



AN ISO 9001 : 2015 CERTIFIED COMPANY

Detailed project report

Sample edition

Projections from FY 2027-28

Project report

High Carbon Ferro Manganese

Installed capacity 18 MT per day

Sector Metal products

Total project cost ₹1,021.21 lakh

Illustrative sample
Figures are representative

Project at a glance

High Carbon Ferro Manganese
18 MT per day

Product	High Carbon Ferro Manganese	Sector	Metal products
Installed capacity	18 MT per day	Annual capacity	5,940 MT per year
Selling price (ex-GST)	₹71,200 per MT	Working days	330 a year
Manpower	90 people	Plant and machinery	₹500.25 lakh
Total project cost	₹1,021.21 lakh	Promoter's contribution	₹255.30 lakh (25%)
Term loan	₹765.91 lakh (75%)	Cash credit limit	₹314.56 lakh
Revenue, Year 3	₹2,960.50 lakh at 70%	Net profit, Year 3	₹219.24 lakh
Return on investment	21.4% a year	Break-even, Year 3	43.0% of capacity
Average DSCR	1.79	Payback period	3.6 years

This is an illustrative sample. Its figures are generated from industry-typical ratios to show the format and depth of an NPCS project report. They are not taken from any NPCS report or any real project, and should not be used for investment or lending decisions.

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1 Introduction

This sample report sets out the techno-economic case for a unit making high carbon ferro manganese. The model plant has an installed capacity of 18 MT per day, which works out to 5,940 MT per year over 330 working days. Its applications range from deoxidising and alloying of carbon steel to export to steel producers abroad.

The projections cover the first five years of operation, starting FY 2027-28. By Year 3 the plant runs at 70% of capacity, with revenue of ₹2,960.50 lakh and a net profit of ₹219.24 lakh.

2 Uses and applications

Demand for the product comes mainly from the following uses:

- Deoxidising and alloying of carbon steel
- Manganese addition in electric arc and induction furnace steel
- Alloy and wear-resistant manganese steels
- Iron and steel castings in foundries
- Export to steel producers abroad

3 Market potential

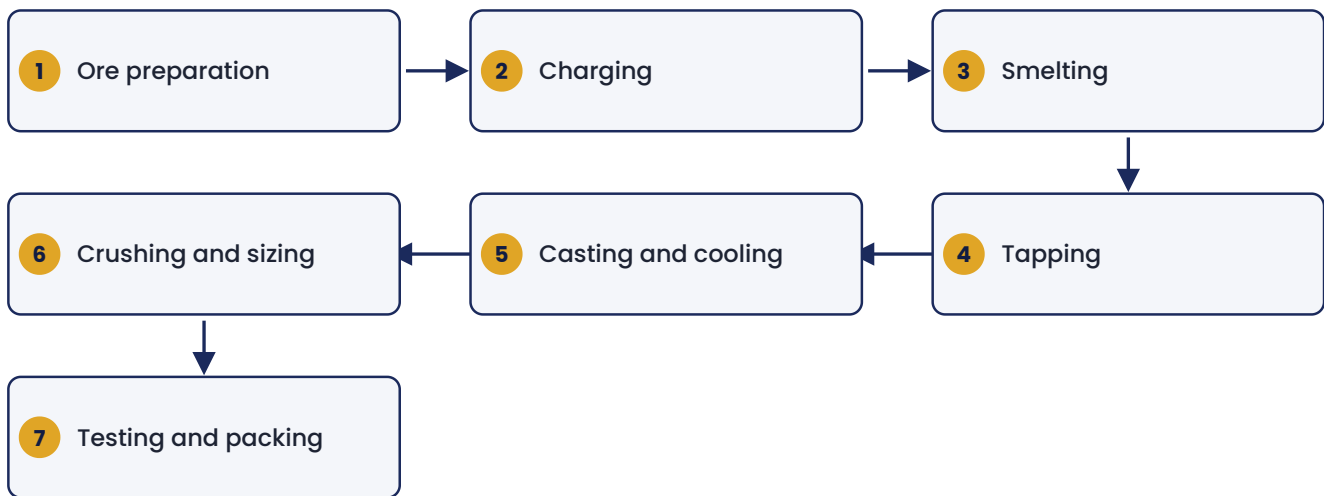
Almost all high carbon ferro manganese goes into steelmaking, where it is added in the ladle or furnace to deoxidise the melt and raise its manganese content. Demand therefore moves with crude steel output, both in integrated plants and in the large secondary sector of electric arc and induction furnace units. India also exports a large share of its ferro manganese, so export prices, freight and trade measures abroad affect what a domestic plant can earn. A new unit's margin depends mainly on the cost of manganese ore, reductant coke and electricity, and on how well it recovers manganese from the ore into the alloy.

