# C H A P T E R - 5

#### PRODUCTION IN CO-OPERATIVE FACTORIES

#### 1. INTRODUCTION

After looking into the details of the organizational structure of co-operative factories, it will be necessary to analyse now these factories operate and produce and how much they produce. So the production inall these factories is presented below.

# 2. <u>SHRI PANCHAGANGA SAHAKARI SAKHAR KARKHANA LTD.</u> GANGANAGAK ICHALKARANJI

#### 2.1 Process of Sugar Manufacture

The sugarcane brought from 102 villages from shareholders and non-shareholders of the area under operation on the basis of recovery. The agriculture department prepares the record of name of cane grower, survey number of land and the vehicle number.

The supervisor takes the weights of sugarcane and truck/tractor separately with the help of way bridge. The photograph of cane transportation by Panchaganga is shown on page 57. There are 3 way bridge in the factory and 30 tonnes sugarcane can be weighted at time. Then the sugarcane with the help of cane unloader is put into the cane carrier. The cane carriers are two in number. One carrier is the big mill, called as new mill. The size of the mill is  $36" \times 72"$ . The crusning capacity is 3800 Metric Tonne per day.



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CANE TRANSPORTATION SDCHEME BY PANCHAGANGA SUGAR FACTORY

Another carrier is called as old mill (small mill). The size of the mill is 23" x 48". The crushing capacity is 1200 Metric Tonne per day. The sugarcane can be crushed with the help of cane leveller cane cutter sharader. The crushed sugarcane is provided to the two mills. The Big mill has 6 units and the small has 5 units. The cane is milled to obtain juice. The juice obtained from mills is sieved and weighed on weighing scale before processing.

#### 2.2 Juice clerification

Weigned juice is clearified as follows :

- 1. Heated to 65 to 70° C temperature.
- Lime with milk of lime and sulphated with sulpher dioxide gas, in contineous reaction tank.
- 3. Heated again to above boiling point and let in doors (continuous subsiders) to settle.
- Clear juice from Door is decanted and taken to evaporators for concentration.
- 5. The muddy juice from Door is filtered on oliver rotary filters and mud are let out. These muds are used for manufacturing purpose.

There are four doors. The first and third door are for the pure juice, second and fourth door for mud. The mud can be used for agricultural purposes.

The juice is processed for sugar recovery and the bagasse is used as fuel in boilers. The steam generated is used in driving the prime movers of mills and power generators.

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There are seven boilers in this factory. The boilers are as follows :

1) 16	Tonnes	2	Nos.
2) 20	tonnes	3	Nos.
3) 30	tonnes	1	No.
4) 35	tonnes	1	No.
	Total	7	Boilers

2.3 Juice Concentration

The clear juice from doors is concentrated to the desired thickness (60-65°C brix) in evaporators. Multiple effect evaporators are used for the purpose.

Crystallization juice (syrup) is again sulphated to bleach the colouring matters. This is boiled in pans along with crystal footings of various sizes, groving in steps. The sugar is allowed to grow to the desired size and then the massecuita dropped to cropped to crystallizers. This mass massecuite is centrifuged screen to get the crystal separated from mother liquine, surrounding them, washed side by side by water and steam. So obtained clear crystals are drived on noppers and then graded on sizes and bagged in 100 Kg jute bags.

Since the total sugar from the syrup cannot be exhausted in one boiling itself, it is required that the mother liquor separated from crystal is again boiled with small size crystals to part with its sugar contents, till it has reached a stage when no far the sugar can taken out by crystallization process. The factory is following three schemes for this purpose. Thus it can be said that the manufacture of sugar is comprised of different processes which are mainly as follows :

- a) Separation of the juice from the fibre by pressure.
- b) Classification and removal of impurities.
- c) Removal of the nign percentage of the water by evaporation.
- d) Conversion of sugar from a dissolved condition into crystal form.
- e) Separation of crystal sugar from the mother liquor or molasses by centrifugals.
- f) Drying and packing of sugar in bags.

The production process of Panchaganga is snown in Figure 2.1

# 2.4 PRODUCTION IN PANCHAGANGA

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The details of sugar production in Panchaganga are presented in Table 5.1.



