

Custom mold inc



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Case Study Background Custom Molds Inc produces custom made molds for plastic parts and manufactures connectors for the electronics industry. The father founders of Custom Molds Inc are father and son, Tom and Mason Miller, in 1987 which is located in Tucson, Arizona. Tom Miller who is a mechanical engineer, had vast experience in the connector industry with AMP. Mason Miller is a double degree holder in chemistry and chemical engineering, a graduate from Arizona State University.

Originally, the company manufactured electronic connectors with source of high quality, custom made molds for producing plastic parts. They worked closely with their customers so that they can meet the customers' requirements and their mold have to meet the exact standards and have to be unique. Once the customers have moved from the design and pilot-run stage of development to large-scale production, they will place orders for multiple molds. Custom Mold's reputation grew with the years as a designer and fabricator of precision molds. With the reputation, the Millers decided to expand into the limited manufactures of plastic parts and new equipments were added such as ingredient mixing facilities and injection molding equipment.

In the mid-1990s Custom Mold's reputation grew to include being a supplier of high quality plastic parts. Due to limited capacity, the company decided to concentrate its sales efforts on supplying parts that were used in limited quantity for research and development efforts and in preproduction pilot runs. Production Processes By 2000, Custom Molds operations involved two distinct processes which are fabricating molds and producing plastic parts. Both the processes are inter-connected for an instance, when a customer

places an order, Custom Molds both fabricate a mold and produce the necessary parts to support the customer's research and design efforts. All fabrication and production operation were housed in a single facility.

Fabrication molds requires a skill-oriented, craftsman-driven process. When an order is received, a design team, consisting of a design engineer and one of 13 master machinists, reviews the design specification. Working with the customer, the team comes up with the final specification for the mold and passes it to the master machinist for fabrication.

At the same time, the specification is given to the purchasing department, who orders the required raw materials. It usually takes about three to four weeks for the raw material to arrive. Once the materials have been received, the plant master scheduler reviews the workload of the assigned master machinist and schedules the mold for fabrication. Fabricating a mold usually takes up to two to four weeks, depending in the amount of work the machinist already has scheduled. The fabrication process takes only three to five days. Once completed, the mold is tested and inspected, where it is used to produce a small number of parts on one of the injection molding machines. If the mold passed the required specification, it is then sent for cleaning and polishing, and then packed and sent to customers.

If at all the mold fails, it is sent to the maser machinist for retooling and the process starts all over. Currently, Custom Molds holds a lead time of nine weeks for delivery of the molds. The manufacturing of the plastic parts is different from mold fabrication. An order for parts may be received in conjunction with an order for a mold to be fabricated. For instances, if the

Custom Molds already have made the molds, an order may be just for parts. If the mold is already available, the order is reviewed by the design engineer, who verifies the part and material specifications. If there are any doubts, the design engineer will contact the customer and clarify the doubts.

Once the parts and raw materials are accepted, orders are placed for the raw materials and production is scheduled for the order. Chemicals and compounds used for the manufacturing are ordered and received within a week. When received, the compound is dry-mixed and blended to achieve the correct composition. Then the mixture is wet-mixed to the desired consistency, called slurry, for injection into molding machine. When ready, the slurry is transferred to the injection molding area by an overhead pipeline and deposited in holding tanks adjacent to the injection machines. The whole process takes only one day.

When the slurry is staged and ready, the proper molds are secured from the inventory or from the clean and polish operation if new molds were fabricated for the order and the parts are manufactured. Although different parts require different temperature and pressure settings, the time to produce a part is relatively constant. Custom Molds has the capacity to produce 5000 parts per day in the injection molding department; historically however, the lead time for handling orders in the department has averaged one week. Once molding is completed, the parts are taken to the cut and trim operation, where they are disconnected and leftover flashing is removed. Once inspection is completed, the parts are either taken for assembling or transferred to packing and shipping area for shipment to

customer. If assembly of the final parts is not required, the parts will be sent to customer within two days after being molded.

Sometimes the final product needs assembling. Typically, this entails attaching metal leads to plastic connectors. If assembling is need, additional three days are required before they can be sent to customer. Customs Molds currently have a lead time of three weeks for parts not requiring fabricated molds.

The Changing Environment In the early 2009, Tom and Mason Miller realized that the electronic industry they supplied and their own business was changing. Electronic manufacturers have decided to make their own components to reduce cost and ensure timely supply of parts. By the 1990s, this trend has changed. Manufacturing were developing strategic partnerships with the parts suppliers to ensure the timely delivery of high quality, cost effective parts. This has allowed for other funds to be used on other uses with larger return on investment. During the same period, Custom Molds started to have issues with delivery.

Customers were complaining to delay in the delivery of the parts instead of the promised dateline. When asked about the situation, the master scheduler stated that it is difficult in determining when a particular order will be delivered. Bottlenecks were occurring during the production process, but where and when it will occur cannot be predicted. The bottleneck started to move to other operations. Tom Miller thought that that he had excess labor capacity in the mold fabrication area. He came up with a solution to push through the schedule by assigning one of the master machinist to identify

the expediting those late orders. However, the tactic wasn't effective.

