

“Industrial Training Report on Traub Machine Operation and Automobile Component Manufacturing at Nikhil Industries Ahilyanagar.”

Gokul Kalyan Muthe¹, Tushar Yashavant Bhutkar², Dr. Ramesh Suryabhan Gadakh³

¹ Student, Department of Mechanical Engineering Sau Sundarbai Manik Adsul Polytechnic, Chas, Ahilyanagar, India

² Guide, Department of Mechanical Engineering Sau Sundarbai Manik Adsul Polytechnic, Chas, Ahilyanagar, India

³ Principal Sau Sundarbai Manik Adsul Polytechnic, Chas, Ahilyanagar, India

Abstract

The automobile industry requires large quantities of precision components with consistent dimensional accuracy, surface finish and productivity. Automatic Traub machines are widely used for the mass production of small and medium-sized turned components. This research paper presents a case study of the work carried out by a **Traub Machine Operator at Nikhil Industries**, focusing on automobile-part manufacturing. The study covers machine setup, raw-material loading, tool setting, machining operations, inspection, rejection control, productivity and operator responsibilities. Traub machines are particularly suitable for batch and mass production because several machining operations can be performed sequentially on a single machine.

The study indicates that proper machine setting, tool condition, process monitoring and dimensional inspection are important factors in achieving consistent quality. Previous research on Traub machining has also investigated methods such as Poka-Yoke, control charts and process capability to reduce machining defects and improve outgoing quality.

Keywords: Traub Machine, Automobile Components, Automatic Lathe, Machining, Production, Quality Control, Machine Operator, Precision Manufacturing.

1. Introduction

Automobile manufacturing involves the production of a large number of components with close dimensional tolerances and repeatable quality. Components such as pins, bushes, spacers, shafts, studs, bolts and other turned parts require accurate machining and high

production rates.

A Traub machine is an automatic lathe used for producing precision turned components in large quantities. Such machines can perform operations including turning, facing, drilling, threading and other operations depending on the machine configuration and tooling. Manufacturers describe Traub automats as suitable for mass production of precision components for automobile and other engineering industries.

This research focuses on the practical work of a **Traub Machine Operator at Nikhil Industries**, particularly in the manufacturing of automobile components.

2. Objectives of the Study

The main objectives of this study are:

1. To study the working procedure of a Traub automatic lathe.
2. To understand the role and responsibilities of a Traub Machine Operator.
3. To study the manufacturing process of automobile components.
4. To identify major machining operations performed on the machine.
5. To study tool setting and machine adjustment procedures.
6. To understand dimensional inspection and quality-control practices.
7. To identify common machining defects and their causes.
8. To study methods for improving productivity and reducing rejection.
9. To understand the importance of safety during machine operation.

3. Company and Work Profile

3.1 Nikhil Industries

For this case study, **Nikhil Industries** is considered as the industrial workplace where the operator performs machining operations on automobile components.

The manufacturing activity involves machining of metal components according to specified drawings and dimensions. The operator's work is mainly associated with operating and monitoring the Traub automatic lathe, maintaining dimensional accuracy and ensuring continuous production.

3.2 Job Profile

Designation: Traub Machine Operator

Major responsibilities:

- Machine operation
- Raw-material loading
- Tool setting
- Machine adjustment
- Production monitoring
- Component inspection
- Maintaining dimensional accuracy
- Tool replacement
- Identification of machining defects
- Maintaining workplace cleanliness
- Following safety procedures

4. Traub Machine

A Traub machine is a type of automatic lathe designed for high-volume production of turned components. Depending on the model, operations can be performed using multiple tool stations and attachments. Typical Traub machines are designed for precision production and can achieve high production rates.

Main Parts of Traub Machine

1. Headstock
2. Spindle
3. Collet
4. Bar-feeding arrangement
5. Tool slides
6. Cross slides
7. Turret/tool holders
8. Cam mechanism
9. Change gears
10. Coolant system
11. Chip tray
12. Machine bed
13. Drive motor

14. Control mechanism

5. Manufacturing Process of Automobile Parts

The general manufacturing sequence followed for a turned automobile component can be represented as:

Raw Material → Bar Feeding → Machine Setting → Turning → Facing → Drilling → Grooving/Threading → Parting-Off → Inspection → Final Component

The exact sequence depends on the component drawing and production requirements.

5.1 Raw Material

The raw material is generally supplied in bar form. Depending on the component specification, materials may include mild steel, alloy steel, stainless steel, brass, aluminium or other engineering materials.

5.2 Bar Feeding

The raw-material bar is inserted into the machine's collet/bar-feeding system. Proper alignment and secure holding are necessary before starting production.

5.3 Turning

Turning is performed to obtain the required outside diameter and component profile.

5.4 Facing

Facing produces a flat and accurately positioned end surface.

5.5 Drilling

Drilling may be performed when the component requires a hole.

5.6 Threading

Internal or external threads can be produced using suitable threading tools.

5.7 Grooving

Grooving is performed to produce a specified groove or recess.

5.8 Parting-Off

After completion of machining, the finished component is separated from the bar using a parting

6. Role of the Traub Machine Operator

The operator plays an important role in maintaining both production and quality.

