**A STUDY ON PRODUCTION PLANNING AND SCHEDULING IN THE CHEMICAL INDUSTRY: A CASE STUDY OF ASHU ORGANICS**

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**ABSTRACT**

Production planning and scheduling are core elements in achieving manufacturing efficiency, particularly in industries characterized by complexity and stringent compliance requirements, such as chemicals. This study aims to investigate how Ashu Organics, a specialty chemical manufacturer, manages these operations effectively. By analyzing production processes, scheduling methods, and resource management practices, the paper presents actionable insights for improving productivity, reducing waste, and optimizing overall operations. The paper also explores the company’s approach to overcoming real-world challenges such as equipment downtime, volatile raw material pricing, and environmental constraints. The findings underscore the growing need for digital integration and agile decision-making in manufacturing planning.

**Keywords**

Production Planning, Scheduling, Chemical Industry, Operational Efficiency, Process Optimization, Manufacturing Strategy, Ashu Organics, ERP, Resource Allocation, Lean Manufacturing

**1. INTRODUCTION**

Efficient manufacturing planning is essential to the success of any production business enterprise. In the chemical company, where precision, timing, and safety play an important role, having a sturdy planning and scheduling technique isn't elective—it's far important. At Ashu Organics, a company managing robust point chemical materials, handling more than one product trace, ensuring compliance with regulatory requirements, and meeting fluctuating global needs are each day demanding conditions.

The need for adaptive scheduling mechanisms and real-time monitoring is growing. From sourcing uncooked materials to assembling purchaser specs and managing inventories in the course of specific production net web sites, the placement of manufacturing planning is extensive. This paper gives an intensive examination of Ashu Organics’ internal systems and workflows that help them preserve overall performance and fine requirements at the same time as handing over the charge to clients.

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**2. OBJECTIVES OF THE STUDY**

This study specialises in the following objectives:

• To offer a dependent evaluation of manufacturing plans in a chemical production context.

• To highlight how Ashu Organics allocates assets, schedules operations, and manages timelines.

• To understand the limitations and bottlenecks faced in a normal chemical production setup.

• To examine the software of lean principles and ERP gear in streamlining operations.

• To endorse actionable upgrades primarily based on modern gaps and emerging quality practices.

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**3. RESEARCH METHODOLOGY**

This study employs a qualitative case-based study approach. The study's approach involves:

• Primary Research: Observations, discussions, and interviews in some unspecified time in the future of an internship at Ashu Organics from May to June 2024.

• Secondary Research: Analysis of making plans, critiques, ERP logs, manufacturing information, and company benchmarks.

• Tools Used: Gantt charts, flow charts, capacity planning sheets, and batch documentation.

• Sample Site: Manufacturing Unit at Badlapur MIDC

The method goals to bridge theoretical frameworks with realistic programs discovered within the agency.

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**4. COMPANY OVERVIEW: ASHU ORGANICS**

Ashu Organics Pvt. Ltd. is a well-established chemical manufacturer with over 4 a long time of experience. The corporation operates four manufacturing websites throughout Maharashtra, each committed to a particular chemical approach. The organization is known for its custom-designed product services, export orientation, and R&D skills.

Vision:

To be the primary price writer in the best specialty chemical enterprise.

Mission:

To always produce and deliver better chemistry than the market opposition, improving purchaser satisfaction and product outstanding.

Key Operations:

• Exclusive product development from lab to business scale.

• Custom production for multinational customers.

• Exporting to over sixteen nations together including the USA, China, and the EU markets.

• Compliance with global safety and extraordinary requirements.

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**5. PRODUCTION PLANNING AND SCHEDULING PROCESS**

Ashu Organics employs a scientific and multi-level technique for manufacturing planning:

5.1 Forecasting and Capacity Planning:

Using historic income facts and customer forecasts, production objectives are set quarterly. Capacity planning is aligned with device availability, manpower, and client demand cycles.

5.2 Material Procurement:

Critical uncooked substances are procured via annual contracts to keep the supply chain balanced. Vendor reliability is regularly assessed. Procurement cycles are synced with production targets to keep away from overstocking and wastage.

5.3 Scheduling:

Gantt charts and ERP-generated production timelines help allocate duties during production strains. Scheduling contains:

• Maintenance slots

• Batch sequencing is primarily based on reactivity

• Priority jobs for immoderate-rate orders

5.4 Execution and Control:

Production statistics are logged batch-smart. Supervisors show each shift and track deviations. Quality assessments are included at uncooked material intake, mid-batch stage, and final product stage.

5.5 Feedback and Rescheduling:

Weekly review conferences help observe manufacturing gaps, rejections, and output efficiency. Based on this, schedules are adjusted for the following cycle.

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**6. ROLE DURING INTERNSHIP**

The author labored underneath the Production Manager and became concerned in:

• Preparing precise production plans based on orders and forecasts.

• Allocating manpower and devices for optimized batch operations.

• Reviewing batch checking out parameters and suggesting modifications.

• Documenting raw fabric utilization, in-gadget results, and the very last batch outputs.

• Identifying technique inefficiencies, particularly in cycle time and alertness intake.

The enjoy highlighted the significance of balancing technical accuracy with operational flexibility.

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**7. CHALLENGES IN PRODUCTION PLANNING**

7.1 Material Variability:

Raw cloth purity regularly influences yield and batch stability. Frequent exquisite exams are critical.

7.2 Equipment Constraints:

Limited availability of specialised reactors or drying devices from every now and then results in scheduling conflicts and production delays.

7.3 Utility Reliability:

Inconsistent power and water delivery can interrupt batch continuity, especially in multi-phase reactions.

7.4 Documentation Load:

Compliance requires retaining exhaustive logs—GRNs, batch facts, safety critiques—which offer overhead and necessitate skilled manpower.

7.5 Regulatory Compliance:

Adhering to GHS (Globally Harmonized System), REACH, and Indian CPCB norms affords complexity to batch making plans and waste disposal.

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**8. FINDINGS AND INSIGHTS**

• Production managers rely carefully on ERP-generated schedules but override them for high-priority batches.

• SOPs are well set up, but adherence is inconsistent during shifts.

• Real-time tracking tools (like SCADA) are underutilized.

• Batch documentation enables exceptional tracking, but can get rid of the table updating.

• Inter-department communique (planning, QC, stores) remains vital.

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**9. RECOMMENDATIONS**

• Digital Integration: Invest in MES (Manufacturing Execution Systems) to music stay popularity of batches.

• Lean Training: Introduce non-stop development workshops for operators and supervisors.

• Preventive Maintenance: Adopt predictive equipment to keep away from tool breakdown inside the path of critical runs.

• Data Analytics: Use historic information to forecast bottlenecks and more accurately aid desires extra correctly.

• Sustainability Practices: Upgrade effluent remedy units and use method modeling to reduce energy usage.

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**10. CONCLUSION**

This research reaffirms that production planning and scheduling are essential for performance, cost discount, and the best guarantee in chemical manufacturing. Ashu Organics demonstrates how a medium-scale organization can achieve stability and flexibility with shape. The organization’s attention to making plans, responsiveness to demanding situations, and dedication to protection and customer satisfaction sets a benchmark in the organization.

Moving forward, adopting Industry 4. Zero technologies and refining inner workflows will allow Ashu Organics to scale sustainably whilst keeping its aggressive place.

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