

Snapshots

Short takes on
the leading edge

Linescan system reads brake-drum code

System-integrator Factory Automation Systems (FAS; Atlanta, GA, USA; www.factoryautomation.com) uses machine vision to perform orientation, identification, and code-reading tasks within robotic machine-handling processes. For example, one sys-

tem finds the orientation of a cylindrical, truck brake drum and positions it for pick-up and further handling by a robot.

The design uses two Legend LS linescan cameras from Cognex (Natick, MA, USA; www.cognex.com) with effective resolution of 2048×8192 pixels to collect necessary data for an Allen-Bradley ControlLogix PLC connected to a Rockwell Automation (both Milwaukee, WI, USA; www.rockwellautomation.com) servomotor that performs precise positioning.

The system had to locate and read a 2-D dot-peen Data Matrix code imprinted on a specular machine surface; the code could appear

anywhere within a 20-in. window and at different heights. Initially, FAS considered using several 2-D cameras and overlapping diffuse on-axis lights (DOALs). But the expense and need for overlapping pictures caused the company to choose linescan cameras that read one line at a time very fast and build an image line by line. For DOAL illumination FAS used two red LED line sensors by CCS America (Waltham, MA, USA; www.ccsamerica.com), each with an emitting surface of $301 \times 12 \times 32$ mm.

To deal with the scaling issues caused by products of differing heights, FAS used a passive system of rollers and linear bearings that allow the cameras and lights to be mounted to an assembly that rides on top of the part, keeping the cameras and lights at a fixed distance from the code. The resulting system has cut inspection hardware costs in half.

