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# Car Body Assembly Process in Assembling Section at Suzuki Indomobil Motor Plant Cikarang Company

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**Abstract**
This practical work was carried out at PT Suzuki Indomobil Motor Plant Cikarang with a focus on the car body assembly process in the assembling section. The assembling process is an important stage in vehicle manufacturing, where components of various sizes (small, medium, and large parts) are systematically assembled to form a complete car structure. Assembly is carried out sequentially from one station to another using a conveyor system, and involves various techniques and standard operating procedures to ensure the quality of the final result. Through this activity, students can directly understand the working system of the automotive industry, assembly methods, and gain experience in a professional work environment.
**Keywords:** *assembly, assembling, automotive, car production*

**Abstrak**
Kerja praktik ini dilakukan di PT. Suzuki Indomobil Motor Plant Cikarang dengan fokus pada proses perakitan body mobil di bagian assembling. Proses assembling merupakan tahapan penting dalam manufaktur kendaraan, di mana komponen-komponen dengan berbagai ukuran (small, medium, hingga big part) dirakit secara sistematis untuk membentuk struktur mobil yang utuh. Perakitan dilakukan secara berurutan dari satu station ke station lain menggunakan sistem konveyor, dan melibatkan berbagai teknik serta standar prosedur operasi untuk menjamin kualitas hasil akhir. Melalui kegiatan ini, mahasiswa dapat memahami secara langsung sistem kerja industri otomotif, metode perakitan, serta mendapatkan pengalaman dalam lingkungan kerja profesional.
**Kata Kunci:** *perakitan, assembling, otomotif, produksi mobil*

## 1. Introduction

The development of the automotive industry in Indonesia shows an increasing trend along with the increasing need for mobility and economic growth. One of the vital aspects in the production process of motor vehicles is the assembling process, which is the stage where various vehicle components are systematically combined to form a complete and ready-to-use vehicle unit. This process requires not only careful planning, but also the application of modern manufacturing technology and strict quality management to ensure the efficiency and accuracy of the final result [1].

PT Suzuki Indomobil Motor is one of the leading automotive companies in Indonesia that plays an important role in the production of Suzuki-branded vehicles, both two-wheelers and four-wheelers [3]. Plant Cikarang is particularly focused on the car assembly process, where all stages from glass installation, suspension system, wiring harness, to final assembly are carried out through a conveyor-based work system and assembly stations. Each station has a specific role and is operated by a competent team with standard operating procedures (SOP) to ensure work quality and safety [2]

The assembling process is one of the critical points in the production chain as it determines the final integration of various vehicle systems, including mechanical, electrical, and body systems [4]. Non-conformities in this stage can lead to production defects, decreased vehicle performance, and potential company losses. Therefore, it is important for engineering students to understand this process directly through practical work activities, as a form of application of the theory that has been obtained in lectures to the real industrial world [5]

This practical work report aims to analyze and describe the car body assembly process in the assembling section at PT Suzuki Indomobil Motor Plant Cikarang, and provide an overview of the modern automotive production system implemented by the company. The main focus is on the workflow, assembly methods, labor management, and quality standards implemented throughout the process [6].

## 2. Material and Methods

### *Location and Time of Implementation*

This industrial internship was conducted at PT. Suzuki Indomobil Motor Plant Cikarang, specifically in Department 3.2 Production – Assy Body, over a period of five weeks, from September 12, 2022, to October 14, 2022. This facility was selected due to its status as a modern automotive production center that implements a line production system and adheres to global industrial standards. The plant focuses on assembling four-wheeled vehicles, beginning with the vehicle's body shell and continuing through to final inspection and testing prior to market distribution.

### *Materials and Tools*

The materials and equipment observed during the internship fall into two main categories: vehicle components and assembly tools. The components used in the assembling process include the front windshield, rear window glass, quarter glass, front suspension system, radiator, front and rear bumpers, air conditioning system, electrical wiring harnesses, safety belts, emblems, and various brackets and interior attachments. These components are either supplied by vendors or prepared in sub-assembly stations and installed progressively according to the assembly line sequence [7].

