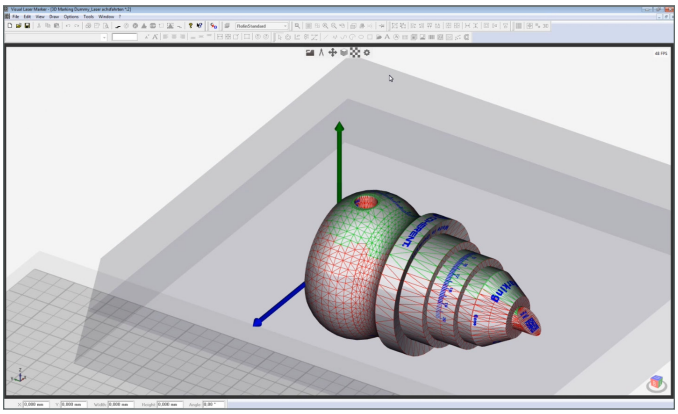

Figure 2. Parts with complex surfaces can be marked in a multi-step, automated process.

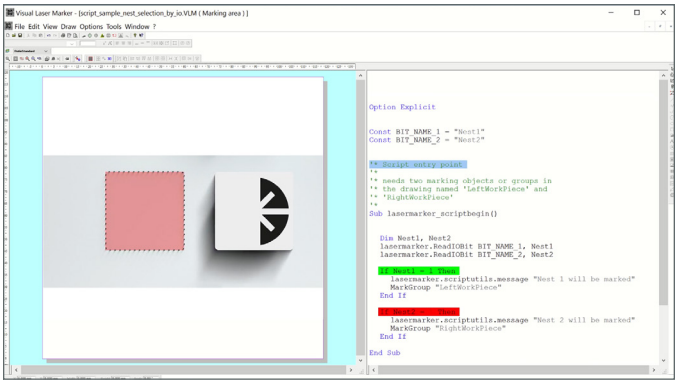

Figure 3. Scripts can be used for custom control of the process flow.

Application Field

Multistep marking tasks that necessarily require coordinated part motion and laser scanning.

Contact

Dr. Dietrich Tönnies, Product Line Manager, Munich, Germany
Email: dietrich.toennies@coherent.com

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