

Production in a Factory – A Paper Mill



Handicraft production is done at home by small families with the help of some simple tools. In contrast, factories produce goods on a large scale with the help of machines and a large number of workers. Let us find out how production is organised in large factories.

- ◆ Have you ever visited any factory? Describe it.
- ◆ Draw a picture of the factory you visited and using your imagination, describe the activities inside a factory in 300 words.

We use so much of paper in our day to day lives. Do you know how is the paper found in books, records, registers, progress reports and newspapers made? There are

two paper mills in Telangana - Sirpur Kagaznagar (Komrambheem district) and Bhadrachalam (Bhadrachalam district).

- ◆ Mark the two districts in a map of Telangana. Why do you think are they located there?

Raw Materials

The material required to produce a commodity is called raw material. Factories require a large quantity and a continuous supply of raw material. You will



*Fig 9.1
Factory from outside*



Fig 9.2 Lorries waiting with bamboo loads

find dozens of lorries supplying raw material to factories every day. Paper mills generally use wood from bamboo, eucalyptus and subabul trees. Subabul wood is most widely used now. Besides wood, a number of chemicals like common salt and caustic soda are also used in the different stages of paper-making. Scrap paper is also recycled in paper mills.

Factories use heavy machinery that is run on electricity. For example, the paper mill shown in the figure 11.1 requires nearly 25 Mega Watts of electricity every year. More than half of the electricity requirement is met through the factory's own power generators. Besides electricity, the mill requires a large quantity of clean water throughout the year.

Paper mills and Disappearance of Bamboo

Although raw material for paper is available in the forests, it is not very easy to procure. Paper mills are generally established near forests where bamboo and other soft wood trees are available.

Paper mills engage contractors to supply bamboo and other raw material. A few decades ago, contractors employed tribal people (like those living in Penugolu hills you read about in Class VI) to cut bamboo from forests. Due to excessive cutting in the past, there are no bamboos trees available in forests near the paper mills now.

Hence, these mills are looking for alternative raw materials like subabul, trees which are grown in villages. This led the government to encourage people to grow subabul trees on farmland. Now-a-days, paper mills bring wood from distant places.

- ◆ What are the most important raw material required for the paper industry?
- ◆ Would you consider electricity as a raw material? Give reasons.
- ◆ Discuss with your teacher a few mills or factories you know about and fill in the table.



Fig 9.3 Bamboo lifter

S.No.	Product	Name of the industry	Raw Material
1	Shoe/Chappel	Footwear industry	Leather / rubber / canvas
2			
3			
4			

- ◆ Do you think if we use more paper, we need to cut more forests or reduce the area under cultivation? Discuss.

When we visited the paper mill, we found 4-5 lorries with loads of subabul wood waiting outside the mill gate. They would be allowed to enter the mill only after 9.30 a.m. There were separate gates – one for the workers and the other large gate for the vehicles. We had to take prior permission from the paper mill authorities to visit the mill.

Process of Paper-making

Inside the factory compound, we saw a lifter crane lifting subabul wood from a lorry and placing it on an iron platform. A conveyor belt took the wood to the cutting machine. Paper is actually made in five stages. This paper mill has separate sections for each stage which uses different machines and raw materials. The stages are as follows:

(i) *Chipping*: In the first stage, large pieces of wood are cut into small chips with the help of large machines. They can cut a lorry load of wood into chips in about 30 minutes. There are about 15 to 20 workers in this section. The chips are then separated according to size. The big chips are again cut into smaller chips. Work goes in this way throughout the day. Can you imagine how many trees have to be cut to run a paper mill for just one day i.e. 24 hours?

(ii) *Making of wood pulp*: The small wood chips are sent to fibre line section. In this section, the wood chips are boiled with some chemicals in large vessels. Through this process, the wood chips are turned into a pulp of thin fibres (like cotton fibres). The liquid pulp is then whitened



Fig 9.4 Labourer at chipping machine



Fig 9.5 Labourers at setting machine



Fig 9.6 Pulping machine (Fiber line)

using chemicals. It then becomes creamy. We found the liquid pulp in milky white colour without any dust particles.

(iii) *Spreading the pulp*: The liquid pulp is spread on thin screens over a cylinder. This is an important stage as the width, length and thickness of the paper is set at this stage. The pulp dries up as the water drains out and evaporates due to heat. Once this is done, the pulp is forwarded through the conveyer belt.