FIG. 2.1 THE PRODUCTION PROCESS OF PANCHAGANGA SUGAR FACTORY

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No.	Crushing season	Sugarcane crushing Tons in lacs	Production of sdugar bags in lacs	Recovery
1.	1958 - 59	0.48	0.35	9.10
2.	1959 - 60	0.851	1.01	11.96
3.	1960 - 61	1.59	1.83	11.66
4.	1961 - 62	1.42	1.73	12.10
5.	1962-4363	1.85	2.24	12.12
6.	1963 - 64	1.94	2.35	12.08
7.	1964 - 65	2.31	2.62	11.36
8.	1965 - 66	2.47	2.68	10.87
9.	1966 – 67	1.69	2.09	12.39
10.	1967 - 68	2.20	2.63	11.97
11.	1968 - 69	3.50	3.82	10.92
12.	1969 - 70	4.19	4.67	11.04
13.	1970 - 71	4.81	5.51	11.31
14.	1971 - 72	4.60	5.31	11.54
15.	1972-73	4.65	5.37	11.32
16.	1973 - 74	3.87	4.26	11.09
17.	1974 – 75	6.10	7.18	11.85
18.	1975 – 76	5.65	6.67	11.87
19.	1976 – 77	5.01	5.90	11.75
20.	1977 - 78	7.62	8.75	11.54
21.	1978 - 79	8.40	9.19	11.15
22.	1979 - 80	6.26	7.19	11.53
23.	1980 - 81	7.55	8.90	11.86
24.	1981 - 82	9.65	9.87	11.68
25.	1982 - 83	11.19	11.35	11.68
26.	1983 - 84	7.11	8.10	11.36
27.	1984 - 85	8.43	9.68	11.57
28.	1985 - 86	7.49	8.72	11.77
29.	1986 - 87	9.47	10.68	11.39
30.	1987 - 88	9.14	10.51	11.47

PANCHAGANGA : PRODUCTION

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The table indicates fluctuating trend in production as regards cane crusned and sugar bags produced. The recovery also is fluctuating in between 9.10 and 12.39.

#### 3.1 SPINNING MILL PROCESS : DECCAN, KOLHAPUR AND ICO

The raw material i.e. cotton is purchased from Manarashtra, Karnatak, Gujarat, Andnra Pradesh. The varieties of cotton are H-4, S-4, Sujata, Vijaya Laxmi, 1007, 170 Co2.

#### 3.2 Blow-Room Section

In the Blow-Room Section, the cotton can be separated. The cotton is passed from convert duck machine and the iron can be taken away from the cotton with the help of auto-mixer machine. The small pieces waste product and soil can be taken away with the hlep of Axiflow cleaner machine.

The Blow-Room line is composed of the units of following machines.

- 1) Bail Braker
- 2) Spirao opener
- 3) Skrisnner fitter
- 4) Cuicher machine

In the last machine the cotton is cleaned. This can be taken away with the help of modern automatic machine. The NSE Blow room of ICOSPIN is shown on page 64.

#### 3.3 Carding Department

In this department the cotton is made available for the next process with the help of carding machines. The small part of the



\_cotton mixed in the air. All the small part of the cotton can be collected with the help of central dust extraction and the air is clean. In this process the standard of cotton is high.

### 3.4 Combing Department :

In this department the process is done by the comber machine. In this department, the cotton is in the form of 'Palu'. The size and weight of the Palu is uniform. It can be collected in can with the help of the draw frame machine and auto leveler machine. The photograph of speed comber of ICOSPIN is shown on page 66.

#### 3.5 Speed Fram Machine

In this process with the help of the speed frame machine, the palu is made more straight and collected on the bobin. The bobin is of plastic or wooden.

#### 3.6 Plant Room

The plant room is essential department in the factory. The numidification plant can adjust the temperature in the factory. Only in a particular temperature, the high quality soot can be produced.

Normal temperature in winter and rainy season 50 to 55 degree centegrade and in summer season 25 to 30 degree centegrade.

#### 3.7 King Frame Department

This departmental process is important in spinning mill activities. There are three roller - Low speed, Median speed and high speed and the soot can be lifted to the bobin.

![](_page_10_Picture_0.jpeg)

Lakshmi-Rieter High Speed Combers-E7/4

LAKSHMI-RIETER HIGH SPEED COMBERS-E7/4

The soot process projects can be measured and the financial position of the factory is dependent on number of spindles.