Various tools and equipment support the assembly process to ensure efficiency and precision. One of the most crucial devices is the robotic sealer, an automated machine used to apply sealant around the vehicle glass prior to installation. It operates with programmed vertical and rotational movements to ensure even sealant distribution [8]. Another essential tool is the manual lifter, a mechanical aid used to position heavy components, such as the front suspension, during installation. This tool features manual control levers that allow technicians to adjust the direction and height for ergonomic assembly. Additionally, power tools such as impact wrenches and screw guns are used for bolt tightening, with torque settings calibrated to meet safety standards. The production line also utilizes overhead conveyor systems and slat conveyors to transport vehicle units from one station to the next in a sequential and automated manner [9].

### *Data Collection Methods*

Data collection was carried out through three main methods: direct observation, structured interviews, and literature review. Direct observations were made by recording the work processes at each assembly station, from the initial component installation to the final inspection. Observations were documented in field notes and process flowcharts. Structured interviews with supervisors and technicians were conducted to gather deeper insights into workflow methods, equipment usage, safety standards, and common production challenges [10]. Literature reviews were also employed to support theoretical understanding, drawing on academic textbooks, internship manuals, and scholarly journals related to modern automotive manufacturing [11]

### *Implementation Procedure*

The implementation procedures began with an introduction to the production workflow, followed by documentation of the vehicle body assembly process across Posts 1 to 16. In the first two posts, front and rear glass panels are installed using the robotic sealer. From Post 3 to 16, various components such as the suspension system, braking components, AC piping, electrical wiring, dashboard parts, emblems, and safety equipment are sequentially installed.

**Figure 1.** Installation of Front Glass, Background Glass and Quarter Glass

Each post is staffed by one to four technicians with clearly defined roles based on standard operating procedures (SOP). After the main components are installed, the unit proceeds to the Trim Line Assembly, where interior components and electrical systems are installed. Here, the vehicle body is mounted onto the conveyor, and parts such as the radiator, dashboard panels, door panels, and safety harnesses are assembled [12].

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**Figure 2.** Installation of the front suspension on the car/unit

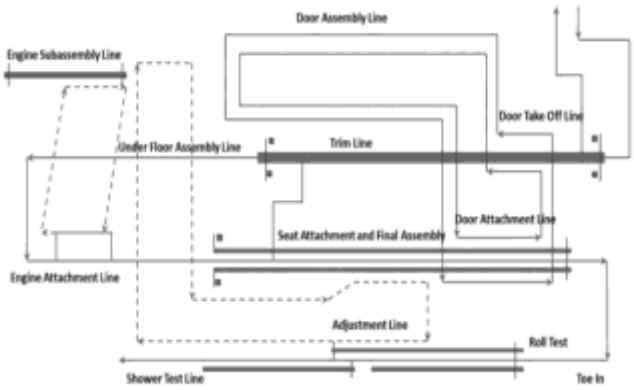


**Figure 3**. Trim Line

The unit then moves to the Chassis Line Assembly, where the powertrain system (engine and transmission) is integrated with the vehicle body using an overhead conveyor system. Assembly of engine components includes the installation of hoses, controllers, and wiring connections. Once the engine is fully mounted, the vehicle undergoes further assembly steps including the installation of the exhaust system, fuel tank, wheels, and tires. Specialized power tools are used to tighten fasteners to Di situ yapredetermined torque levels, ensuring safety and performance compliance [13].

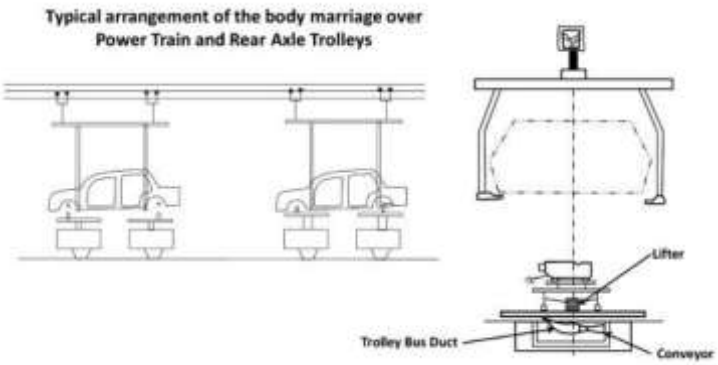


**Figure 4**. Chassis line

Finally, the unit enters the Final Assembly and Testing Area, where fluids such as engine oil, fuel, and transmission fluid are filled. The doors, which had been removed during earlier stages, are reinstalled, and the vehicle is subjected to a series of functional tests. These include inspections of lighting, braking, leakage, engine performance, and overall vehicle integrity. All activities are performed within a continuous production line supported by conveyor systems and strict quality control measures [14].