(iv) *Pressing, drying and rolling*: The drying pulp is pressed by rollers to smoothen it. When the pulp dries up completely, we get a sheet of paper which is then rolled up.

(v) *Cutting*: The paper is cut in the cutting machines according to the size required. Paper is made into rolls and sheets as well. It is then packed and sent to godowns.

The production work takes place continuously in all the sections simultaneously.

Work in Batches

The paper in the form of rolls and sheets is preserved in godowns. Each roll is labeled with a Batch/Lot no., weight etc. What is a batch? When a lorry load of wood is brought into the factory, the entire quantity of wood is given a batch number. This batch is then sent to different sections one after the other. Raw material of one batch would be processed together at each stage. For example, when batch No. 201 is being cut into small pieces, simultaneously the previous batch (No. 200) would be in the section for making pulp and batch No. 199 would be in the spreading section and so on. As soon as No. 201 is cut into pieces, it would be sent to the next section and No. 202 would come up for cutting into pieces.

Papers produced in one batch would have the same inputs and processing, so their quality will be the same. The batch system allows a factory to produce continuously throughout the day. It also allows the managers to trace any mistake in the product by checking what went wrong with a particular batch.

Working Hours and Shifts

This paper mill runs 24 hours a day. The workers work in three shifts of eight hours each. They are 'A', 'B' and 'C' shifts. In each shift, about 800-900 workers are at work.

A Shift: 6 AM to 2 PM

B Shift: 2 PM to 10 PM

C Shift: 10 PM to 6 AM (Night Shift)

Night shift workers get a special allowance. Workers change their shift

cyclically. Workers of each shift have to move from A shift to B and then to C every week. There is also a general shift for the administrative staff which is from 9.30 am to 5 pm. Administrative staff look after the management, accounts, trade and sales of the product and workers' welfare activities etc.

Selling the Paper

This paper mill has marketing depots in different cities. It also sells paper to other countries such as Sri Lanka, Bangladesh, Nepal, Malaysia, Singapore, Nigeria and South Africa. The paper is sold through these depots.

Developed railways and roadways make it is easy to transport wood and paper to and from the mill.

- ◆ Why is there a security guard at the gate? Enact how the watchman behaves. Which persons or vehicles does he allow or not allow inside the factory?

Working in Paper Mill

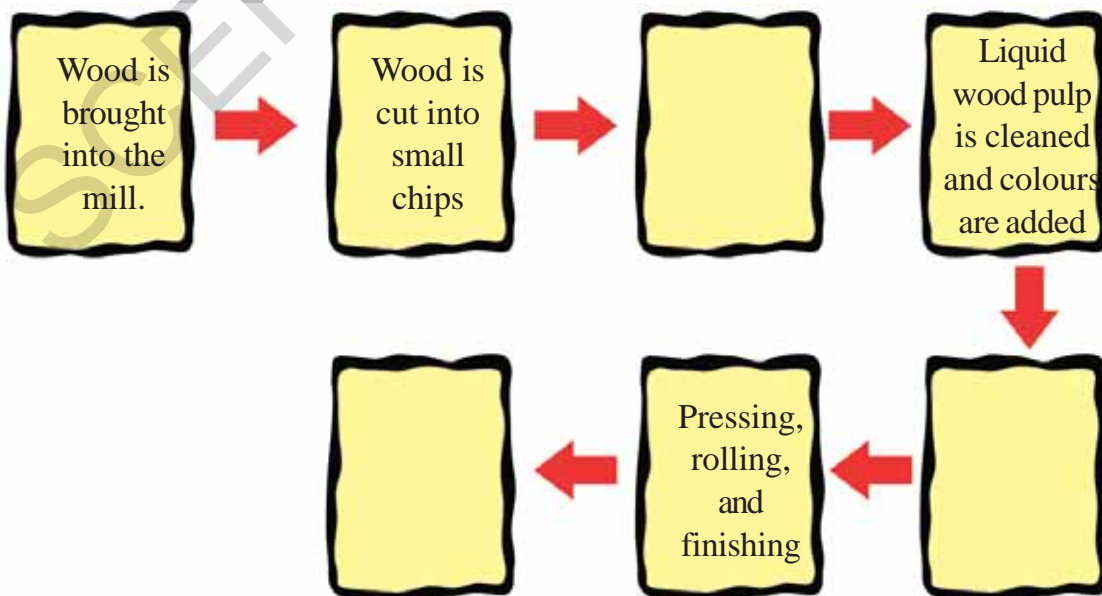
A factory employs a large number of workers of different kinds - some work on machines, some help them, some take care of electrical fittings, some help in transporting the materials etc. Some of them are highly qualified engineers while others may have education from ITI and polytechnic colleges. Still others may be illiterate doing manual work like cleaning. A factory also employs people on different terms and conditions.