The usual customers for a unit of this kind are integrated steel plants, electric arc and induction furnace steel units, alloy and stainless steel makers, iron and steel foundries, and ferro alloy traders and exporters.

A full NPCS report adds a market survey with present demand, expected growth and the names and addresses of existing manufacturers, worked out for the location you choose.

4 Manufacturing process

The manufacturing process runs in seven stages. Each stage is described below, and the flow chart shows the sequence.



Process flow for high carbon ferro manganese

- 1 Ore preparation.** Manganese ore, coke and dolomite are crushed, screened to size and weighed in the set proportion.
- 2 Charging.** The mixed charge is fed by gravity through chutes into the submerged arc furnace.
- 3 Smelting.** Electrodes buried in the charge supply the heat, and carbon reduces manganese and iron oxides to metal.
- 4 Tapping.** Molten alloy and slag are tapped at intervals into ladles and the slag is separated.
- 5 Casting and cooling.** The alloy is cast into beds or moulds and left to cool and solidify.
- 6 Crushing and sizing.** Cooled alloy is broken, crushed and screened to the size range the buyer orders.
- 7 Testing and packing.** Each lot is analysed for manganese, carbon, silicon and phosphorus, then bagged for dispatch.

5 Raw materials

The main raw materials are manganese ore, coke, power and fluxes. In Year 3, at 70% utilisation, raw materials cost ₹1,865.23 lakh, about 63% of sales. The table shows how this cost splits between materials.

Raw material	Share of cost	Year 3 cost (₹ lakh)
Manganese ore	55.0%	1,025.88
Coke	20.0%	373.05
Power	20.0%	373.04
Fluxes	5.0%	93.26
Total raw materials	100.0%	1,865.23

6 Plant and machinery

Plant and machinery accounts for ₹500.25 lakh of the project cost. The submerged arc furnace takes the largest share, and the other items and their indicative costs are listed below.

Machinery and equipment	Indicative cost (₹ lakh)
Submerged arc furnace	250.13
Transformer	90.05
Raw material handling	60.03
Crushing and screening	50.02
Pollution control	50.02
Total plant and machinery	500.25

7 Land, building and utilities

Land and site development is taken at ₹53.78 lakh and building and civil works at ₹255.38 lakh. Other fixed assets, including electrification, furniture, testing equipment and power backup, add ₹46.82 lakh. Land rates vary widely by location, so these are the figures most likely to change in a real project.

Utilities in Year 3 cost ₹195.42 lakh for power and fuel, or 6.6% of sales. The plant also needs a reliable water supply for cleaning and domestic use, and for the process where required.

8 Manpower

The unit employs 90 people. Wages and salaries come to ₹193.98 lakh in Year 1 and are assumed to rise by 5% a year.

Category	Number	Monthly wage (₹)	Annual cost (₹ lakh)
Management, supervision and administration	14	30,500	51.24
Skilled workers and operators	31	19,500	72.54
Semi-skilled and unskilled workers	45	13,000	70.20
Total (Year 1)	90		193.98

9 Licences and approvals

A unit of this kind typically needs the following registrations and approvals. Requirements vary by state and by the exact product, so confirm them with the local authorities before applying.

- Udyam (MSME) registration
- GST registration
- Consent to establish and consent to operate from the State Pollution Control Board
- Factory licence or registration under the applicable labour law, where the workforce threshold applies
- Fire safety NOC, where required
- Trade licence from the local body
- Environmental clearance under item 3(a) of the EIA Notification 2006
- BIS licence for ferromanganese to IS 1171 under the Ministry of Steel quality control order
- Sanctioned high-tension power connection for the furnace load

10 Project cost and means of finance

Setting up the unit costs ₹1,021.21 lakh in all, of which plant and machinery is ₹500.25 lakh. The estimate includes a 5% contingency on building and machinery, pre-operative expenses and the margin money needed to start working capital.