**Figure 5** Final assembly

## 3. Results and Discussion

The industrial internship at PT. Suzuki Indomobil Motor Plant Cikarang provided valuable insights into the systematic and structured nature of automotive assembly line operations. The internship was conducted in Department 3.2 Production – Assy Body, which focuses on installing key body and mechanical components onto the vehicle chassis before it proceeds to trim and chassis line assemblies.

***Assembly Line Observation Results***

Observations were carried out across 16 sequential posts within the Assy Body section. Each post is designed with specific tasks and component installations, supported by tools such as robotic sealers, manual lifters, and torque-controlled power tools.

- Post 1 & Post 2: Installation of the front and rear windshields using the robotic sealer system. The sealant is applied with consistent thickness and positioning, reducing the risk of leaks and structural issues.
- Post 3–Post 8: Mounting of the front suspension, AC piping, brackets, and floor side members. These components form the foundation of vehicle stability and climate control.
- Post 9–Post 12: Integration of wiring harnesses, brake and clutch pedals, and electrical panels. These are essential for vehicle functionality, including driving control and signal transmission.
- Post 13–Post 16: Installation of interior features such as safety belts, dashboard, emblem, and door sealants. These components contribute to safety, aesthetics, and interior finishing.

After this phase, the vehicle proceeds to the Trim Line Assembly, where components such as the radiator, wipers, pedals, and wiring systems are connected. The chassis line then joins the engine and drivetrain to the body using an overhead conveyor system, allowing synchronized assembly with high precision.

The workflow observed during the internship demonstrated a clear application of lean manufacturing principles, particularly in minimizing waste, optimizing labor, and standardizing work procedures. The use of robotic sealers and conveyor systems reduces human error and enhances production speed while maintaining consistent product quality. Additionally, each workstation follows Standard Operating Procedures (SOP) and takt time, ensuring that the production cycle aligns with overall factory throughput goals [15]. From a systems engineering perspective, the integration of manual and automated processes illustrates hybrid manufacturing, where human oversight complements robotic precision. The use of tools such as manual lifters also reflects attention to ergonomic factors, minimizing physical strain on workers and promoting a safer work environment [14].

The internship also highlighted several potential areas for process optimization. For example, during the observation at Post 11 and 12, wiring harness installation required significant manual adjustment due to slight variations in component alignment. This suggests opportunities for jig and fixture improvement, or tighter vendor quality control. Moreover, the final inspection process could benefit from a more digitized checklist system to reduce dependency on paper-based documentation.

Overall, the internship provided first-hand exposure to a real-world automotive production system and emphasized the importance of coordination between engineering design, production planning, and quality assurance. It also reinforced the necessity of continuous improvement (kaizen) in industrial settings to maintain competitiveness and sustainability in manufacturing [16].

## 4. Conclusion

The internship conducted at PT. Suzuki Indomobil Motor Plant Cikarang, specifically within the Department 3.2 Production – Assy Body, provided practical exposure to the structured and standardized processes of automotive assembly lines. Through direct observation of the 16 assembly posts, as well as subsequent stages in the trim and chassis lines, it became evident that the integration of manual labor and automation plays a crucial role in ensuring production efficiency, precision, and product quality. Key takeaways include the effective application of robotic systems such as sealant applicators, ergonomic tools like manual lifters, and conveyor-based movement that supports continuous workflow. Each workstation adheres to strict Standard Operating Procedures (SOP), with clearly defined roles and takt times that reflect lean manufacturing principles. The internship experience also highlighted areas for potential improvement, such as the optimization of wiring installation and the digitization of inspection documentation. Overall, this work practice has enhanced the understanding of modern manufacturing systems, teamwork dynamics, quality assurance protocols, and the importance of process consistency in industrial-scale vehicle production.

## 5. Acknowledgment

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## 6. Abbreviations

| *Abbreviation* | Full Term |
|---|---|
| *Assy* | Assembly |
| *SOP* | Standard Operating Procedure |
| *AC* | Air Conditioning |
| *QC* | Quality Control |
| *Kaizen* | Continuous Improvement |

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