A

Project Report

On

"LEAN MANUFACTURING"

Submitted by

ANSHUL SHASHIKANT THETE

Submitted in partial fulfilment of the requirement of Internship program designed by Sigma Tooling's India Pvt Ltd of Implementations of (Lean Manufacturing)

Guided by

Mr. SHAIKH SALMAN

(Chief Technology Officer)

DEPARTMENT OF REASARCH AND DEVELOPMENT
SIGMA TOOLINGS INDIA PVT LTD
[Financial Year: 2023 – 24]

CERTIFICATE

This is to certify that are students **Mr. ANSHUL SHASHIKANT THETE** has successfully completed the project work entitled "**LEAN MANUFACTURING"** in partial fulfilment for internship program Designed by Sigma Toolings India Pvt Ltd in (Lean Manufacturing) and has successfully implemented all the module throughout the varies department of Sigma Toolings.

Place: Aurangabad

Date: 30-06-2023

Shaikh Salman
Guide

Shashi Thete
Manging Director

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ABSTRACT

Lean manufacturing has emerged as a highly effective approach to streamline operations and optimize productivity across various industries. This project aims to explore the principles and methodologies of lean manufacturing and their implementation in a real-world manufacturing environment. By adopting lean techniques, companies can eliminate waste, improve process efficiency, enhance product quality, and ultimately increase customer satisfaction.

The project begins by providing a comprehensive overview of lean manufacturing, delving into its origins, key concepts, and benefits. It investigates the fundamental principles of lean, such as identifying value from the customer's perspective, mapping value streams, and implementing a continuous improvement mindset. Additionally, the project explores various lean tools and techniques, including 5S, Kanban, Just-in-Time (JIT) production, and Total Productive Maintenance (TPM), among others.

A case study is conducted in a manufacturing company to demonstrate the practical application of lean manufacturing principles. The case study involves analysing the existing processes, identifying areas of waste, and implementing lean solutions to eliminate or minimize these inefficiencies. The project evaluates the impact of the lean implementation, measuring improvements in productivity, cycle time reduction, inventory management, and overall operational performance.

Furthermore, the project discusses the challenges and potential barriers to implementing lean manufacturing in organizations, along with strategies to overcome them. It addresses the importance of leadership commitment, employee engagement, and organizational culture in fostering a lean mindset and sustaining continuous improvement efforts.

The findings of this project contribute to the growing body of knowledge on lean manufacturing, providing insights into its application in a real-world setting. The results demonstrate the potential for significant operational improvements and cost savings through the adoption of lean principles and methodologies. By embracing lean manufacturing, companies can enhance their competitiveness, optimize resource utilization, and meet the evolving demands of the marketplace.

SIGMA PROCESS ANALYSIS

1.1 Flow chart

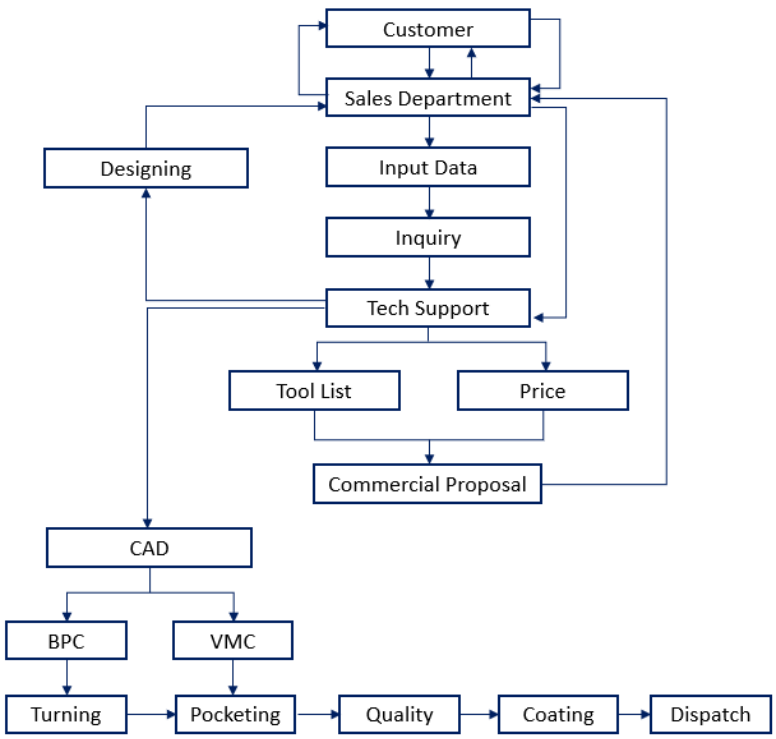


Fig no: 1.0 Sigma Process Analysis

1.2 Summary

- **Input data-** Input data refers to the information or raw material that is collected and fed into a business system or process, serving as the foundation for generating insights, making informed decisions, and driving operational efficiencies.
- **Commercial Proposal** – A commercial proposal is a formal business document that outlines the products or services being offered, along with pricing, terms, and benefits, with the goal of persuading a potential client to enter into a business agreement.
- **Proposal** is relayed to the customer.

- **DAP -** The design approval process (DAP) refers to the formal review and authorization procedure in a business organization where proposed designs are evaluated, assessed, and approved based on criteria such as feasibility, compliance, quality, and alignment with business objectives.

- **Booking –** the process of reserving or securing a product, service, or resource, typically involving the completion of a transaction or reservation, ensuring availability, and confirming the arrangement for a specified time or period
- **Loading –** Complete information about the tool requirements is loaded and provided to the planning department.
- **CAD –** This department consists of BPC and the VMC Department. The BPC Department is responsible for Blank cutting and turning, and the VMC department is responsible for pocketing.
- **Quality –** After Pocketing, the tools are sent to Quality for final inspections, after this the tools are coated and finally dispatched.

1.3 Pain Point

1. One significant pain point in the manufacturing process of Sigma Toolings was its lack of

efficiency and the existence of various loopholes. This meant that the overall workflow was not streamlined, leading to delays, redundancies, and a waste of resources. The presence of these inefficiencies hindered the company's ability to produce tooling’s in a timely and cost-effective manner. It also impacted the overall productivity and profitability of the organization, creating a pressing need for improvement.

