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Automotive Tooling Management

A SupplyPro Whitepaper

Abstract

This article is written for the Service Director, Operations Director, or Dealer Principle and uncovers the advantages of implementing tool management initiatives in automotive service and repair facilities.

Introduction

For Automobile Repair Facilities seeking cost reduction in repair and maintenance operations, it is essential to streamline the tooling fulfillment process from time of order receipt to the time of return. Efficiently organizing and categorizing tool fulfillment rules and procedures are measurable ways to reduce cost, reduce repair order cycle time, optimize labor and improve process management.

Why Consider Tool Management?

Although there are numerous reasons for controlling tooling fulfillment, none are as dramatic as the reduction of operating costs. The financial and operating impact of reducing this cost through tool management is one that many are slow to recognize.

The most obvious reason to consider tool management is inventory control. This benefit provides the most natural and identifiable starting point for tool management. The immediate results of reducing inventory and new tool purchases provides the basis for understanding the potential for tool control elsewhere in the company. Additionally, accurate inventory control allows for the discovery of obsolete tooling and the identification of lost or missing items.

Process planning benefits from tool management include the ability to monitor usage periods and frequency. This ability also assists management when determining benchmarks for employee productivity.

Technology and the Tool Repository

As more and more advanced technology appears in the automobile, automated systems and equipment are developed to monitor, control, and report the information to and from the vehicle. The sophistication of these new diagnostic systems requires technicians and mechanics to develop computer skills never before required in the repair of vehicles.

The rapid growth and implementation of this technology on the service floor is making a profound impact throughout the indus-

cabinets, automated storage carousels, bar code readers, magnetic stripe readers, and information retrieval devices. Yet, the overall operation and management of the repository, and the tools stored within it, remain relatively unchanged.

The activity of a tool repository and its inventory has presented major stumbling blocks to automating its control in the past. The record keeping for a tool crib has traditionally been a manual task, which can be extremely difficult to manage and operate. These existing methods, coupled with the necessity to work with personnel who are unfamiliar with automated control systems, creates many human interface problems. The actual use and life cycle of a tool creates accounting, storage, and tracking problems not easily managed by existing management methods.

However, if an automated system were available to provide immediate information on a tool's status, it would enable maintenance and repair facilities to increase productivity, reduce inventory costs and location time, and give management an important tool for monitoring the activity and relationship of tooling to the actual servicing of automobiles.

Expanding Universe of Market Needs

As the demand on companies to increase profits increases – likewise, companies are requesting better technologies to make that happen. The following illustrates the evolving technology and increasingly sophisticated levels of service needs in the automotive services market – past and near term. Starting with the chart center which represents the when the first import was introduced into the United States.

1. In the 1950s new automotive features were introduced, including air conditioning and electrically operated car windows and seat adjusters. Manufacturers changed from the 6-volt to the 12-volt ignition system, which gave better engine performance and more reliable operation of the growing number of electrical accessories.