Complaints about late delivery were still coming in.

In addition to the problem, two defective parts were returned. Tom Miller knows something has to be done. 1. What are the major issues facing Tom and Mason Miller? The Electronics industry to which they supplied was changing very rapidly. The millers are facing the shrinking size of their core market; traditionally fabrication. These changes impact both the fabrication and the manufacturing sides of the business. For fabrication, although the number of orders remained around the same, the market for multiple molds was shrinking, so the absolute number of fabricated was reducing.

The Demand for multiple molds is declining. Earlier Custom Molds used to produce custom designed molds in majority but through the data provided we can analyze that in the last 3 years, the company has been getting more and more orders in the production of plastic parts consistently and the orders for custom molds have been decreasing. This calls for a mass production of plastic parts. Inefficient Testing and Inspection Process It has been mentioned in the case that two orders were returned recently because of number of defective parts in those batches. This can be attributed to the inefficiency of the testing and inspection team. The transportation, packing, shipping etc. costs have to be incurred by the company and could have been avoided if the testing and inspection been rigorous.

Increase in order sizes for plastic parts There has been a shift in demand from custom molds to plastic parts. Therefore there is a need to change the layout of the plant to something more suitable for mass production.

Difficulties Meeting Quality Objectives As demand characteristics increased for manufacturing parts, there was consequent increase in lead time on parts. Customers are complaining about the late delivery of the products. This will lead to loss of credibility in front of their customers. Bottlenecks were occurring throughout the manufacturing process and quality issues were increasing. There was unplanned growth beyond the available capacity given the process issues.

There were numerous non-value-adding processes throughout the workflow including delays, many inspection steps, storage and transport. Parts were not being manufactured at optimum speeds and as pressures of late deliveries and mounting backlogs built up. Thus, the quality of finished goods suffered. . What are the competitive priorities for Custom Mold's Processes and the changing nature of the industry? Previously a. High quality product Custom Mold previously strive for top quality product for their customers and grew reputation of one of the most consistent company that strive for quality products b.

Flexibility in customer orders Customization was their priorities. They fully concentrate on customers orders requirements and needs and try their best to meet those requirements. c. On time delivery Custom Mold managed to deliver all of their products to the customers within the required timeEarly 2009 Due to changing nature of the industry, more customers are making strategic partnership with supplier to ensure the timely delivery of high quality and cost effective parts. As we can see, the competitive of the industry, the demand is changing and Custom Mold also must be aware of this. They must change their competitive priorities to continue compete in <https://assignbuster.com/custom-mold-inc/>

the industry. They might have to change their layout for molds from job shop to small batch process in this changing process.

Below are the suggested competitive priorities: a. Consistent quality products They should maintain the quality of their products b. Cost effective They might achieve this by changing the layout from job shop to small batch process. Small batch process allows products to be made in larger volume and low variety from the job shop process. High volume tends to reduce cost per unit and can directly lowered the operation cost.

c. On time delivery With customers focus on on time shipment for their products, Custom Mold cannot simply overlook to this competitive priority. On time delivery ensure the customer trust to them and they have to be excellent on that. 3. What alternatives might the Millers pursue? What key factors should they consider as they evaluate these alternatives? Short term alternatives a. Layout of the plant should be changed Custom Molds need to change the plant layout from job shop to assembly line. This is because the company is getting more orders for manufacture of plastic parts consistently over the last three years. The demand form from the customers changed from highly customized and high quality to cost effective and timely delivery of high quality products are the strongest proof why they need to change their argument.

. Identify bottlenecks in production process This is important in order for Custom Molds to retain their clients. The bottlenecks might be due the process layout in the company.

Two different process for a different product might overlap each others and create confusion to the process. c. Improve the efficiency of Testing and Inspection Team As has been mentioned in the case, two orders have been rejected by the customer. For this not to happen again, the efficiency of Testing and Inspection team needs to be improved.

Long Term Alternatives a. Investment in Research and Development Company would be better off to invest in R&D in order to stay ahead of its competition. R&D can often show ways to reduce costs by maintaining the same quality.

b. Expansion Plans As the orders increase, company should plan for some expansion plans or some new plants to cater to increasing demand. c.

Phase-out the production of Custom Molds As the numbers of orders for Custom Molds are decreasing consistently over the last 3 years, the company should look out for phasing out the production of custom molds as the company may start losing out money. Recommendations 1. Shift to Assembly Line As the number of orders for big order sizes are increasing for plastic parts, the plant layout should be changed from job-shop to an assembly line production. 2. Operational Excellence The company should focus on overall efficiency in terms of process, movement and inter-department communication. 3. Market Research The company should do extensive market research to ascertain customer's needs and use it to determine the needs of facility and human resources.