

QDC Drives Efficiency at Johnson Controls



The Johnson Controls plant in Cadiz, KY, installed this dual-position die table to improve die-change times on a 600-ton press. For prestaging, a die can be loaded on the table (in the center of the photo) and placed to one side (top and bottom of photo). When the press (center-right) finishes with the production die, the die exits at the center and moves to the other side of the table, then the prestaged die routes to the press.

Increasing die-change speed on a 600-ton press, keyed by a dual-position die table, brings a 66-percent improvement in die-change time and allows the Cadiz, KY, plant to stamp more inhouse.

The Johnson Controls automotive seat-part facility in Cadiz, KY, covers 220,000 sq. ft. and employs 680 people. Although the plant, built in the early-1970s, has been financially successful, a recent evaluation of internal operations and external conditions concluded that it was necessary to increase manufacturing efficiencies. A key target was pressroom operations, focusing on increasing utilization of an existing mechanical press.

Goal: Increase Production, Reduce Outsourcing

Increased utilization would offer two distinct advantages: stepped-up production and reduced outsourcing. Additional uptime would allow the press to manufacture more parts and facilitate insertion of new parts into the production schedule. And, the facility had been outsourcing production that could not

be accommodated within the existing uptime. Greater press utilization would allow more of this production to be moved back inhouse, bringing cost savings.

Ty Koelker, the plant tooling manager, along with a select group of engineers, managers and purchasing agents were assembled to oversee the changes. Their first job was to study Johnson Controls' global operations and to benchmark press uptime rates. They also worked to determine the capital needed to achieve desired rates.

Upon establishment of benchmark numbers and rough budgetary figures, the team determined that the best way to reach the goals was to increase the speed of die-change operations on one of the plant's 600-ton presses. Minimizing changeover times would create more press uptime, translating to additional production time and the ability to process a greater number of parts.

Current die-change procedures, averaging 70 min./die and performed manually, involved a fork truck retrieving the die from the press bed and moving it to the storage location. The truck then picked up the new die, moved it into position and placed it on the press bed, where employees used crowbars to muscle the die into its final position. Although functional, this method was extremely slow and posed physical risks to employees and tools.

QDC Gets the Call

Plant officials decided to implement quick-die-change (QDC) equipment as the best method to speed the process. Such equipment can transfer dies in and out of the press, automatically clamp and unclamp dies and bolsters, and transport dies between storage locations and the press. Each of these activities can significantly increase changeover speeds and corresponding uptimes if not optimized.

The project team zeroed in on a specific piece of QDC equipment, a dual-position die table from Serapid U.S.A. Inc., Sterling Heights, MI. Similar equipment had worked successfully at a Johnson Controls sister facility. Dual-posi-

tion models differ from traditional QDC tables in that two dies can be handled simultaneously. This feature adds additional speed to the process by allowing a new die to be prestaged before changeover begins.

The table's T configuration allows the exchange of two dies with a single table. A new die can be prestaged on the left or right position prior to a change-

over. When the press stops, a push-pull rigid chain system is activated to retrieve the die and pull it out of the press onto the center of the table. A second rigid chain push-pull then moves the previously used die sideways onto the empty location on the opposite side of the table as the prestaged die. The new die is pushed into the center location, and then pushed again into the appropriate

position on the press bed. Standard die plates and locating pins mounted on the press bed ensure that the dies locate in the precise position each time.

At the Cadiz plant, the table is placed at the back of the press to provide employees unobstructed access to high-traffic areas in front. Hinged bolster extensions, an optional feature, provide additional flexibility, allowing operators to swing the extensions aside to provide access to the back of the press when the table is not in use.

Die-Change Times Drop by 66 Percent

With the dual-position die table installed, die-change times dropped significantly at Cadiz, from 70 to 28 min. per change. With 15 die changes per week, the setup provides a 480-min. time savings. This increases the production capacity of the press by an 8-hr. shift each week. As more dies are added to the press production schedule, time savings will continue to grow, according to Koelker.

In fact, the increase in available production time on the press has allowed the plant to add new dies and insource existing dies as well. As a result, the total number of tools run in the press has gone from eight to 16, with four more planned for the near future. The productivity improvement leads Johnson Controls officials to believe that the QDC investment will pay for itself within a year, and improve plant safety as well.

“Since installing this equipment, we’ve seen a 66-percent improvement in our die-change time,” Koelker says. “More importantly, our work sequence is considerably safer, by eliminating use of a forklift to change dies, for example.”

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Information for this article was supplied by Serapid U.S.A. Inc., Sterling Heights, MI; tel. 586/274-0774; www.serapid.com.