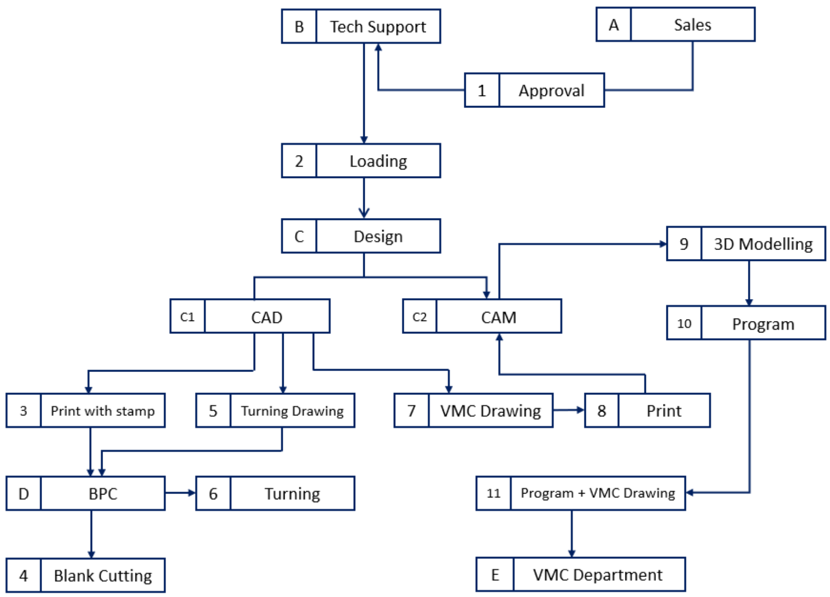
1.4 Remedies

1. To address the pain points in Sigma Toolings' manufacturing process, we adopted a systematic approach. We began by studying the entire process in detail, analysing it using flowcharts and process mapping techniques. This allowed us to gain a comprehensive understanding of the existing workflow, identify bottlenecks, and recognize areas for improvement. With this knowledge in hand, we implemented lean manufacturing principles as our remedy.

DESIGN PROCESS ANALYSIS

2.1 Flow chart

Fig no: 1.2 Design Process Analysis



2.2 Summary

- Sales [A] – The Sales Engineering team gives the approval to tech support after conversations with the customer to start manufacturing process of the tool.
- Tech Support [B]– is then tasked with loading the data into the system. This step is known as "loading."
- The design team [C] comprises of two components: CAD and CAM.
- In CAD [C1], assembly designs are first printed, stamped, and handed over to the Blank Preparation Cell [D]. CAD then creates turning drawings, which are given to BPC to start the turning process. Additionally, CAD also produces VMC drawings, which are passed on to CAM. In CAM [C2], 3D models are created and programmed using the VMC drawings.
- Finally, the programs, along with the VMC drawings, are shared with the VMC Department [E] for further execution.

2.3 Pain Points

1. A pain point in the CAD design process is the requirement for the design team to physically visit someone else to get every print stamped after it has been checked and verified. This process is often tedious and time-consuming, especially when there are a significant number of designs, ranging from 15 to 20, that need to be stamped each day.
2. One common pain point in the design process is when a new design project comes up that lacks a pre-existing design in the database. In such cases, designers face a significant time investment to develop the design from scratch.
3. Another pain point in the design process occurs when a new design comes from the client, and the designer is unaware that an old design for the same part already exists. As a result, the designer unknowingly starts from scratch, duplicating efforts and wasting valuable time.

2.4 Remedies

1. **Establish an electronic stamping system:** Implement an electronic system where drawings can be uploaded to get stamped. This stamping system would resolve the current issue of physically getting up to get every print stamped and allows for digital signatures or seals to be applied to CAD prints. This system can be integrated into the design software or used as a standalone tool. It provides a more efficient and convenient way for the CAD design team to obtain the necessary stamps without physically visiting someone else.
2. The availability of a pre-existing design in the database would make the design process much faster and could reduce the time needed to design one tool by half. Moreover, having a similar design in the database allows designers to leverage existing resources, such as templates, standardized components, and manufacturing specifications. These resources can be adapted and reused, reducing the need for extensive research, testing, and development. This not only saves time but also improves consistency across designs, ensuring quality and adherence to established standards.
3. **Implement a Design Discovery Process:** Develop a systematic design discovery process

that designers can follow when starting a new project. This process should include a step to search the design database for existing designs related to the part or product. By incorporating this step into the design workflow, designers can quickly determine if an old design is available, potentially saving significant time and effort.

BPC PROCESS ANALYSIS

3.1 Flowchart

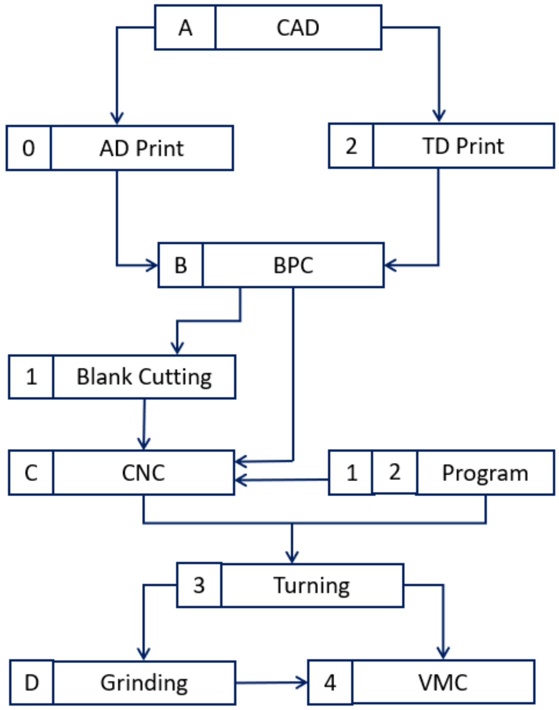


Fig no: 1.3 BPC Process Analysis

3.2 Summary

- **CAD [A] -** The Computer Aided Designing department prepares the Assembly drawing Turning drawing, which represents the final product.
- They print the drawing and stamp it with the company's seal. The printed Assembly drawing is then passed on to the BPC.
- **BPC [B]-** The BPC uses the Assembly drawing as a guide to cut the blanks [1], which are the initial workpieces for the manufacturing process.
- The BPC takes the turning drawing and feeds the information into a (CNC) machine.
- **CNC [C]-** This machine is used to generate the program required for the turning process.