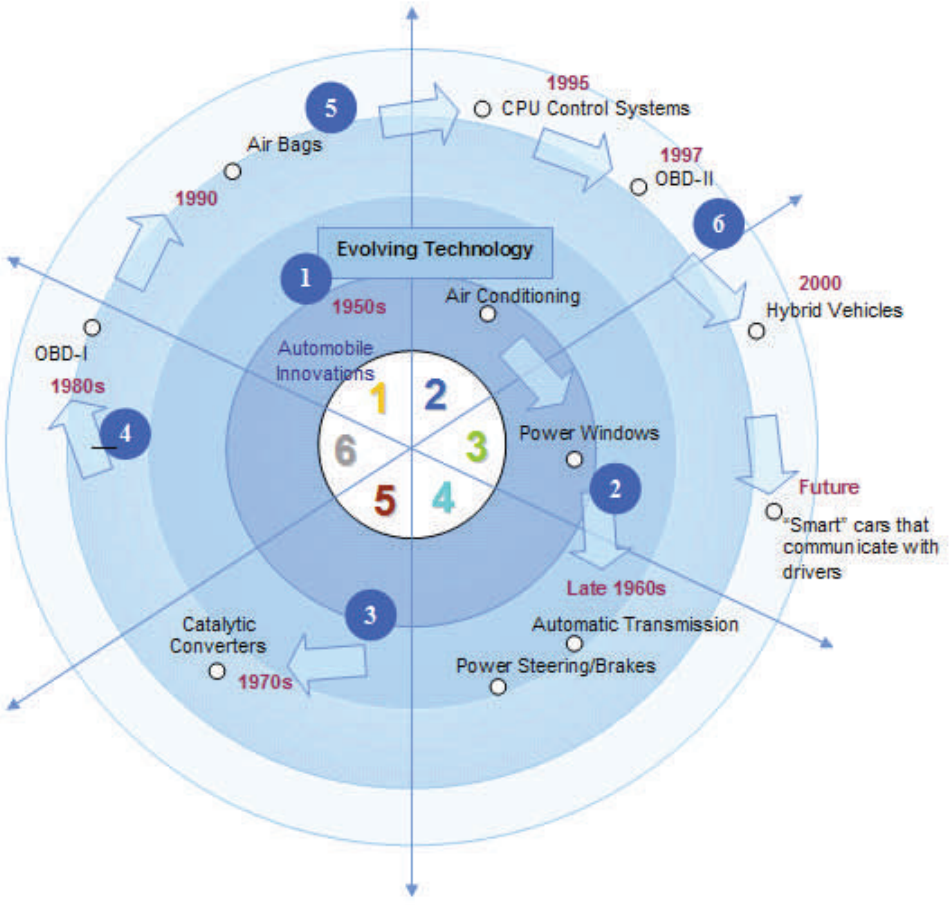
2. By 1960, heating and ventilating systems became standard equipment on even the least expensive models. Automatic transmissions, power brakes, and power steering became widespread. Styling sometimes prevailed over practicality—some cars were built in which the engines had to be lifted to allow simple service operations, like changing the spark plugs.

3. In the 1970s American manufacturers continued to offer smaller, lighter models in addition to the bigger sedans that led their product lines, but Japanese and European compacts continued to sell well. Emissions components such as the Catalytic converter were introduced to help reduce exhaust emissions.

4. Digital speedometers and electronic prompts to service parts of the vehicle appeared in the 1980s. Advances in automobile technology in the 1980s included better engine control and the use of innovative types of fuel. In 1981 Bayerische Motoren Werke AG (BMW) introduced an on-board computer to monitor engine performance.

5. Computer control of automobile systems increased dramatically during the 1990s. The central processing unit (CPU) in modern engines manages overall engine performance. Microprocessors regulating other systems share data with the CPU. Computers manage fuel and air mixture ratios, ignition timing, and exhaust-emission levels. Passive restraints required for all new cars. Vehicle manufacturers meet standard by either offering driver side air bag or automatic seat-lap belts.

6. Hybrid vehicles such as the Prius became available for sale in North America in 2000. The Ford Motor Company introduced the first U.S.-made hybrid when it began production for the Ford Escape Hybrid in August 2004. The 2005 model year Escape was also the first hybrid in the sport-utility vehicle (SUV) category.



Issues with Existing Tool Procedures

The following steps illustrate the typical tool procurement procedure:

1. A need for the special service tool is identified as what would fulfill the repair requirements of a repair order. A request to purchase the tool is issued (if not in inventory)
2. The requisition is reviewed and either modified, rejected, or approved.
3. The approved requisition goes to purchasing.
4. A vendor is selected and approved for the tool and a purchase order is issued.
5. The tool is shipped, received, inspected, approved, and delivered to the tool repository or requestor.
6. A tool record is created recording the primary tool description, purchase requirements, storage location, and quantity.

