

Applications Note #2



Industry: Automotive

Application: Machine Tool Loading / Flexible Feeding

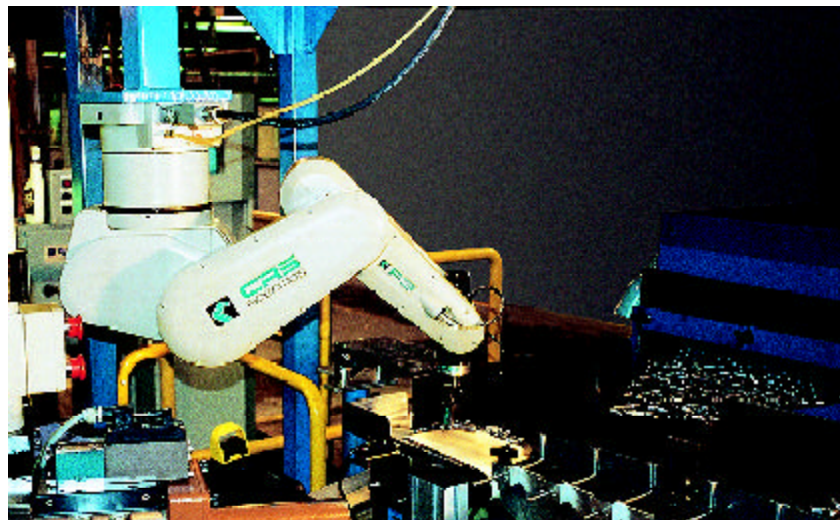
Product: F3 Robot & C500C Controller

THE PROBLEM

In 1997, DANA Canada Weatherhead Plant (St. Thomas, Ontario) was experiencing difficulty managing the production of hydraulic steel fittings for the off-highway vehicle industry. These fittings are machined out of steel forgings in a CNC machine that progressively reams, threads, and mills the part into the final product. Loading the pre-machined forgings into the CNC was originally done manually, but this proved to be a tedious, tiring and messy task. The rate of production of the forgings was not coordinated with the CNC, resulting in production bottlenecks.

THE SOLUTION

CRS designed a batch-oriented, flexible feeding system that eliminated the need for specialized fixtures to hold and locate the parts that had to be loaded. At the heart of the mechanical system is the **CRS Robotics F3 6 axis industrial robot**. A Cognex vision board calculates the location and orientation of each part on the vibratory conveyor as it comes into the camera's field of view (FOV). The part's coordinates are communicated at high speed to the



robot controller, which in turn, commands the F3 to quickly pick up the part. A buffer zone located at the midpoint between the delivery conveyor and the CNC is used to temporarily store the parts in the event that CNC is not ready for the next load cycle, thereby minimizing cycle time and the robot duty cycle. If

there is no part in the FOV, the robot sends a signal to the hopper/conveyor system to index the next batch.

Shampa Wali, Dana's Production Engineer, says, "Thanks to the CRS Robotics System, Dana Canada Weatherhead is now producing better quality products. While the system is running, the operator now has the ability to perform more quality checks, SPC's and audit sheets. The operator can now preset tooling for the next job to be run. In addition to the quality improvements, the robotics system is also saving us about 2 hours per day."

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