- The turning process [3] involves using the CNC machine to shape the blanks into the desired form, following the instructions from the program.
- Once a tool has completed the turning process, it is evaluated to determine if further

processing is required. If necessary, the tool is sent to the **Grinding department [D],** where additional grinding operations are performed to achieve the desired surface finish or accuracy.

- After grinding, the tool is then sent to VMC [4] for further machining operations.

3.3 Pain Points

1. **Manual programming:** Engineers need to manually enter the program into the CNC machine. This task is not only tedious but also time-consuming, requiring significant

manual effort. It hampers productivity and efficiency as valuable time that could be spent on other important tasks is wasted on this laborious process.

2. **Drawing misplacement:** Another issue we encounter is the occasional loss of drawings that are generated from the computer-aided design (CAD) software. This loss can be attributed to human negligence or oversight, resulting in valuable drawings going missing. Such an occurrence not only disrupts the workflow but also creates confusion and delays, as the missing drawing needs to be located or recreated, consuming additional resources.
3. **Disorganized material sizes:** Inconsistencies arise when the blanks do not align with the specified size. This lack of organization and coordination can lead to difficulties in the manufacturing process. Inaccurate material sizes pose challenges in achieving the desired precision and can result in wastage of resources, time, and effort. It becomes essential to rectify this issue to maintain consistency and streamline production.

3.4 Remedies

1. **Automated programming**: Introduce CNC programming software that allows for automated programming of the CNC machines. This eliminates the need for manual entry and significantly reduces the time and effort required for programming. By automating this process, engineers can focus on more value-added tasks, leading to improved productivity and efficiency.
2. **Google Sheets**: We propose implementing a digital solution utilizing a Google Sheet that will involve designers uploading the drawings directly to a designated Google Sheet, accessible only to authorized personnel. This eliminates the need for physical stamping as a verification tool, as the access control ensures that only the designers can edit and upload drawings to the sheet. Designers can update the sheet in real-time, providing immediate visibility of the latest drawings to all relevant stakeholders. By centralizing all the drawings in one location within the Google Sheet, the risk of drawings getting lost or misplaced is significantly reduced.

3. **Standardized chart:** Create a standardized chart or reference guide prominently displayed in front of the operator responsible for cutting the blanks. This chart will outline the recommended raw material sizes to be used for specific tool sizes, eliminating any

guesswork or potential for errors during the selection process. By providing operators with this visual reference, we enable them to make accurate and informed decisions without relying solely on their own judgment.

VMC PROCESS ANALYSIS

4.1 Flowchart

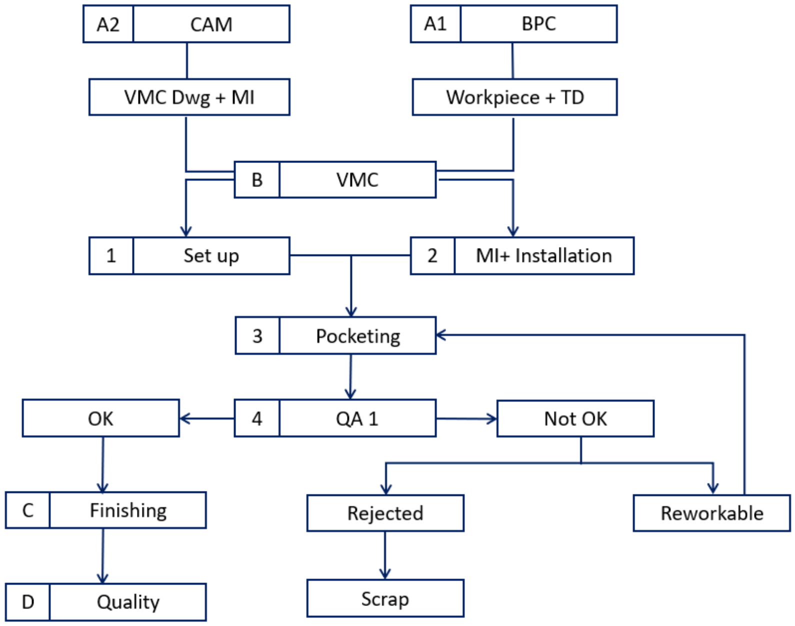


Fig no: 1.4 VMC Process Analysis

4.2 Summary

- **BPC [A1]:** This department collaborates with CAD department to provide the VMC with Workpiece and Turning Drawing.
- **CAM [A2]:** This department provides VMC with necessary drawings and machine instructions for the Pocketing process.
- **VMC [B]** department sets up the VMC, installs the provided Machine Instructions, and uses the Turning Drawing to perform the Pocketing process on the Workpiece received from BPC.
- After the Pocketing process [3], they perform Quality Assurance Test 1 [4] on each workpiece received from VMC.
- If a workpiece passes the test, it is sent to finishing and to quality; however, if a workpiece fails the test, it is either rejected and sent to scrap or returned to the VMC for further pocketing process.

4.3 Pain Points

- **Incorrect or inadequate blanks from BPC:** Another pain point arises when the Blanks Preparation Cell (BPC) department supplies the VMC department with incorrect or unsuitable blanks. This can include receiving blanks that do not correspond to the intended specifications or blanks with incorrect measurements. Such errors in the blanks introduce inaccuracies into the VMC machining process, resulting in suboptimal outcomes and a waste of valuable resources.