Cost of project	₹ lakh
Land and site development	53.78
Building and civil works	255.38
Plant and machinery	500.25
Other fixed assets (electrification, furniture, lab equipment, DG set)	46.82
Contingencies	37.78
Preliminary and pre-operative expenses	22.35
Margin money for working capital	104.85
Total cost of project	1,021.21

Means of finance

Funding follows a 75:25 split between bank loan and promoter's contribution, with a term loan of ₹765.91 lakh and promoter funds of ₹255.30 lakh. The bank also provides a cash credit limit of ₹314.56 lakh for working capital.

Source of funds	₹ lakh
Promoter's contribution (25%)	255.30
Term loan from bank (75%)	765.91
Total means of finance	1,021.21
<i>Cash credit limit for working capital (separate)</i>	<i>314.56</i>

11 Working capital

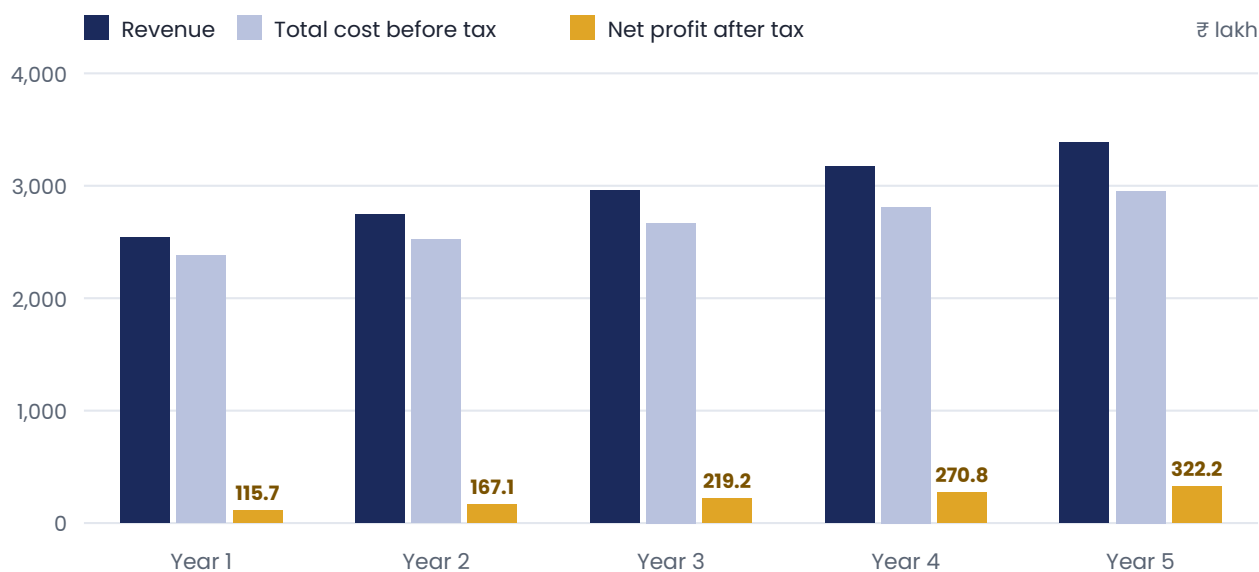
Working capital is worked out from holding periods: 30 days of raw material, 15 days of finished goods and 45 days of credit to customers, less 30 days of credit from suppliers. In Year 1 the requirement is ₹419.41 lakh. The bank funds ₹314.56 lakh through cash credit and the promoter's margin covers ₹104.85 lakh.

Particulars (₹ lakh)	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Raw material stock (30 days)	131.41	142.36	153.31	164.26	175.21
Work in progress (5 days)	26.85	29.00	31.16	33.32	35.49
Finished goods (15 days)	82.51	89.10	95.70	102.33	108.98
Trade receivables (45 days)	312.85	338.92	364.99	391.06	417.13
Total current assets	553.62	599.38	645.16	690.97	736.81
Less: trade creditors (30 days)	134.21	145.39	156.58	167.76	178.95
Working capital requirement	419.41	453.99	488.58	523.21	557.86

