Activity-based Costing Streamlines Pressure Die Casting Operations for a Leading Auto Ancillary Group

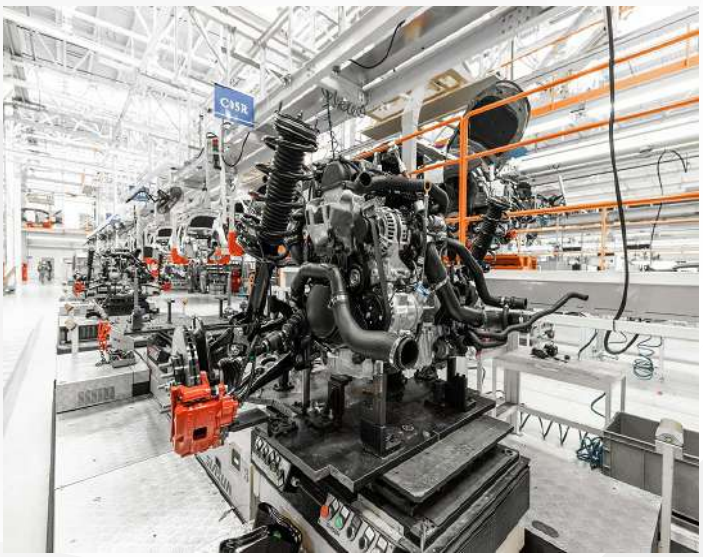
The Client

The auto ancillary group manufactures and markets automotive components, including gasoline systems & products, diesel systems & products, EMS system products, emission control, high-pressure die-cast products, and precision machined products.

It markets and sells its products to various auto companies such as Maruti, Hyundai, General Motors, Cummins, Bosch, Mikuni, TVS Motor Company, Bajaj Auto, Suzuki, Yamaha, and Hero Honda motors.

The Problem

The auto ancillary group had recently entered the contract manufacturing market and established an exclusive facility. Although the plant managers developed an ingenuous system to capture critical non-financial data using a self-developed MS Access package, when it came to efficiently running operations, several challenges emerged:



- The top management was constantly bombarded with productivity improvement data without any visible effect on profit parameters.
- The marketing team found itself increasingly unable to negotiate with customers who now went into details of prices submitted by them.
- The mounting number of bids lost convinced the management that the existing system was woefully inadequate.

The industry's volatile and highly competitive nature accentuated the need for more accurate cost information. Given the many challenges, different teams at the ancillary unit needed a detailed breakdown of operations—wise costs, along with related actual costs and current market rates for various operations.

Our Solution and Approach

ProActive Solutech suggested using an activity-based costing (ABC) approach to enable the top management and operational teams to unearth critical insights into the costs across various operations. To do this, the following activities were carried out:

Formation of an ABC Cross-functional Team: The team comprised representatives from the plant's production and service departments to collect and disseminate information.

Preparation of an Activity Dictionary: Package implementers, in consultation with the cross-functional team members, departmental heads, and costing representatives, listed out critical activities performed by each department. This list served as the Activity Dictionary.

Cost Identification and Allocation Methodology: The mapping of costs captured for the PDC cost centre was based on:

Department to Activity Allocation: The expenses (resources) booked in the PDC Cost Centre were traced to activities and done through resource drivers that served as the basis for allocating resources to activities.

Linking of Activity Costs to Products: Once the cost of activities was established, the linkage between activities and cost objects such as products, services, and customers was accomplished using activity cost drivers. The allocation bases were:

- **Activity-to-Activity Allocation or A-to-A Allocation:** The ABC model facilitates the allocation of expenses from certain service/utility activities to other direct activities.
- **Activity to Products or A to P Allocation:** Once the expenses had been taken to the direct activities, the costs were allocated to the products/product segments based on drivers, like machine hours, oven hours, labour hours, etc.

Costing for Support Functions: For support functions such as breakdown maintenance, activity cost was apportioned to production departments, namely die casting and machining, based on cell-wise and machine-wise maintenance hours spent.

Creation of Masters: The following Masters were created in the package after taking the Plant Head and CFTs into confidence.

- Bill of Material for each product
- Customer Master for each customer and related Category Master (i.e., Export/Local)
- Cost Object Master for all finished parts manufactured by the plant
- Part Number Master to identify the part numbers for each production stage (i.e., casting, machining, etc.)
- Department Master
- Activity Master

Deliverables

The following deliverables were provided to the auto ancillary unit post-ABC implementation:

- Activity Rate
- Consumption Pattern of Consumables
- Costs of Rejections
- Cost of Tool Change/Setup
- Costs of Die Maintenance Activity
- Costs of Preventive and Break Down Maintenance Activity

Post-implementation Benefits

The implementation of activity-based costing at the auto ancillary unit resulted in several business benefits:

- **Continuous Monitoring of Rejection Costs:** The most visible impact was the increased awareness of process rejections and their adverse effects on the profit margins of the plant. The cost of rejections, which were accurately captured by the package, was brought down from close to 12% on monthly sales to 5%. The potential savings due to this alone accrued nearly 28 million rupees annually. This was of extraordinary significance considering that the total turnover of the Plant was only 760 million rupees per annum.

- **Multiple Driver Rates:** Instead of a single machine-hour rate, the company has a better idea of its die-casting operations. Factors such as the weight of casting, the surface area, and machine utilization—which were not visible earlier but had an impact on final costs—are now clearly identified.

- **Machine Downtime:** The auto unit could quickly identify reasons for machine downtime, which ranged from preventive maintenance to breakdown, the time consumed on setup changes, and line stoppage due to want of material.

- **Make or Buy Decisions:** The availability of multi-process cost reports enabled plant managers to evaluate the cost of performing operations in-house versus outsourcing them.

- **Renegotiation of Prices with Customers:** The ABC method highlighted the increased costs of running small batches in PDC operations. The results compelled the corporate marketing team to go in for renegotiation of prices for specific low-volume products belonging to the same product category, which, until then, were offered at the same rate as high-volume parts. In addition, the marketing team requested tooling advances from customers for low-volume parts.

Support for Kaizen Initiatives: Another positive by-product of ABC implementation was the improved availability of information for Kaizen activities. The measures instituted to capture various non-financial information for ABC purposes ensured better data availability on process quality, cycle time, time for setting up machines and dies, power consumption pattern, etc. Employee work teams can use this data constructively for continuous improvement activities.