- **Faulty programs from CAM:** The VMC department faces challenges when the CAM department provides faulty programs for the machining process. These flawed programs result in incorrect cuts and ultimately lead to wastage of resources, including materials and machine time. Such programming errors not only disrupt the workflow but also necessitate additional effort and time to rectify the mistakes and reprogram the VMC machine accurately.

4.4 Remedies

1. **Standardized blank storage:** Establish a standardized system for storing blanks in a designated area within the BPC department. This can involve assigning specific locations or shelves for different types and sizes of blanks. Clearly label and categorize the blanks based on their specifications, ensuring easy identification and retrieval.
2. **Double verification with drawings: CAM** department should incorporate a rigorous double verification process by checking the programs against the drawings not just once, but twice. This means that after the initial programming is completed, the individual should review and compare the program with the corresponding drawings to identify any discrepancies or errors.

FINISHING PROCESS ANALYSIS

5.1 Flowchart

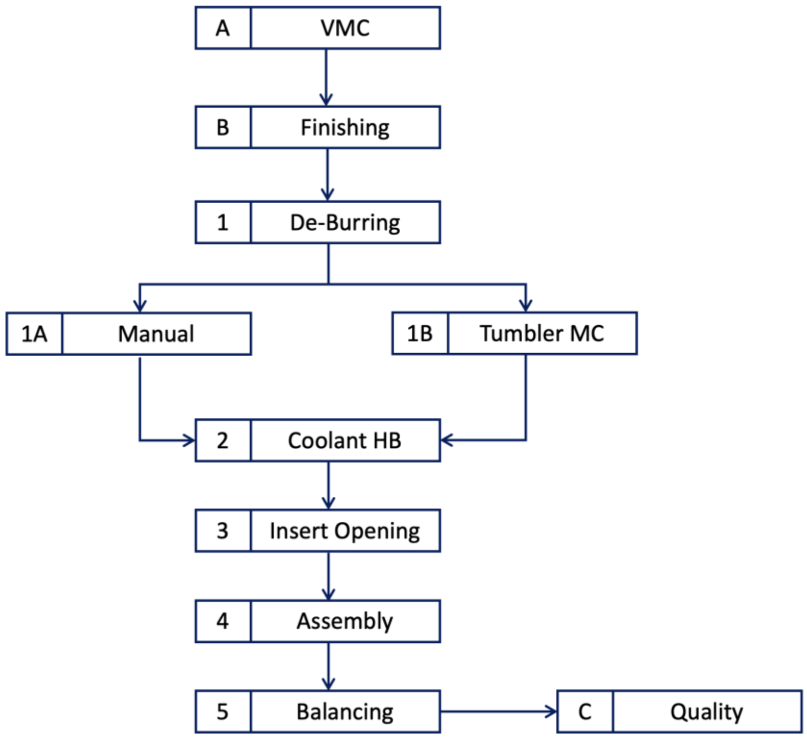


Fig no: 1.5 Finishing Process Analysis

5.2 Summary

- **Deburring [1]**: Tools undergo deburring, which can be carried out in two ways – manual deburring [1A] and tumbler machine deburring [1B]. For tools with fewer pockets that can be deburred within 30 minutes, manual deburring is performed. However, if a tool is complex or if there is a large quantity of the same tools, they are deburred using a tumbler machine.

- **Coolant hole blocking [2]**: After deburring, the coolant holes, which are created during the VMC process, are blocked. This ensures that the tool's internal structure is properly sealed and prevents any coolant leakage during operation.
- **Insert opening and assembly**: The insert openings [3] of the tool are checked and then the assembly process [4] takes place, where various components of the tool are joined

together according to the design specifications.

- **Balancing [5]**: In the balancing step, the tool's balance is carefully checked. If the tool is found to be unbalanced, additional pockets are created to restore balance. This helps to ensure optimal performance and stability during operation.
- **Quality check [C]**: Once the tool has undergone the aforementioned finishing processes, it is sent to the quality department for further evaluation and testing.

5.3 Pain points

1. **Tool is not aerodynamically balanced:** One of the pain points experienced by the finishing department is the lack of aerodynamic balance in tools designed by the design department. Due to this, the finishing department needs to try and balance the tool. This leads to waste of time as well as material.

2. **No proper safety measures:** The absence of proper safety measures in the finishing department poses a significant pain point. Ensuring a safe working environment is crucial for the well-being of employees and the overall efficiency of the department.
3. **Inventory is unorganized:** An unorganized inventory makes it challenging to locate specific tools, consumables, or materials needed for the finishing process. This results in wasted time and effort spent on searching for items, which can delay production and hinder workflow.

5.4 Remedies

1. **Design department:** should prioritize incorporating aerodynamic balance principles into their tool designs. By considering the balance aspect during the design phase itself, they can create tools that not only perform efficiently but also have an aesthetically pleasing design. When tools are designed with aerodynamic balance in mind, it reduces the reliance on the finishing department to check and correct imbalances. This saves time and effort, allowing the finishing department to focus on other critical tasks and maintain an efficient workflow.
2. **Safety Measures:** To address this pain point, the finishing department should prioritize safety and implement comprehensive safety measures. This includes conducting regular safety audits, ensuring proper training and education on safety protocols, and maintaining a culture of safety awareness among all employees.
3. **Designate storage areas and shelving:** Establish designated storage areas and shelves for different types of tools and materials. Clearly label each storage location to ensure easy identification and retrieval. Group similar items together to facilitate efficient organization and inventory management.