#### 3.8 Winding Department

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In this department the collection of soot from ring frame department is done. It is in the form of cone. The cone is generally 1 Kg. The photograph of cone winding is snown on page 68. The cones are packed in plastic bags.

The spindle capacity of spinning mills in Ichalkaranji is shown below:

#### <u>Mill</u>

#### Total Spindle

1)	Deccan Co-operative Spinning Mill Ltd.,Ichalkaranji	83,124
2)	Kolnapur Zilna Sanakari Vinkari Soot Girani Ltd., Icnalkaranji	75,240
3)	Tne Ichalkaranji Co-operative Spinning Mill Ltd., Icnalkaranji	56,432
4)	Nav Manarasntra Sahakari Soot Girani Ltd., Icnalkaranji.	25,000

#### 3.8 Production in Deccan

The details regarding production in Deccan are presented in Table 5.2.

![](_page_12_Picture_0.jpeg)

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RJK-Cone Winding

RJK -CONE WINDING

TABLE 5.2

No .	Year	Production of Yarn in Kg. lakns	
1	1962–63	1.08	
2	1963-64	3.21	
3	1964–65	2.79	
4	1965-66	3.95	
5	1966-67	9.89	
6	,1967-68	11.02	
7	1968 <b>–6</b> 9	11.34	
8	1969–70	11.44	
9	1970-71	12.64	
10	1971–72	14.72	
11	1972-73	15.33	
12	1973–74	16.55	
13	1974-75	16.82	
14	1975-76	15.33	
15	1976–77	13.45	
16	1977-78	19.41	
17	1978–79	26.43	
18	1979-80	30.80	
19	1980-81	31.50	
20	1981-82	33.16	
21	1982-83	35.29	
22	1983-84	37.20	
23	1984-85	40.90	
24	1985-86	46.06	·
25	1986-87	50.52	

DECCAN SPINNING MILL : PRODUCTION

The production in the year 1962-63 was 1.08 laken kg and it has gone upto 50.52 laken kg in 1986-87. The production is increased due

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to the increase in the number of spindles. The table also snows a fluctuating trend in production.

# 3.9 Production in Kolhapur Zilha

The production in Kolnapur Zilna is presented in Table 5.3.

11968-692.8421969-706.8031970-718.7541971-729.9551972-7310.39	
2       1969-70       6.80         3       1970-71       8.75         4       1971-72       9.95         5       1972-73       10.39	
3       1970-71       8.75         4       1971-72       9.95         5       1972-73       10.39	
4 1971-72 9.95 5 1972-73 10.39	
5 1972-73 10.39	
6 1973–74 11.59	
7 1974-75 11.33	
8 1975-76 14.67	
9 1976-77 18.36	
10 1977-78 21.32	
11 1978–79 21.95	
12 1979-80 25.07	1
13 1980–81 30.41	
14 1981-82 , 36.75	
15 1982-83 38.05	
16 1983-84 42.36	
17 1984-85 51.19	
18 1985-86 57.15	
19 1986-87 49.85	

TABLE 5.3

The production of yarn in the year 1968-1969 was 2.84 lakn kg. In the year 1986-1987 it has increased upto 79.85 lakn kg. .

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# KOLHAPUR ZILHA : PRODUCTION

kg. The production has increased constantly upto the year 1985-1986 and then there has been decrease for 1986-87. Thus the production side of the factory is good one.

# 3.10 Production in ICO

The data regarding production in ICO are presented in Table 5.4

#### TABLE 5.4

ICHALKARANJI CO-OPERATIVE SPINNING MILLS LTD., ICHALKARANJI: PRODUCTION

No.	Year	Production of Yarn in Kg. lakns	
1	1977–78	5.41	
2	1978–79	17.34	
3	1979–80	21.88	
4	1980–81	23.68	
5	1981-82	21.92	
6	1982-83	40.73	)
7	1983-84	40.38	
8	1984-85	40.74	
9	1985-86	42.75	
10	1986-87	46.55 🐭	đ
11	1987-88	<b>47.93</b> 1 .	

The production of yarn in 1977-1978 was 5.41 lakn kg. which has increased in 1987-88 to 47.93 lakn kg. Thus the production of farm has been constantly increased. This has been possible due to increase in the number of spindles.