12 Projected profitability

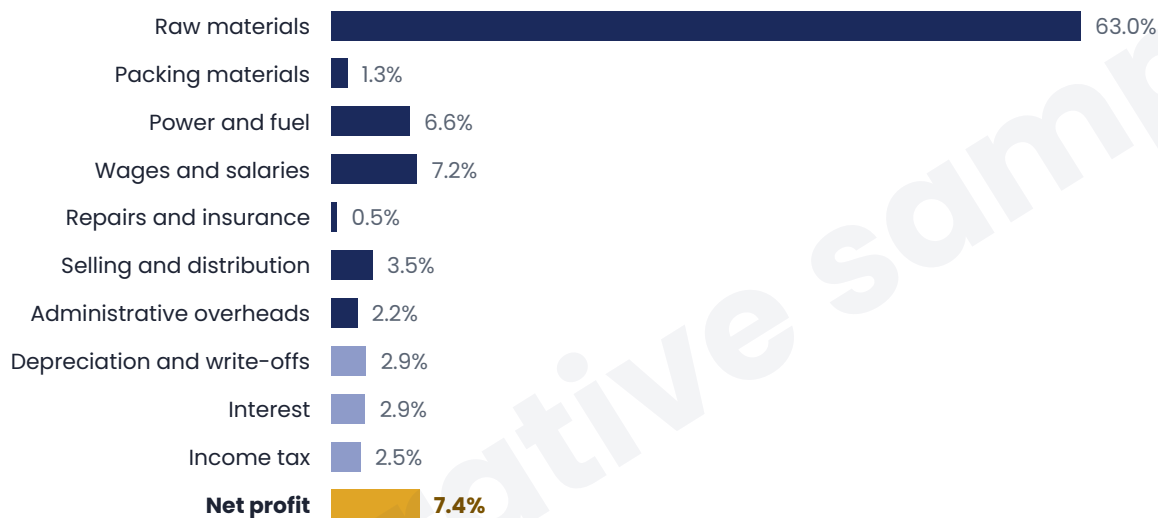
As utilisation climbs from 60% to 80%, sales increase from ₹2,537.57 lakh to ₹3,383.42 lakh. Operating profit in Year 3 is ₹463.75 lakh, a margin of 15.7%, and net profit after tax grows from ₹115.71 lakh in Year 1 to ₹322.20 lakh in Year 5.

Particulars (₹ lakh)	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Capacity utilisation (%)	60%	65%	70%	75%	80%
Revenue from operations	2,537.57	2,749.03	2,960.50	3,171.96	3,383.42
Raw materials consumed	1,598.77	1,732.00	1,865.23	1,998.46	2,131.69
Packing materials	34.13	36.97	39.82	42.66	45.51
Power and fuel	167.50	181.46	195.42	209.38	223.34
Wages and salaries	193.98	203.68	213.86	224.56	235.78
Repairs and maintenance	10.00	10.51	11.03	11.58	12.16
Insurance	3.36	3.36	3.36	3.36	3.36
Cost of production	2,007.74	2,167.98	2,328.72	2,490.00	2,651.84
Gross profit	529.83	581.05	631.78	681.96	731.58
Selling and distribution expenses	88.51	95.89	103.26	110.64	118.01
Administrative overheads	58.74	61.68	64.77	68.00	71.40
Operating profit (EBITDA)	382.58	423.48	463.75	503.32	542.17
Depreciation	110.29	95.31	82.43	71.35	61.79
Preliminary expenses written off	4.47	4.47	4.47	4.47	4.47
Interest on term loan	78.94	66.25	49.93	31.82	11.71
Interest on cash credit	34.60	34.60	34.60	34.60	34.60
Profit before tax	154.28	222.85	292.32	361.08	429.60
Income tax	38.57	55.71	73.08	90.27	107.40
Profit after tax	115.71	167.14	219.24	270.81	322.20



Revenue, total cost before tax and net profit after tax, ₹ lakh

Where each rupee of sales goes in Year 3



Each cost head as a percentage of Year 3 sales

13 Cash flow statement

The cash flow statement sets out the sources and uses of funds year by year. The unit stays cash positive throughout and closes Year 5 with a cash balance of ₹634.26 lakh after meeting the loan repayments due.

Particulars (₹ lakh)	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Sources of funds					
Promoter's contribution	255.30	–	–	–	–
Term loan from bank	765.91	–	–	–	–
Cash credit (working capital) from bank	314.56	–	–	–	–
Net profit after tax	115.71	167.14	219.24	270.81	322.20
Depreciation	110.29	95.31	82.43	71.35	61.79
Preliminary expenses written off	4.47	4.47	4.47	4.47	4.47
Increase in trade creditors	134.21	11.18	11.19	11.18	11.19
Total sources	1,700.45	278.10	317.33	357.81	399.65
Application of funds					
Fixed assets	894.01	–	–	–	–
Preliminary and pre-operative expenses	22.35	–	–	–	–
Increase in inventories	240.77	19.69	19.71	19.74	19.77
Increase in trade receivables	312.85	26.07	26.07	26.07	26.07
Repayment of term loan	68.42	148.05	164.37	182.48	202.59
Drawings	–	–	–	–	–
Total application	1,538.40	193.81	210.15	228.29	248.43
Net cash flow	162.05	84.29	107.18	129.52	151.22
Opening cash balance	–	162.05	246.34	353.52	483.04
Closing cash balance	162.05	246.34	353.52	483.04	634.26

14 Projected balance sheet

The projected balance sheet balances in every year. Net worth grows from ₹353.13 lakh at the end of Year 1 to ₹1,350.40 lakh at the end of Year 5, while the term loan outstanding falls from ₹697.49 lakh to nil.