QUALITY DEPARTMENT ANALYSIS

6.1 Flowchart

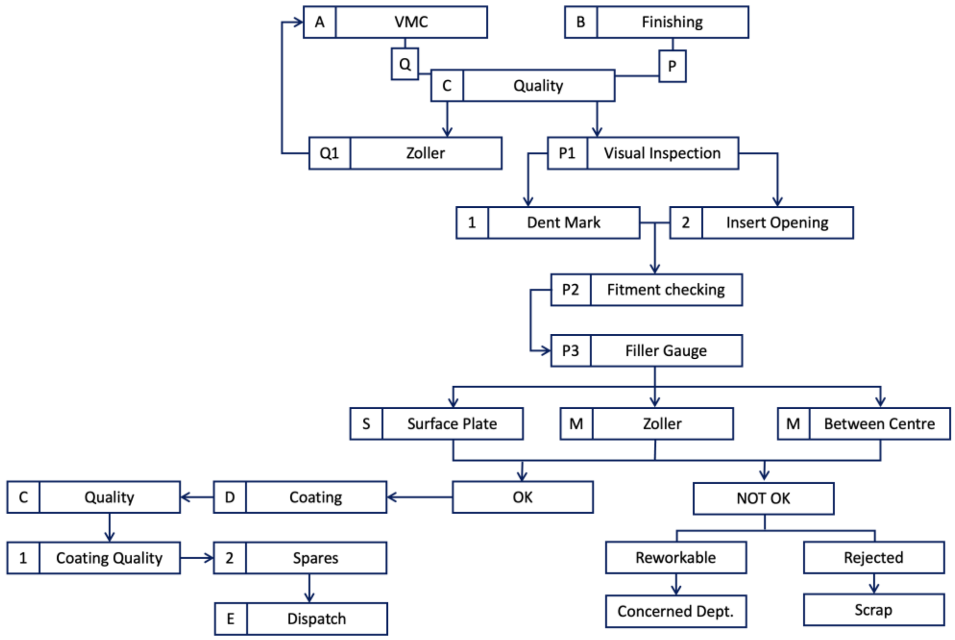


Fig no: 1.6 Quality Department Process

6.2 Summary

- **Quality inspection process:** The quality department receives tools from either the finishing department or directly from VMC. Tools from finishing undergo a visual inspection to check for dent marks and ensure the insert openings are correctly made. Fitment checking is performed to ensure proper assembly and alignment of components. Tools are also checked using a filler gauge to verify specific measurements.
- **Dimensional measurement:** The dimensions of the tool are measured using three different methods. The Zoller machine is used for precise measurements, ensuring accurate sizing and alignment. The surface plate is utilized to check flatness and perpendicularity of surfaces. The between center machine is employed to measure the distance between specific points on the tool.

- **Coating and final checks:** If the tool passes all the inspection steps, it proceeds to the coating process. After coating, it returns to the quality department for final checks. These checks involve verifying all dimensions, performing any necessary adjustments or fittings with spare parts, and ensuring the tool meets the required specifications.

- **Dispatch or rework/rejection:** Tools that pass the final checks and are deemed satisfactory are prepared for dispatch. They are carefully packaged and made ready for delivery to the appropriate destination. However, if a tool does not meet the required standards, it is categorized as reworkable or rejected. Reworkable tools are sent to the concerned department where necessary modifications or adjustments can be made to bring them up to the required standards. Rejected tools, on the other hand, are considered unusable and are sent to scrap.

- **Directly to and from VMC:** Tools that come directly from VMC undergo dimensional measurement using the Zoller machine. Based on the measurement results, they are either sent back to VMC for further adjustments or deemed acceptable for subsequent processes.

6.3 Pain points

1. **Lengthy Approval Process:** A significant pain point in the finishing department arises when they receive a tool that does not match the drawing provided by the design

department. In such cases, the finishing department is required to halt their workflow and contact the design department for clarification. They need to confirm whether the discrepancy between the tool and the drawing is intentional or unintentional. This approval process, necessary to ensure the accuracy and compatibility of the tool, often consumes a considerable amount of time. As a result, it leads to unwanted delays in the production process and hampers overall efficiency.

6.4 Remedies

1. **Improved communication channels:** Establish clear lines of communication between the finishing department and the design department. This can involve designated personnel who serve as points of contact to quickly resolve any discrepancies. Implementing a dedicated communication platform or system can facilitate efficient and prompt communication between the departments.
2. **Documentation and revision control:** Implement a documentation system that tracks revisions and changes made to the drawings. This system should ensure that any updates or modifications to the drawings are communicated effectively to the finishing department. Having a centralized repository for drawings and clear version control can minimize errors and discrepancies.

COATING PROCESS ANALYSIS

7.1 Flowchart

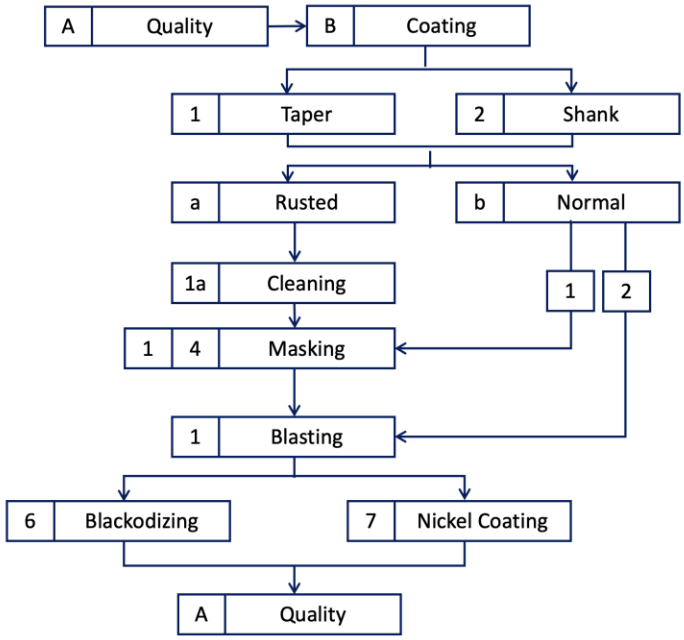


Fig no: 1.7 Coating Department Process

7.2 Summary

- **Categorization:** Tools are categorized as either tapered [1] or shank [2] tools. Within these categories, some of the tools may be rusted [a], requiring them to undergo a cleaning[1a] process using sulphuric acid.
- **Masking [1,4]:** Once the rusted tools have been cleaned, the next step is to mask the tapered tools before they are sent for blasting. Masking involves covering certain areas of the tools that should not be exposed to the blasting process. On the other hand, the shank tools are sent directly to the blasting step without masking.
- **Blasting [1]:** During the blasting process, the tools undergo a high-pressure treatment using abrasive materials to remove any remaining rust, dirt, or imperfections on their surfaces. This step prepares the tools for the final coating.
- **Coating [6,7]:** After blasting, the tools are ready to be coated. Depending on the specific requirements, the tools can undergo either blackodising [6] or nickel coating [7].