#### 3.11 AUTOMATION IN NAV-MAHARASHTRA

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The Deccan Co-operative Spinning Mill Ltd., Ichalkaranji, Kolnapur Zilha Snetakari Vinkari Sanakari Soot Girani Ltd., Ichalkaranji and the Ichalkaranji Co-operative Spinning Mill Ltd., Ichalkaranji. These three spinning mills are wearking in Ichalkaranji. The manual labour is higher in these mills as compared to Nav Manarashtra Sanakari Soot Girani.

The Nav Maharashtra Sanakari Soot Girani is modern and all the machinery is imported from Italy. The Morzoli Company and Management of Nav Maharashtra Sahakri Soot Girani Ltd., Ichalkaranji nad an agreement buy-back system. They get machinery. These machinery are automatic. It requires less manual labour as compared to the other three mills in Ichalkaranji. The details regarding machinery and operations are given below.

#### 3.12 BLOW-ROOM SECTION

The cotton can be separated automatically. The cotton is passed from conver-duck technique and the iron can be taken away from the cotton with the help auto-mixer machine. The small pieces waste product and soil can be taken away with the help of Axiflow cleaner machines. With the help of horizontal opener, the cotton seeds and small waste products are separated from each other. In this department the machines are automatic, which can be seen in the photograph on page 73.

#### 3.13 COMBING DEPARTMENT

In this department the process is done by the comber machine.

![](_page_17_Picture_0.jpeg)

MARZOLI BLOW-ROOM MACHINERY NAV MAHARASHTRA SAHAKARI SOOT GIRANI LTD., ICHALKARANJI The cotton is in the form of "Plau". The size and weight of the plau is uniform. It can be collected in can. The can filled with the Palu and automatically. It can be taken away and another blank can is placed by the side of the machine.

The plau can be collected in the can with the help of draw frame machine and auto-leveler machine. If the cotton thread is cut, then the machine automatically stops,

#### 3.14 SPEED FRAME

In this process with the nelp of speed fram intermachine, the Palu is made more straignt and collected on the bobin. Important part of this department is that if the small and straight Palu is cut, the machine stops. The process is automatic.

#### 3.15 WINDING DEPARTMENT

In this department the collection of soot from Ring Frame department is done. All the soot from bobin is collected on the ćane. If the thread can be made automatically and the machine starts. It has electronic control. When the cone of soot sompleted, then another cone comes in and the filled cone is passed. This process is also automatic. The cone winding section can be seen in the photograph on page 75.

![](_page_19_Picture_0.jpeg)

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CONE WINDING SECTION NAV MAHARASHTRA SOOT GIRANI LTD., ICHALKARANJI In this Soot Girani most of the macninery is automatic and it requires less manual labour. In India this type of automatic macninery is only in the Nav Maharashtra Sanakari Soot Girani Ltd., Ichalkaranji.

# 3.16 PRODUCTION IN NAV-MAHARASHTRA

The details of production in Nav Maharashtra are presented in Table 5.5.

#### TABLE 5.5

# NAV-MAHARASHTRA : PRODUCTION

No.	Year	Production of Yarn in Kg. lakns	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -
1	1985–86	7,250	
2	1986–87	15,67,004	
3	1987-88	22,22,576	
4	1st July to 28th Oct.1988	7,80,903	

The production yarn has also increased which is clear from the above table.

# 4. LAXMI CO-OPERATIVE PROCESSORS LTD., ICHALKARANJI

from The raw material i.e. dhoti and clotn is brought Madhavanagar, Sangli, Kurundwad, Chandur, Kabnur, Korocni. Ichalkaranji.

#### 4.1 Working of the Process

In this process, the gray cloth is stiched. Then the cloth is mercerised with the help of pwer mercrising machine. The power unit is not in operation since last 4 years.

# 4.2 <u>Bleaching Department</u>

In this department, there is bleacning machinery and with it the mercrised cloth is bleacned. But this department is not in operation. Squizing machine, Skecher machines are also not in operation due to the heavy excise duty of the Government of Manarashtra.

#### 4.3 Finishing Department

Drying macnine - The clothes can be dried with the help of drying machine weith moderate temperature.

#### Caladering macnine, fold macnine -

In this process the bleaching clothes are caladering and falt finish process can be done.

Bleacned cloth is brought for the purpose of finishing.

If the clothes are bleached with the help of power processing. They have to pay high excise duty. But if the cloth is bleached by hand processing, then they have to pay less excise duty. Bleaching cloth can be mercrised, finished with the help of machine. Then this cloth can be caladering. The caladering cloth can be sent to folding and packing.