At this point, the tool is considered available for use on the service floor. However, there are no controls in place to monitor the actual deployment or its utilization. Incidents where the tool is lost, broken, or scrapped are gone unaccounted for.

The simple definition of a tool control problem stems from the previous procedure. This tool is but one of hundreds or even thousands of durable type tools. Consider an example where the average tool cost was $175.00 with a total stock of 700 units, then this inventory alone is worth $122,550. This represents quite an investment for maintaining repair capability. This inventory must continually be replenished, repaired, and calibrated, and it grows as the automobile manufacturer grows with new models and servicing techniques. The problem stems from the simple fact that no control is exercised with any competent or comprehensive reporting over this perishable, renewable asset of the company.

The consensus of most service technicians who interact and depend on their tooling to be available from the tool repository is that they can depend on the tool repository to supply their needs ~ 70% of the time. In manned, tool crib environments, some questions immediately arise. Are the tool crib personnel the cause for lost tools, misplaced tools, broken tools, etc, or is it the fault of inadequate control systems provided by upper management to keep adequate inventory available and to provide appropriate fulfillment processes? Simply reordering or scouring the service floor is not the solution. Tracking of the tool's activity and use is the solution to controlling its availability.

Identifying the Requirements

Before any tool control system can be implemented, there are some basic errors that need to be identified and addressed.

- Tool numbers are not assigned to tools. Even though manufacturer's numbers are used, a tool ID number must be given to each distinct tool.
- No records exit for the tool's vendor, cost, order quantity, or location.
- No records exist for scrapped or broken tools. Without monitoring the frequency or existence of scrapped tools, tool shortages can go totally unnoticed. Any recovery method for scrap value is nonexistent.
- On-hand inventory value is not available. Value of durable tools is unknown, usually requiring an inventory to be taken before any budgeting for future needs can easily be accomplished.
- Identification of obsolete tools cannot easily be accomplished. Often obsolete tools are included in requisitions. If they are issued, they may cause operational problems because an obsolete tool was issued for the job.

Without addressing these issues, customer repair and maintenance operations cannot effectively process and complete repair orders. The loss or unavailability of any tool can cause undue operational delays. Repair delays, idle mechanics, waste limited service bay space, and setup bottlenecks for other repair processes. These delays all add up to preventable costs – if you know what tools are available, they can be provided to the repair process when needed. Overstocking the repository does not provide and economical or guaranteed solution to these problems. Only the control of tooling that is provided through an automated system and the rules that it is designed by can alleviate the reduce tooling related bottlenecks and delays.