- **Quality [A]:** Once the coating process is completed, the tools are sent back to the quality department for inspection. This inspection ensures that the coating has been applied correctly, meets the required specifications, and that the tools are in optimal condition.

7.3 Pain points

1. **Masking process is time consuming:** A pain point in the coating process is the time-

consuming task of covering the taper of some tools with paper tape before the blasting process. This step is necessary to protect the taper from the abrasive materials used during blasting.

However, it can be a tedious and labor-intensive process that adds to the overall time required for coating. The manual task of covering the taper with paper tape takes a significant amount of time, especially if there are numerous tools to be processed. Each tool needs to be carefully wrapped and taped, ensuring that the taper is adequately covered and protected. This can slow down the overall production process and create bottlenecks in the workflow.

7.4 Remedy

1. **Pre-formed Taper Covers:** Instead of using paper tape, pre-formed taper covers can be employed. These covers are designed to fit various taper sizes and can be easily slid onto the taper, providing a quick and effective protection layer. They eliminate the need for manual wrapping and taping, significantly reducing the time required for covering the taper.

8.1 Flowchart

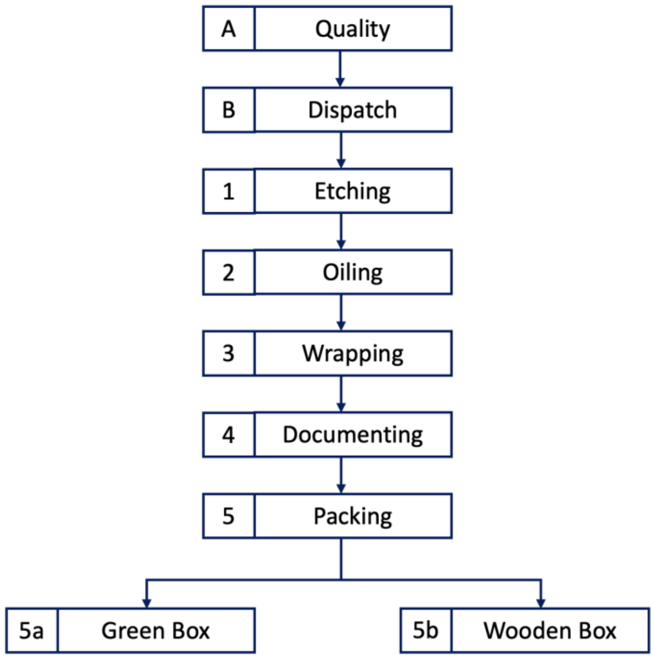


Fig no: 1.8 Dispatch Department Process

8.2 Summary

- **Dispatch -** The Quality department [A] sends the tools to the Dispatch department [B] for further processing.
- **Etching -** In the Dispatch department, the first step is etching [1], where the company name, serial number, and other details are engraved onto the tool using a laser.
- **Oiling -** Once the etching is complete, the tool is dipped in oil [2] to protect it from corrosion and ensure longevity.
- **Wrapping -** After oiling, the tool is carefully wrapped in plastic [3] to provide additional protection during transportation and storage.

- **Documenting -** Before packing, all the relevant documents [4], such as the purchase order and the drawing of the tool, are thoroughly verified.

- **Packing -** Finally, based on the weight of the tool, it is packed either in a green box [5a] for light tools or a wooden box [5b] for heavy tools, ensuring appropriate packaging for secure transport.

8.3 Pain points

1. **Delivery sent to the wrong address:** Despite the Dispatch department's best efforts, there

can be instances where deliveries are mistakenly sent to an incorrect address. This could be the result of human error, oversight, or incomplete or inaccurate address information provided during the dispatch process.

2. **Incorrect document number printing during etching:** One of the pain points in the Dispatch department is the occurrence of errors caused by printing the wrong document number onto the tool during the etching process. This issue often arises due to the heavy workload and the potential for human error.

8.4 Remedies

1. **Implement thorough quality checks:** To avoid document number errors, it is crucial to establish a robust quality control process. This can involve introducing multiple verification steps and cross-checking systems to ensure the correct document number is etched onto the tool.
2. **Enhance address verification procedures:** To minimize delivery errors, the dispatch department should implement rigorous address verification protocols. This can include double-checking the address details with the customer, using reliable address databases, and implementing automated systems that flag potential address discrepancies.

IMPLEMANTATION REPORT

IR 1: Excel Sheet for Linking Design and VMC Departments

Implementation Report: Excel Sheet for Linking Design and VMC Departments

1. Introduction
This report provides a detailed overview of a project aimed at enhancing the efficiency and accuracy of program retrieval in the VMC Department through the development of an Excel sheet that establishes a connection between the Design and VMC Departments. The report covers the problem encountered by the VMC Department, the proposed solution, the implementation process, and the feedback received from the involved departments.

2. Problem Statement
The VMC Department faced challenges when locating the necessary programs provided by the Design Department on the shared server within VMC. The presence of multiple folders with similar names resulted in confusion and errors, leading to inefficiencies in daily operations. The objective was to streamline the program retrieval process and eliminate any potential for errors or confusion.

3. Solution Overview
To address the problem, a solution was developed consisting of an Excel sheet integrated with a data library. The Excel sheet encompassed a comprehensive list of all standard tool programs required on a daily basis. Each program was hyperlinked to its corresponding folder within the data library, enabling users to access the desired program with a single click. By navigating to the designated folder, users could locate only one file, ensuring clarity and minimising errors.