In the packing department, these can be packed in 10, 20, 50 number of dnoties as per the demands.

#### 4.4 PRODUCTION IN LAXMI

The details regarding production and profit/loss in Laxui are presented in Table 5.6.

						<ul> <li></li> </ul>
LAXMI	PROCESSOR	:	PRODUCTION	AND	PROFIT/LOSS	

No.	Year	Production in Kg in lakn	Profit Rs.in lakn	Loss Rs.in lak
1	1958–59	1.50	0.29	
2	1959–60	3.22	0.40	-
3	1960-61	3.35	0.10	
4	1961-62	3.88	0.29	-
5	1962–63	3.70	0.51	
6	1963-64	3.12	0.25	
7	1964-65	3.43	0.20	-
8	1965-66	3.06	0.10	
9	1967-68	4.05	0.08	-
10	196869	3.93	-	1.39
11	1969-70	5.62	0.16	
12	1970-71	7.57	2.45	****
13	1971-72	6.31	-	0.52
14	1972-73	5.20	_	1.10
15	1973–74	5.59	<b></b> ·	1.52
16	1974–75	5.45	0.95	
17	1975-76	2.62	0.05	
18	1976–77	1.55		1.18
19	1977–78	1.16	-	3.19
20	1978–79	0.65	-	2.93
21	197980	0.26	-	2.87
22	1980-81	4.65	-	5.87
23	1981-82	7.93	3.27	-
24	1982-83	10.53	30.76	-
25	1983-84	10.05	1.31	
26	1984-85	5.54	2.29	
27	198580	6.10	-	9.54 ~
28	1986-87	7.01	0.80	-
29	1987-88	8.51	5.26	-

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The production shows fluctuating trend. The processors has incurred loss during 10 years whereas it has been in profit for the remaining 19 years.

#### 5. THE YASHAWANT CO-OPERATIVE PROCESSORS LTD., ICHALKARANJI

This procesds was esdtablished in the co-operative sector in the year 1963 under the Maharashtra State Co-operative Act 1960 (Kegistration No. KPR/PKG(I)/26/1963 dated 14-3-1963) and it had gone into production on 8th May 1965 at the auspicious hands of S.K.Day, the non'ble Minister for Social Welfare and Co-operation, Government of India, New Delni. For the formation of the co-operative institution share contribution was collected from small power-loom weavers and traders and the matching contribution was secured from the Govt. of Manarashtra.

The total snare contribution collected from snareholder stands at Ks.12,67,000/- and Ks.12,00,000/- was secured as maktching contribution from the State Government. The total snasre capital as on 30th June 1982 stood at Ks.22,67,000/-.

The structure of membership for the processing is, A Class comprising of small power-loom and hand-loom owners. B Class comprising of co-operative societies C Class comprising of traders and merchants D Class Government of Manarashtra.

In this processors the production is divided into -

(1) Bleacning (2) Mercrising (3) Dyeing

(4) Calendering (5) Printing etc.

# 5.1 Water Pollution Scheme

The important part of the factory is water pollution scheme. Under the provision of water pollution Act 1969, they have formulated a scheme to discharge the effluent from this factory. The consent of the scheme was given on 19th June 1975 and the scheme was completed with about  $1\frac{1}{2}$  years. The scheme was undertaken in consultation with Shri B.Subbarao who is the professor of Walchand College of Engineering Sangli, and is supposed to be an authority for formulating a scheme to treat effluent water. The total cost of the scheme was Gestimated at Rs.2,50,000/-.

#### 5.2 Candy Filteration Plant

In the rainy season, the river water gets muddy and the process cannot have better finish. With a view to solve this difficulty, some permanent arrangement was needed. So the filteration plant was established. The total cost of the project including machinery and civil works was ks.2.50 lakhs.

#### 5.3 Hand Process Unit

Due to irrational and heavy taxation policy of Government, the processor business has suffered to a great extent. The management have decided to accept the situation as it is and to face the same with certain planning of diversification of their present activities.

They have established Ichalkaranji Co-operative nand-processors in their premises to take the advantage of excise duty. This hand process was started in July 1979 and since then it is working satisdfactorily. During the three years span from 1979 to 1982, they have made tooth and nail efforts to pull out the institution from financial crisis and eventually this year 1985 the management could achieve the target while wiping out all accumulated financial losses of Ks.57 lakhs.