- ◆ Why is it necessary to put the Label / Batch no. on the paper rolls?
- ◆ Why do you think does the paper mill work round the clock? Compare this with agricultural field work.

Some are regular 'permanent' workers of the factory, while some others may be employed as casual workers when the need arises; still others are employed as contract workers. Let us look at this in detail.

Suraj is a permanent worker in the paper mill. You can see him in his uniform - blue shirt and khaki pant in the pressing section.

Fill in the blanks in the flow chart given below:



He has been working in this mill for more than 10 years and gets a salary of Rs. 15,000 per month. As a regular employee, he gets a number of benefits like Provident Fund (that will be paid to him when he retires from service), medical insurance etc. In addition, if, for any reason, his employment is terminated or he cannot work due to an accident, he will be paid a compensation by the factory. He will also get an increment in salary every year. If he or his family members become sick, he takes them to nearby Employees State Insurance (ESI) dispensary and gets medicines free of cost. He pays a small amount and the paper mill pays some amount for availing this facility. Suraj gets regular holidays – one day every week, on festivals, and some additional leaves. He is also given allowances to buy the uniform and get it washed. In due course, Suraj gets bonus too, an additional amount paid to workers when the paper mill earns profits. There are about 1800 such permanent workers in the mill.

Chandu is not a permanent worker but he comes daily and works in the factory.

He is a contract labourer. He is usually asked to help in unloading the trucks or in packing and loading the paper. Last year, a labour contractor came to his village in Maharashtra and promised him a job in this mill. Workers like Chandu are paid a lower salary than permanent workers (about Rs.8000 a month). They do not get allowances, medical help, bonus and paid holidays. However, they get work throughout the year and may become permanent workers after two or three years.

The women who work in this factory usually clean the floors and paste labels on the paper packets. Tara is working as a casual worker in this factory. Workers who are employed on and off are called ‘Casual Workers.’ Tara comes every morning to the factory to see if there is work. Usually they employ her for four or five days in a week to clean the floors of the factory. In the section where wood is chipped, there is a lot of wood dust and chips all over the floor. All this has to be cleaned and the machines are to be

dusted properly. She is paid about Rs.100-150 on a daily basis. Though she has been working for more than three years, she earns only Rs. 2500 a month. She is not eligible for any of the facilities that are available to permanent workers like Suraj.

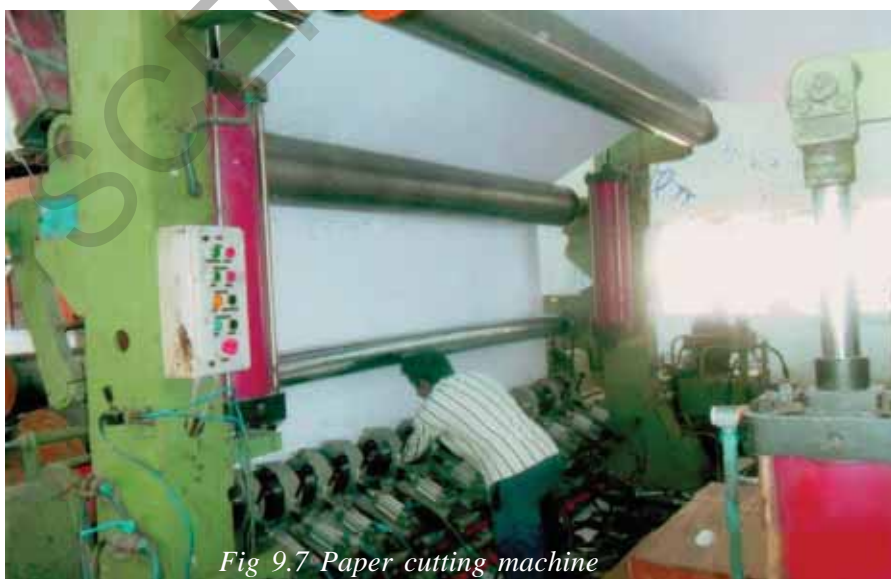


Fig 9.7 Paper cutting machine

Usually factory owners try to reduce their costs by employing casual workers even for regular work. Sometimes, they bring new machines which require fewer workers. In such situations, the workers and their unions resort to agitations and then bargain with the managers to improve their lot.