4. IMPLEMENTATION PROCESS

4.1. Design Process

4.1.1. Development of Excel Sheet and Data Library: The Excel sheet was created, incorporating the list of standard tool programs and establishing hyperlinks to the respective folders. The development of the data library involved the creation of new folders for over 150 programs.

4.1.2. Organised Data Library and Scalability: To ensure long-term usability and scalability of the Excel sheet, a well-structured data library was implemented. This structure allowed for seamless addition of new programs without disrupting existing hyperlinks or causing confusion. The following strategies were employed:

4.1.3. Data Library Organisation: The Excel sheet was designed with a clear and structured layout, facilitating easy identification and management of program files. The data library was logically categorised, such as by project type or tool category, making it simple to locate and link new programs in the future.

4.1.4. Expansion: The Excel sheet was designed to accommodate the addition of new standard tools or programs as they became necessary. This flexibility ensured that the sheet could adapt to evolving requirements without difficulties. New programs could be attached to the sheet by creating a new folder within the data library and establishing the corresponding hyperlink.

4.1.5. Maintenance and Updates: Regular maintenance and updates of the Excel sheet were prioritised to keep the data library organised and up to date. As new programs were added or existing ones were modified, careful attention was given to updating the Excel sheet accordingly, ensuring accurate and functional hyperlinks. By implementing an organised data library structure and focusing on scalability, the Excel sheet became a dynamic tool for program retrieval. It facilitated seamless addition of new programs, enabled efficient management of the data library, and ensured the continued effectiveness of the solution over time.

4.2. Training Process

4.2.1. Meeting with Design and VMC Departments: A meeting was conducted in the conference room with the purpose of training the workers who would be utilising the Excel sheet. Representatives from both the Design and VMC Departments were present. During this meeting, the Excel sheet was presented, and a walkthrough was provided to familiarise the participants with its functionality.

4.2.2. Soliciting Feedback: Active feedback was sought from the participants, encouraging them to share their thoughts and suggestions. The issues that the solution aimed to address were reiterated, and participants were invited to provide input to further enhance the usability of the Excel sheet.

4.2.3. Incorporating Feedback: Valuable input was received from both the Design and V

MC Departments. Suggestions included adding a section with hyperlinks to the tools' drawings, which could serve as a verification step. Additionally, requests were made to upload additional programs that were initially overlooked.

5. Handling Program File Structure: A challenge encountered during the implementation was the need to provide access to the entire program file, rather than just the code within it. To overcome this, separate folders were created for each program file. By hyperlinks to the folders instead of the program files directly, users were able to access the desired program file in its entirety. This approach ensured that users could easily locate and copy the entire program file without confusion.

6. Preventing File Deletion: Another challenge faced was the accidental deletion of program files by workers while attempting to copy them. To mitigate this risk, two solutions were implemented:

6.1. Password Protection: The Excel sheet containing the hyperlinks was password-protected, preventing unauthorised modifications. By restricting access to the sheet, accidental deletions or changes were minimised, maintaining the document's integrity.

6.2. Restricted File Deletion Permissions: Access privileges on the common server were modified to deny the ability to delete files. By implementing these restrictions, the risk of permanently losing program files due to accidental deletion was significantly reduced. Users were only allowed to copy the files, ensuring the preservation of the original files.

7. Finalisation and Deployment: The feedback received was carefully considered and incorporated into the Excel sheet. The Design Department was responsible for uploading the final version of the Excel sheet to the server, making it accessible to

all relevant personnel.

8. Conclusion

The implementation of the Excel sheet for linking the Design and VMC departments has successfully addressed the inefficiencies and confusion in program retrieval. The solution provided a user-friendly interface with hyperlinks to program folders, simplifying the process and minimising errors. The organised data library structure ensured scalability and flexibility for future additions, and regular maintenance updates were emphasised to maintain accuracy and functionality. The training process and feedback solicitation from both departments contributed to refining the solution and enhancing its usability. Challenges related to accessing program files and preventing accidental deletions were effectively mitigated through the creation of separate folders, password protection, and restricted file deletion permissions. Overall, the implementation of the Excel sheet has significantly improved the efficiency and accuracy of program retrieval, enabling smoother operations between the Design and VMC departments.

- **Handover Summary**

The implementation report details the development and deployment of an Excel sheet designed to streamline program retrieval between the Design and VMC departments. The report identifies the problem faced by the VMC Department, which was the confusion and errors caused by multiple folders with similar names on the shared server. The proposed solution involved creating an Excel sheet with hyperlinks to the respective program folders within a well-structured data library. The implementation process included the design and organization of the data library, training sessions for department workers, and incorporating feedback. Challenges related to accessing program files and preventing accidental deletions were successfully addressed. Overall, the implementation of the Excel sheet improved efficiency and accuracy in program retrieval and enhanced collaboration between the Design and VMC departments.

Project Title	AUTO SHEET VERIFICATION		
HOD	Ashok Bhairat	Mentor	Salman Shaikh
In charge	Chandpasha Mulla	Mentee	Anshul Thete
Problem Statement		Implementation Remark	

The implementation report describes how an Excel sheet was created to make it easier for the Design and VMC departments to find and use programs. The VMC Department was having trouble because there were many folders with similar names on the shared server, leading to confusion and mistakes. The solution was to make an Excel sheet with links to the correct program folders in a well-organized data library. The implementation process involved setting up the data library, training the department workers, and getting their feedback. Problems with accessing program files and accidental deletions were solved successfully. Overall, the Excel sheet made it faster and more accurate to find programs, and it improved cooperation between the Design and VMC departments.		The implementation of an Excel sheet successfully addressed the challenges faced by the VMC Department in locating and utilizing programs due to the presence of numerous similarly named folders on the shared server, causing confusion and errors. By creating an organized data library with hyperlinks to the appropriate program folders, the Excel sheet streamlined program retrieval. The implementation process included the establishment of the data library, training sessions for department workers, and soliciting their feedback. Issues related to accessing program files and accidental deletions were effectively resolved. Overall, the implementation of the Excel sheet significantly improved the efficiency and accuracy of program retrieval, fostering better collaboration between the Design and VMC departments.	
Existing Time Analysis		New Time Analysis	
Parameter	Duration	Parameter	Duration
For One Unit	50 seconds	For One Unit	20 seconds
Daily	5.83 min	Daily	2.3 min
Monthly	35 min	Monthly	13.8 min
Yearly	2.33 hours	Yearly	55.2 min

- **HOD Remark Summary**

Sample text

- **Internship Trainer Remark Summary**

Sample text

Implementation Report: Design and Dispatch Department Problem Resolution

1. Introduction

This implementation report outlines the actions taken by I to address a recurring problem in the Design and Dispatch Department of a company. The problem involved the design department sending wrong files to the dispatch department due to repeated pictures with minor changes but the same reference number. I devised a solution and implemented it immediately to mitigate the issue.