# 5.4 Production in Yashwant

The details regarding production and profit/loss in Yashawant are presented in Table 5.7.

		Total bleaching	Profit Pe	Loss Po
No.	Year	in meters in lacs	in lacs	in lacs
1	1965–66	42.30	-	3.15
2	1966-67	136.59	0.65	-
3	1967–68	142.63	0.53	-
4	1968-69	175.77	-	1.44
5	1969–70	221.28	4.27	-
6	1970–71	234.73	0.02	-
7	1971-72	237.28	-	6.42
8	1972–73	333.50	-	6.03
9	1973–74	347.51	12.80	-
10	1974–75	325.59	3.03	-
11	1975-76	363.46	2.09	
12	1976–77	322.85	-	17.91
13	1977-78	278.83	-	23.67
14	1978 <b>–79</b>	220.81	-	9.77
15	1979-80	175.95	-	6.53

#### TABLE 5.7

#### YASHWANT PROCESSORS : PRODUCTION AND PROFIT/LOSS

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Table 5.7 (contd.)

No.	Year	Balance	Profit	Loss
16	1980-81	207.05	.21.84	-
17	1981-82	286.79	37.69	_
18	1982-83	284.38	10.88	-
19	1983-84	296.34	1.13	_
20	1984-85	323.98	0.83	-
21	1985-86	257.14	_	8.96
22	1986-87	290.69	10.13	_
24	1987-88	212.77	4.11	-

The table indicatesd fluctuating trend in production The processors have earned profits in some years and it has incurred losses also.

### 6. SHRI VYANKATESH CO-OPERATIVE PROCESSORS SOCIETY LTD., ICHALKARANJI

Snri Vyankatesn Co-operative Processors Society Ltd., Icnaikaranji is the first co-operative hand-process in Manarashtra.

In this nand process, bleacning department is in operation at present. The bleacning process is as follows. The gray cotton cloth is brought from traders of Ichalkaranji. This raw material is bleacned and mercrised.

In this hand process, the workers work with the help of mercrised machine and produce the mercrised cloth.

All other departments are not working in this factory due to rising prices of raw material and financial conditions of factory.

# CARR. BALASAHEB KHARDEKAR LIBRARD

# 6.1 PRODUCTION IN VYANKATESH

The productioin and profit/loss of Vyankatesn is presented in Table 5.8.

# TABLE 5.8

No.	Year July to June	Total bleaching in meters in lacs	Profit Rs. in lacs	Loss Ks. in lacs
1	1978–79	22.90	_	1.02
2	1979-80	20.26	0.74	-
3	1980-81	19.47	1.12	-
4	1981-82	18.36	-	-
5	1982-83	19.13	0.01	-
6	1983-84	15.80	-	0.17
7	1984-85	23.15	-	2.00
8	1985-86	12.73		1.19
9	1986-87	12.65		4.20

# VYANKATESH PROCESSORS : PROFUCTION, PROFIT/LOSS

The production of bleacning is snowing fluctuating trend. The bleacning production was highest in the year 1984-85 i.e. 23.15 lawn meters.

The processors is in loss since four years due to policy of the Central Government.  $\ensuremath{\gamma}$ 

# 7. <u>THE ICHALKARANJI CO-OPERATIVE CEMENT INDUSTRIES LTD.</u>, <u>ICHALKARANJI</u>

The Co-operative movement was started after independence in Western Maharashtra in Icnalkaranji. The co-operative movement was started in sugar and textile industries and later it has been extended to cement industry also.

This is the first co-operative cement indusktry in western Manarashtra. The founder and Chairman of this cement industry Mr. Partaprao Hodage is B.E.(Mecn.) and other two directors Mr. Kamesh Premaraj Mardne, B.E.(Civil) and Mr.D.M.Briajdar B.E.(Mecn.). Thus three directors are Engineers and Mr. Ashok Govind Govende is B.Com. Thus out of nine directors four are graduates. This is most important feature of this factory.  $\land$ 

The Ichalkaranji Co-operative Cement Industries Ltd., Ichalkaranji is located on Kolhapur-Sangli road near Hatkanangale, 20 Km. from Kolnapur. The factory is regiestered under small scale industry (Registration No.11/13/02574/Prov/SSI dated 2-1-1985. For the production of ordinary portland cement) The unit has installed capacity of 6000 metric tonne per annum (considering 25 days in a month and 300 working days in a year).