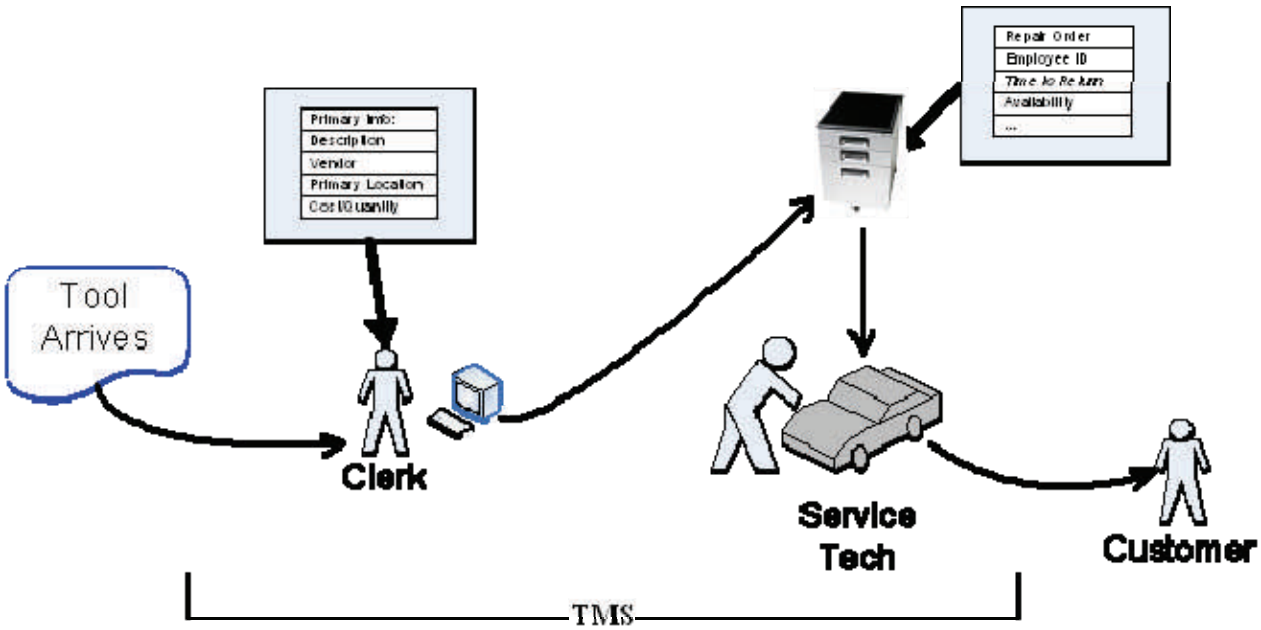
Based on the previous discussion scenario, a basic tool management system would need to maintain an accurate inventory of all tools and their location in the repository and on the shop floor. This feature alone would eliminate many of the current problems, such as lost tools and out of stock tools. It's important to note that not all tool related problems can be solved by simple tool inventory. To produce the benefits that tool management can render, a system must include the activity of tracking, planning, reporting, organizing, ordering, and other activities that are required by the various personnel that control your tooling requirements.

The Solution: Tool Management Systems

Tool Management Systems (TMS) can overcome the challenges of the complex tooling process, resulting in a highly efficient service center that reduces repair order cycle time and decreases labor costs per repair. TMS are sophisticated hardware/software solutions designed to manage all aspects of tool movement, inventory management and tooling fulfillment within an automotive maintenance and repair facility

A well-designed TMS can:

- Reduce the actual cost of repair orders
- Decrease the labor required for order fulfillment
- Increase repair accuracy
- Increase inventory accuracy
- Increase customer satisfaction
- Improve process management
- Improve adherence to rules (at any level, for any number of parties)
- Increase staff morale



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Reduced Costs

TMS results in the elimination of lookup tables and catalogs needing to be referred to as they are now an integral part of the overall system. With TMS, there is no need to study or memorize which repair requires which tool – as the TMS will know all the rules and will guide the user through the process insuring that each guideline is adhered to. This control means that the repair personnel are spending significantly less time with non-value added activities, and will be focused on fulfilling repair orders.

Increased Repair Order Accuracy

TMS applications, by their very design, force service personnel to access tooling resources in a very regimented logic-based process that checks each step as it is executed. Opportunity for human error is reduced and repair order accuracy is increased since the right tool is applied to the right type of repair. These computer-based applications control the movement of each item within the service floor, regardless of the type of product or the process it is being used for.

Reduced Repair Cycle Time

Each minute not looking up tools, searching for product, or checking repair guideline information is a minute quicker that a repair order is processed out of the door. Depending upon the complexity of the job, this can account for the majority of time needed to complete a repair in a purely manual environment.

Improved Process Management

By implementing a TMS, the manufacturer's repair rules and guidelines are converted to logic rules that are now controlled by the TMS. These rules are updated as required at one central point and full accountability is now fully transparent.

Improved Customer Satisfaction

An efficient, streamlined tooling process eliminates wasted time and allows service technicians to focus on their primary job. The result is greater job satisfaction, increased productivity and greater customer satisfaction as a result of the controlled environment for order fulfillment which will result in less order processing errors.

TMS: What to Look for

Vendors for the TMS technology should be experts in the operations management fields. The vendor must be capable of studying and analyzing the service and maintenance procedures for the automotive industry. Based upon on-site findings reports, the vendor should be able to recommend the appropriate configuration of a TMS and provide preliminary operational benefits.