2. Problem Description
The Design and Dispatch Department of the company faced challenges when the design department provided incorrect files to the dispatch department. This occurred when similar pictures with minor changes, but identical reference numbers, were mistakenly sent to dispatch. Consequently, the dispatch department analyzed and etched inaccurate tool descriptions on the tools, leading to disruptions and complications.

3. Solution Proposal
I identified the root cause of the problem and proposed a solution to ensure accurate file transmission between the departments. I suggested the implementation of an Excel sheet that would serve as a centralized database for both departments. I chose Excel over Google Sheets to maintain confidentiality as the files contained sensitive information for the company. The solution aimed to establish a systematic table that could be easily understood and utilized by all parties involved.

4. Implementation Details
I initiated the implementation of the proposed solution by creating an Excel sheet that would serve as the central repository for data exchange between the design and dispatch departments. I took the following steps to ensure effective implementation:

a. Data Collection: I gathered all the necessary data required for the Excel sheet, including tool descriptions, reference numbers, and associated details.

b. Sheet Design: I designed a systematic table in the Excel sheet that allowed for easy data input and comprehension. I structured the table to accommodate the specific information needed by both departments.

c. Connection Setup: Since the company had a shared server, I established a connection between the Excel sheets used by the design and dispatch departments. This connection ensured that both departments could access and utilize the same data.

d. User Permissions: I assigned appropriate user permissions to maintain data integrity. Only the design department was granted editing authority to modify the Excel sheet, while the dispatch department was limited to copying specific details.

The dispatch department had no ability to add or delete any data within the sheet. However, if any accidental deletions occurred, I implemented an automatic refresh function to restore the deleted data.

5. Results and Benefits

The implementation of the Excel sheet solution led to several positive outcomes for the Design and Dispatch Department:

a. Improved Accuracy: The Excel sheet acted as a reliable source of information, eliminating the possibility of incorrect files being sent to dispatch. This ensured accurate tool descriptions and branding on the tools.

b. Streamlined Workflow: The centralized Excel sheet facilitated seamless data exchange between the departments. The systematic table design made it easier for employees to locate and input relevant information quickly.

c. Enhanced Data Security: By using an internal Excel sheet connected to the shared server, the company maintained confidentiality as the files remained within their network. The sensitive information was safeguarded from unauthorized access.

d. Increased Efficiency: With the Excel sheet solution in place, the design and dispatch departments experienced improved coordination and reduced errors. The standardized process saved time and resources, allowing both departments to focus on their core tasks more effectively.

6. Conclusion

I successfully resolved the recurring problem faced by the Design and Dispatch Department through the implementation of an Excel sheet solution. The systematic table design, connectivity between departments, and careful user permission management ensured accurate data transmission and improved efficiency. The solution brought numerous benefits, including enhanced accuracy, streamlined workflow, data security, and increased overall efficiency within the department.

- **Handover Summary**

This implementation report highlights the actions taken to address a recurring problem in the Design and Dispatch Department of a company. The problem involved incorrect file transmission due to similar pictures with minor changes but the same reference number. To mitigate this issue, an Excel sheet solution was proposed and implemented. The Excel sheet served as a centralized database, enabling accurate data exchange between departments. The implementation process involved data collection, systematic table design, connection setup, and user permission management. The results included improved accuracy, streamlined workflow, enhanced data security, and increased efficiency.

Project Title	AUTO SHEET VERIFICATION		
HOD	Ashok Bhairat	Mentor	Salman Shaikh
In charge	Ashok Bhairat	Mentee	Anshul Thete
Problem Statement		Implementation Remark	
This report explains what we did to fix a problem in the Design and Dispatch Department of our company. The problem was that we were sending the wrong files because some pictures looked very similar but had different details. To solve this, we used an Excel sheet. It helped us keep all the information in one place so that both departments could access it easily. We collected the necessary data and designed a table in the Excel sheet. We also connected it to the shared server and gave different permissions to different users. The results were good. We made fewer mistakes, our work went more smoothly, our data was safer, and we were more efficient overall.		The Design and Dispatch Department of the company faced a problem where incorrect files were being sent due to similar-looking pictures with different details. The solution implemented was the use of an Excel sheet, which served as a centralized database for easy access by both departments. The necessary data was collected and a table was designed in the Excel sheet. Additionally, a connection was established with the shared server, and user permissions were assigned accordingly. The implementation of this solution yielded positive results. There was a reduction in the number of mistakes made, workflow improved, data security was enhanced, and overall efficiency increased.	
Existing Time Analysis		New Time Analysis	
Parameter	Errors	Parameter	Errors
Weekly	2	Weekly	0
Monthly	8	Monthly	0
Yearly	92	Yearly	0

- **HOD Remark Summary**

Sample text

- **Internship Trainer Remark Summary**

Sample text

ACKNOWLEDGEMENT

It is a matter of great pleasure for me to present my project report on “**Lean Manufacturing”.** First and foremost,

I am profoundly grateful to my guide to **Mr. Shaikh Salman** the **Chief Technology Officer** and all the Employees of **Sigma Toolings India Pvt Ltd** for their expert guidance and continuous encouragement during all stages of thesis. I feel lucky to get an opportunity to work with them. Not only their understanding toward the subject, but also their interpretation from the simulation helps me think on a bigger way.

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