Fig 9.8 Inside the factory

Besides the workers, the mill also employs a number of accountants, clerks and managers who are paid better salaries. The senior managers who are usually from the families of the owners of the mill get very high salaries along with a number of allowances like free housing and free education for children.

Who Owns the Paper Mill?

This mill does not have a single owner. Some people got together to form a company which owns this mill. These people invested large amounts of money and also borrowed money from the banks

◆ Fill the table comparing Suraj, Chandu and Tara's work :

S.No.	Name	Work	Experience	Income	Other Benefits
1	Suraj				
2	Chandu				
3	Tara				

- ◆ Why do you think does a factory employ people on different terms - regular, temporary and casual labourers?
- ◆ What are the problems faced by temporary/casual workers?
- ◆ Why do you think people from faraway places come to work in the paper mills in Telangana?

to set up this factory. They appoint the managers, other administrative staff and regular employees. The workers, managers and administrative staff are paid salaries but not the owners. The owners share amongst themselves whatever money is left after paying wages and other costs of running this paper mill. That is, they get all the profits from the factory. They also bear the losses, if any.

Can you summarise the main features of factory production using the following points?

1. Machines:
2. Raw Materials:
3. Energy and Water:
4. Production:
5. Workers:
6. Managers:
7. Market:
8. Owners:

Some factories are owned not by individual owners or group of owners but by the government. These are run by the government for the welfare of all people

Most factories need raw materials in such large quantities that natural resources like forests, rivers and mines are rapidly exhausting. They also give out smoke and pollute the rivers and surrounding land with their chemical effluents. Thus, there is a need to develop methods to control the damage they cause to the environment.

Factories provide employment to a large number of people. However, the workers who work in these factories often find the work very tedious and many of them become sick due to exposure to dust and chemicals. They also get paid very little. They are also often forced to live in slums with poor facilities.

One of the major challenges before us is to find out how to balance our need for various kinds of goods and the ill effects of the factory system and how to make the life of workers comfortable and dignified.

Pollution

When we were going to the other side of the paper mill, we found some unpleasant smell in the area. This was due to the use of chemicals. After coming out of the paper mill, we talked to a few residents living nearby. They said that this stench was usual and it was common to find dust released from the industry settle on the leaves of plants, in the farms, trees in the nearby area and on garden plants. The mill also draws a lot of fresh water from the river but lets out waste water containing poisonous chemicals, which eventually joins the river.

Only last year, the paper mill got an effluent treatment plant to which all the waste water is sent. This machine removes contaminants (substances causing harm to living organisms through air, water, soil and food) and produce environmentally safe water (treated effluent) and solid waste suitable for disposal or reuse (which is normally used as a fertilizer). Besides this, the paper mills use treated effluent to water their gardens. Some farmers use this for irrigation too.

There are a large number of factories in our state and country, which produce diverse articles of use. They produce them in large quantities in a short time.



Fig 9.9 Rolls of papers

Keywords :

1. Production process
2. Conveyor Belt
3. Fiberline
4. Label
5. Allowance
6. Bonus
7. Pollution
8. Working hours
9. Raw material

Improve your learning

1. Imagine that you wish to start a leather or textile factory. What are the aspects you will have to consider for setting up a mill?
2. Explain the process of paper-making in your own words.
3. Do you think this paper mill will stop working one day? If it does, what will be the impact on the labourers' lives?
4. Imagine a world without paper. What alternatives will you use instead of paper?
5. What are your suggestions to stop the pollution caused by industries?
6. Organise a debate in the classroom on the pros and cons of the paper mill.
7. List the benefits and income received by a regular employee of the paper mill. Contrast them with that of a temporary employee and a casual worker.
8. Compare the production of baskets by craftspersons and production of paper with reference to the following points: (i) Workplace (ii) Tools/machines (iii) Raw materials (iv) Workers (v) Market (vi) Owners.
9. There is a paper mill at Sirpur Kagaznagar in Komrambheem district. Why do you think it is not established in the district headquarters? Discuss.
10. Locate the following countries on the world map.
 - a) Sri Lanka
 - b) Singapore
 - c) Nigeria
 - d) South Africa
 - e) Nepal
11. Read the third para of page 91. Do you think that the factories are taking care of their workers health? Why?



Project:

You might have noticed some factories in your area causing pollution. Or imagine that a factory in your locality is causing pollution. Write a letter to the editor of a local newspaper and discuss the contents in the classroom.