As at year end (₹ lakh)	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Liabilities					
Promoter's capital	255.30	255.30	255.30	255.30	255.30
Reserves and surplus	115.71	282.85	502.09	772.90	1,095.10
Term loan	697.49	549.44	385.07	202.59	–
Cash credit from bank	314.56	314.56	314.56	314.56	314.56
Trade creditors	134.21	145.39	156.58	167.76	178.95
Total liabilities	1,517.27	1,547.54	1,613.60	1,713.11	1,843.91
Assets					
Gross fixed assets	894.01	894.01	894.01	894.01	894.01
Less: accumulated depreciation	(110.29)	(205.60)	(288.03)	(359.38)	(421.17)
Net fixed assets	783.72	688.41	605.98	534.63	472.84
Preliminary expenses not written off	17.88	13.41	8.94	4.47	–
Inventories	240.77	260.46	280.17	299.91	319.68
Trade receivables	312.85	338.92	364.99	391.06	417.13
Cash and bank balance	162.05	246.34	353.52	483.04	634.26
Total assets	1,517.27	1,547.54	1,613.60	1,713.11	1,843.91

15 Depreciation

Fixed assets are depreciated on the written-down value method, at 15% a year for plant and machinery, 10% for building and 10% for other assets. Land carries no depreciation.

Preliminary and pre-operative expenses are written off in equal parts over five years.

Particulars (₹ lakh)	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Building and civil works (cost ₹268.15 lakh, 10% WDV)					
Opening written-down value	268.15	241.33	217.20	195.48	175.93
Depreciation	26.82	24.13	21.72	19.55	17.59
Closing written-down value	241.33	217.20	195.48	175.93	158.34
Plant and machinery (cost ₹525.26 lakh, 15% WDV)					
Opening written-down value	525.26	446.47	379.50	322.58	274.19
Depreciation	78.79	66.97	56.92	48.39	41.13
Closing written-down value	446.47	379.50	322.58	274.19	233.06
Other fixed assets (cost ₹46.82 lakh, 10% WDV)					
Opening written-down value	46.82	42.14	37.93	34.14	30.73
Depreciation	4.68	4.21	3.79	3.41	3.07
Closing written-down value	42.14	37.93	34.14	30.73	27.66
Total depreciation	110.29	95.31	82.43	71.35	61.79
Preliminary expenses written off	4.47	4.47	4.47	4.47	4.47

16 Term loan repayment

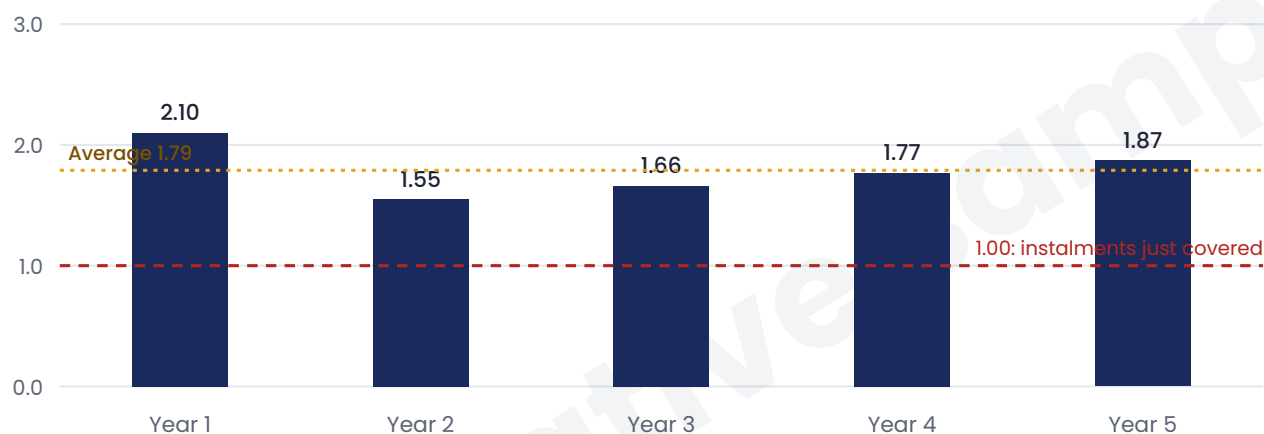
Repayment of the ₹765.91 lakh term loan starts after a moratorium of 6 months, during which interest at 10.5% is serviced. The loan is then cleared in 54 EMIs of ₹17,85,811 each, and the annexure gives the monthly schedule.

