

## **VI. Conclusions and Recommendations**

The current economic problems facing the tool and die industry are significant, and are considered to be different from previous economic downturns, because there is a fundamental change in the manner in which the automotive industry operates. Some of the causes of the downturn are overcapacity, foreign competition, lower demand for dies, technology improvements, and an increased demand for a greater variety of services. These factors are permanent and not going to disappear; hence the restructuring of the industry.

Benchmark data shows the foreign competition can make dies at one-third the cost in approximately one-half the time. These differences can be attributed to three basic reasons: lean operations, simpler part designs from their customers, and closer supplier-customer relationships. This latter factor is particularly important as it drives, in part, the simpler part designs, and because it enables both parties to identify system level cost reduction opportunities, such as functional build.

There are three basic recommendations: T&D shops must adopt lean practices, T&D shops must form strategic partnerships / coalitions between T&D shops as well as their customers, and government must support the industry during this transition period.

### ***A. Adopting Lean Practices***

It is imperative that T&D shops adopt lean practices. These practices have been shown to result in lower cost and improved manufacturing performance. The benchmark data clearly shows lower time and cost in manufacturing, assembly, and tryout, which are all manufacturing functions, as opposed to die design and castings. Further, the data show greater efficiencies in machine utilization, fewer labor hours per machine, and shorter machine setup times. Lastly, the data show that the lean shops have not only synchronous production, but also the infrastructure and internal metrics that enable further identification of bottlenecks and cost reduction opportunities. This is driven by a measure of production capacity other than number of labor hours, namely: number of dies produced. Other related initiatives include adoption of ABC accounting, improving CAD/CAM systems to move towards the paperless T&D shop, investing in high speed

milling machines to eliminate benchwork, standardizing workflow, standardizing common parts, and prepackaging parts in quantities and types needed to assemble a single die.

Although these are specific suggestions, each T&D shop should conduct an analysis to determine the most cost effective method to transition to a lean manufacturing system. Within Michigan, the state funded Michigan Manufacturing Technology Center ([www.mmtc.org](http://www.mmtc.org)) offers numerous training classes and implementation support for lean.

## ***B. Creating Collaborative Relationships***

A significant opportunity exists for the domestic tool and die (and related industry sectors, such as product engineering and assembly tool companies) if they can pool their resources and work to the competitive benefit of their principal customers – the auto companies. The current competitive bid process is antagonistic, short-term and non-collaborative. The complexities in launching a new vehicle require collaboration between the customer and the many suppliers providing products and services that all interact with each other. The bidding process and physical demands expected of the suppliers to support their customers are not compatible.

The collaborative model outlined in this study is an attempt to overcome this incongruence. There are many challenges in the development and implementation of the collaborative model. The facilitation effort to bring many suppliers together is significant. One of the keys to keeping the effort together is finding a customer (e.g., automotive OEM or Tier One) that is willing to entertain the concept. Of course the customer's fear is that they will experience higher costs without competitive bidding, so attention to cost is critical. This places a significant burden on achieving success with the coalition quickly – beginning with the first job. The lead-time and costs to develop a basic operating structure for the coalition, negotiating and marketing the coalition with potential customers, and identifying appropriate member companies is a significant undertaking. Support from industry (both customers and suppliers) and government organizations would greatly increase the likelihood of success. For example, the following actions will help the collaborative model develop and succeed:

## **1. Tool and Die and Related Industry Companies**

Entertain cooperating together and pursuing joint initiatives to improve individual and industry competitiveness. This requires consideration of core competencies and the movement toward niche specialization. The coalition approach allows one to offer a greater range of services to the customer, as well as the opportunity to practice functional build at the modular or BIW level; a practice that the benchmark data clearly showed reduced tryout time and cost.

The coalition approach also requires a progressive mindset to look beyond lean manufacturing techniques into innovative ways to increase customer value through adding, subtracting, or changing processes and technologies on a continual basis. Simply adapting once will not suffice. A mindset of continuous improvement in both everyday business and the collaborative model will be essential to become a state-of-the-art T&D shop. Meanwhile, being able to maintain other parts of the business separate from the coalition initiatives to protect the business from anti-trust concerns will also be paramount. The collaborative efforts may drive major shifts in the business, but they cannot drive competitive interactions outside of the collaborative context.

## **2. Automotive OEMs and Tier One Customers**

Entertain the coalition as a viable option – perhaps allowing it to compete against other competitive options and recognize that the potential of the collaborative model will increase in its competitive performance over time. Provide direction to the coalition in terms of cost reducing initiatives that are priority to the customer. Make the internal organizational changes required to support a collaborative model. Along those same lines, recognizing that the most powerful cost saving and quality-improvement activities require collaboration between the OEM and the suppliers. For example, the benchmark data showed a significant cost reduction from more efficient die standards and the right sizing of dies, which both require stronger communication between the customer and the supplier. Therefore, allowing the coalition access to critical resources (personnel, design, facilities) to enable true implementation of cost saving initiatives is a crucial step. Tool and die suppliers equipped with in-depth

knowledge about their tools can be invaluable to the customer experiencing integration issues related to other parts of the vehicle assembly.

### ***C. Government Support***

Financial and intellectual support is required to move the collaboration development forward. A more in-depth model needs to be developed to serve as a framework to guide companies in forming collaborative relationships. Academic and research & development organizations can work together to refine the collaborative relationships, and facilitation is needed to negotiate operating issues between organizations. It is also likely that the coalition model could be generalized for use in other industries.

Local, state, and federal economic development organizations can assist in the implementation and adaptation of the coalition model to fit specific group needs. In addition, state and federal institutions could provide financial support in the form of

- Investment tax credits and faster depreciation schedules to enable T&D shops to keep pace with the changes in technology,
- Change laws to allow coalitions to purchase group healthcare coverage,
- Provide more funds for the education and adoption of lean manufacturing methods, and
- Provide funds to help the initiation of coalitions and support coalition cost reduction initiatives.

Ultimately, without government support, current market forces and social and organizational obstacles to collaboration will drive the industry overseas.