The machinery employing vertical shaft klin process is indigenously manufactured by M/s Shree Engineers, Jodnapur.

The brief process of manufacture of port land cement by vertical shaft klin process is explained below.

The raw material lime stone purchased from Lokapur and Yadwad of Karnataka State. Coke from Nagpur, Chandripur, Chiana clay from Hukeri, gypsum from Tamil Nadu and Rajastan States. Black soil from local area of Hatakangale taluka. Thus, it may be noted that the raw materials for cement production are brought from outside.

The lime stone are crushed by Jaw crusher machine, clay and other additives such as laterite, boxite are also crushed.

The crushed lime stone, coke, Chaina clay, soil separately stored automatically in storage staylo. These are again taken out in desired proportions weight batches. They are further conveyed to preblender and the blended material is throughly ground in open circuit ball mill.

In ball mill the crushed and blended material nonogenized the cement powder is stored in bading staylo.

Through an elevator to beinding soil and later to storage soil meal is subsequently lifted to the hopper of the noduliser where nodules are formed.

These nodules travel downward into the klin through a Rotary chute and find an access to the preheating zone followed by calcination and clinkering zones, where in drying, pre-heating calcining and sinter ing take place, leading to conversion of nodules into clinker. This clinker as received from the klin through the cooling zone. The Gypsum is subsequently mixed with in suitable proportion for further grinding in the cement mill to produce the finished product that is the port land cement.

It is important to maintain the chemical and physical requirement of dodules to achieve quality product the process employed 1.1 vertical shaft klin are broadly classified as '

- 1) Black meal process
- 2) Differential heat process
- 3) Shell process.

Black meal process is used in the Ichalkaranji Co-operative Cement industries Ltd., Ichalkaranji, which N.C.B.C. has improved to suit to the Indian conditions. The black meal process is burning a mixture of lime stone, clay, coke-Breeze and corrective material. If any mixed in definite proportion ground to required fineness, which remains unchanged at any stage further. The heat energy required to preheat, calcining at sintering in the shaft klin is approximately 1050 Kg coal per kg of clinker produced which is gained by burning of coke breeze present in the raw mill.

Raw material normally is mixed in following proportions for production one metric tonne of ordinary portland cement :

i)	Lime stone	-	1.3 tonnes
ii)	Clay and additives	<u></u>	0.025 tonnes
iii)	Coke Breeze	-	0.20 tonnes
iv)	Gypsum	-	0.05 tonnes.

The capacity of Ichalkaranji -Co-operative Cement Industry is 20 tonnesd per day. The coke breeze is utilised as fuel to produce the neat required for pre-heating, calcining and sintering of nodules as there is no alternative fuel which can be used in this process. The finished product of cement is snown on page 87.

The compressive strength of I.C.C.I. cement and I.S.I. cement is presented in Table 5.9.

![](_page_31_Picture_0.jpeg)

# TABLE 5.9

# COMPREHENSIVE STRENGTH OF CEMENT

No.	Particulars	ISI specification	ICCI cement
1.	Compressive strengtn 3 days	160 kg/cm <sup>3</sup>	200 kg/cm²
2	Compressive strengtn 7 days	220 kg/cm <sup>2</sup>	300 kg/cm²
3	Compressive strength 28 days	350 kg/cm <sup>2</sup>	400 kg/cm²
4	Specific surface	2250 kg/cm <sup>2</sup>	3000 kg/cm <sup>2</sup>
5	Soundness expansion	below 1 M.M.	1 M.M.
6	Initial seating time	above 30 min.	80 winutes
7	Final seating time	less 600 min.	85 minuts
8	Weight	50 Kg ± 0.25%	above 50 kg.

# 7.2 PRODUCTION IN CEMENT FACTORY

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The details regarding cement production are presented in Table 5.10.

# TABLE 5.10

No.	Year	Production of cement in metric tonne
1.	1986-87	984.70
2.	1987-88	3041.500

# ICHALKARANJI CEMENT : PRODUCTION

The table clearly indicates that there has been steep rise in cement production in the factory.

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# REFERENCE

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1. Sinha Ram Vichar : Sugar Industry in India, p. 145.

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