Upon implementation of the application, the vendor should provide consultants who are experts in the area of process analysis, management and improvement to help measure and validate intended repair order rules. These consultants typically redesign the tooling flow to optimize efficiency, as well as bring best-practice knowledge of service operations.

Leading vendors in the TMS field will have the highest qualified consultants who have a variety of subject matter experts to draw upon to bring the automotive client the best possible solution. The vendor should provide ongoing support for the program once it is on place, and should be an active participant in a steering committee that will review the product on an ongoing basis to determine where further improvements could be realized.

Functionality and ease of use should be key features that the vendor you select should provide as standard items within the solution that you are seeking to implement. The vendor providing the solution should have a proven track record with the following attributes:

- **Proven Technology:** The vendor should offer you a product that is stable and that will meet your requirements. Its usage should be well documented, and you should be able to call upon the vendor's customers for verifiable references.

- **Flexible Technology:** A quality vendor will be to provide you with a package that suits your needs, and not require you to accommodate their functionality. To meet this requirement, the vendor should be experienced in adapting their technology to a variety of applications and usages so that you will be certain to have a properly developed end product.

- **Strong Business Partners:** Products rely upon other products for their successful development. A vendor with a long-established and solid relationship with industry leaders will assure you that your selection is supported by the best-in-class. Your primary technology vendor should be excited that you wish to know who their business partners are.

- **Subject Matter Experts:** Your vendors' team of consultants should be highly respected industry professionals who are capable of being an integral part of your team. Your vendor should, without question, be willing to provide you with detailed biographies of the entire team that will be working you your solution.

Benefits of TMS:

A truly efficient automotive service center will perform much more then just the inventory location of specific items. By utilizing a TMS, the service center will achieve reduced labor costs per repair order and increased productivity. The benefits to using a TMS include:

- Lower service overhead and increase service revenue by increasing employee efficiency
- Eliminate disputes about accountability based on usage au-

- Determine more profitable billing rates
- Provide data needed to make strategic decisions about size of workforce, budgeting for loss, and inventory stock levels
- Prevent and identify tool inventory shortages
- Reduce space requirements and overhead
- Consolidate record keeping functions
- Maintain a record of scrapped tools
- Know the value of total tool inventory and of tools in use
- Pinpoint overuse problems by employee, job
- Identify obsolete tooling
- Take advantage of tool kitting

Be certain that the vendor you select has proven expertise and understanding of the requirements unique to an automotive service center. The vendor should provide expert analysis and logistic support as well as highly qualified subject matter professionals. A national and international capability to respond to problems, proven ongoing relationship with existing customers and a single source for support are other important qualities.

The SupplyPro Solution – SmartDrawer Automotive

SupplyPro offers the only full featured TMS application that is targeted to the automotive service application. Designed to meet all of the requirements outlined in this paper, SupplyPro's SmartDrawer Automotive solution is the first TMS application that is targeted to the service and maintenance client.

TMS execution through SmartDrawer Automotive includes a complete process analysis and design by SupplyPro's leading operations management professionals. SupplyPro will consolidate the tooling rules and requirements into logical user-maintained specifications. Baseline productivity is measured and analyzed so that both client and SupplyPro may review progress achieved with the new application.

About SupplyPro Inc.

SupplyPro Inc. was formed as a software technology company whose primary role is the implementation of Point Of Use control systems and other productivity enhancing applications for Fortune 500 clients in the food and beverages, aviation, automotive, semiconductor, and energy industries.

Now recognized as a technology leader in our own right, SupplyPro is rapidly expanding focus beyond the traditional Point of Use solutions with the development, implementation and support of SmartDrawer Automotive solution. Company services also include logistics consulting, project management, systems integration, installation, training, and on-going support, all designed to help clients increase productivity and improve customer satisfaction.

To learn more about how SupplyPro can help improve your automotive service operations, please visit us at www.supplypro.com

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