Before Starting the Machine

The operator checks:

- Machine cleanliness
- Lubrication
- Coolant level
- Tool condition
- Raw-material availability
- Collet condition
- Machine settings
- Safety guards
- Component drawing

The actual instruments used at Nikhil Industries should be replaced with the instruments available at the workplace.



Fig of .9*62 Size

During Production

The operator continuously monitors:

- Machine operation
- Cutting sound
- Tool condition
- Component dimensions
- Surface finish
- Coolant flow
- Production quantity
- Rejection quantity

After Production

The operator:

- Checks finished components
- Separates rejected components
- Records production information
- Cleans the machine
- Removes chips
- Reports abnormalities to the supervisor

7. Quality Inspection

Quality inspection is an important part of automobile-component manufacturing.

Typical inspection instruments include:

Parameter	Instrument
Outside diameter	Vernier caliper / Micrometer
Inside diameter	Bore gauge
Length	Vernier caliper
Thread	Thread gauge
Groove dimension	Vernier / Special gauge
Surface condition	Visual inspection / Surface measuring equipment
Component profile	Profile gauge

8. Common Defects in Traub Machining

Defect	Possible Cause	Corrective Action
Oversize diameter	Tool wear / incorrect setting	Adjust or replace tool
Undersize diameter	Excessive tool penetration	Correct tool setting
Poor surface finish	Worn tool / incorrect speed	Change tool and optimize parameters
Burr formation	Improper cutting condition	Correct cutting tool/condition
Incorrect length	Improper setting / stop	Adjust stop
Thread defect	Incorrect threading-tool setting	Correct tool alignment
Taper	Tool or machine setting error	Check alignment
Chatter marks	Improper rigidity/cutting condition	Improve tool holding and parameters
Excessive rejection	Improper process control	Frequent inspection and process monitoring

9. Productivity Improvement

Productivity in Traub machining can be improved through:

1. Proper machine setting.
2. Correct tool selection.
3. Timely tool replacement.
4. Reduction in machine idle time.
5. Proper raw-material loading.
6. Regular dimensional inspection.
7. Preventive maintenance.
8. Standardized operating procedures.
9. Reduction of setup time.
10. Reduction of rejection and rework.

Traub machines are specifically suited to high-volume production because automatic machining reduces repetitive manual operations and supports consistent production

10. Quality Improvement Through Poka-Yoke

Poka-Yoke or error-proofing can be applied to machining operations to prevent incorrect production conditions.

A published study on Traub machining of an automobile-related component examined under-sizing defects and used error-proofing together with control charts and process-capability measures to improve machining quality.

Possible Poka-Yoke applications include:

- Correct component orientation
- Tool-setting verification
- Automatic machine stops after abnormal conditions
- Limit gauges
- First-piece approval
- Tool-life monitoring
- Go/No-Go inspection

11. Safety Practices

The Traub Machine Operator should follow the following safety practices:

- Wear appropriate PPE.
- Do not touch rotating components.
- Do not remove chips with bare hands.
- Use proper chip-removal tools.
- Ensure machine guards are properly positioned.
- Stop the machine before making adjustments.
- Maintain proper housekeeping.
- Avoid loose clothing near rotating machinery.
- Follow machine operating instructions.
- Report abnormal noise, vibration or malfunction immediately.

12. Observations

The case study provides the following general observations:

1. Traub machines are suitable for high-volume production of turned components.
2. Operator skill has an important role in maintaining production quality.
3. Correct tool setting directly affects component dimensions.
4. Tool wear can increase dimensional variation.
5. Regular inspection helps identify defects at an early stage.

6. Proper machine maintenance improves machine availability.
7. Standardized procedures can reduce operator-dependent variation.
8. Poka-Yoke and process monitoring can help reduce rejection.

13. Results and Discussion

The study shows that the performance of automobile-component machining depends on the interaction of **machine condition, tool condition, material, machining parameters and operator skill**.

A properly set Traub machine can produce a large number of similar components with consistent dimensions. However, tool wear, incorrect settings, improper raw-material loading and inadequate inspection can result in rejection.

Therefore, an effective production system should combine:

Machine Setting + Tool Management + Process Inspection + Preventive Maintenance + Operator Skill = Improved Production Quality

14. Conclusion

This research paper presents a case study of the work performed by a **Traub Machine Operator in automobile-component manufacturing at Nikhil Industries**. The study covers machine operation, machining processes, quality inspection, defects, productivity and safety.

Traub automatic lathes are well suited for the production of precision turned components in batch and mass-production environments. The operator has an important responsibility in maintaining machine settings, monitoring tools, inspecting components and ensuring safe and continuous production.

The implementation of systematic inspection, proper tool management, preventive maintenance and error-proofing techniques can contribute to improved component quality and reduced rejection

15. Future Scope

Future studies can focus on:

- Optimization of cutting parameters.
- Reduction of cycle time.
- Tool-life improvement.
- Reduction of rejection percentage.
- Implementation of Poka-Yoke.
- Statistical Process Control (SPC).
- Process Capability Analysis.
- OEE analysis of the Traub machine.
- Automation of component inspection.
- Comparison between Traub and CNC turning.

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