Particulars (₹ lakh)	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Opening balance	765.91	697.49	549.44	385.07	202.59
Interest	78.94	66.25	49.93	31.82	11.71
Principal repaid	68.42	148.05	164.37	182.48	202.59
Closing balance	697.49	549.44	385.07	202.59	—

17 Debt service coverage

The debt service coverage ratio averages 1.79 over the repayment years, with a low of 1.55 in Year 2. A DSCR above 1 means the unit earns enough to meet its loan instalments, and the model keeps a margin above that in every year.

Particulars (₹ lakh)	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Net profit after tax	115.71	167.14	219.24	270.81	322.20
Depreciation and write-offs	114.76	99.78	86.90	75.82	66.26
Interest on term loan	78.94	66.25	49.93	31.82	11.71
Total available for debt service (A)	309.41	333.17	356.07	378.45	400.17
Principal repayment	68.42	148.05	164.37	182.48	202.59
Interest on term loan	78.94	66.25	49.93	31.82	11.71
Total debt service (B)	147.36	214.30	214.30	214.30	214.30
DSCR (A / B)	2.10	1.55	1.66	1.77	1.87

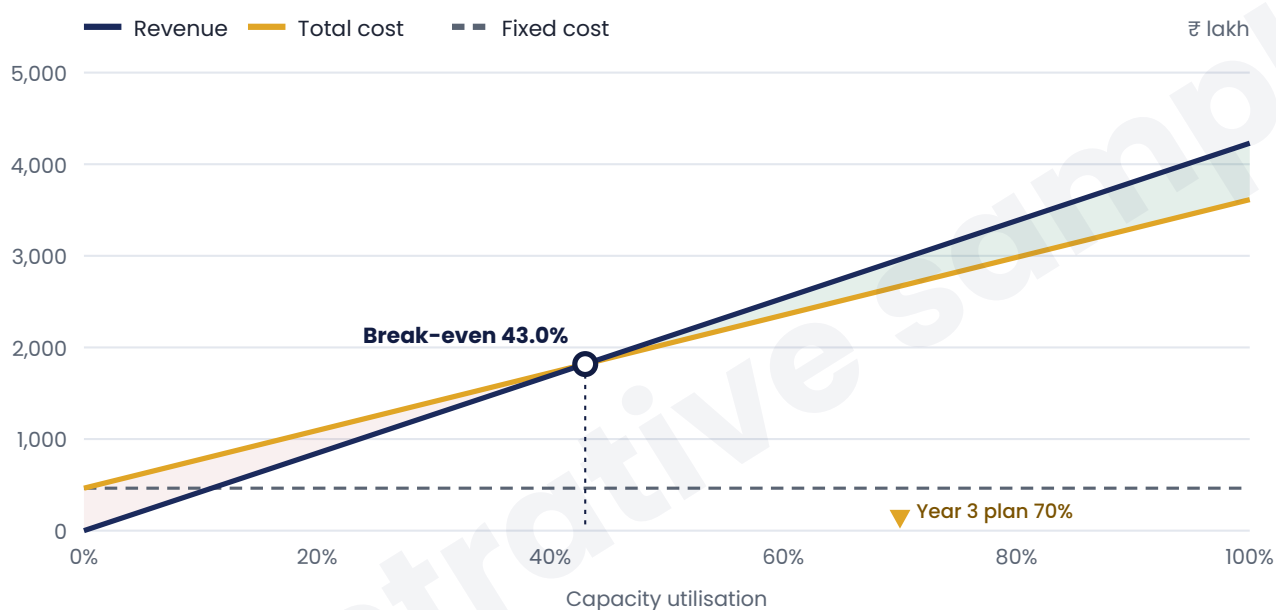


DSCR by year. A ratio above 1.00 means cash accruals cover the term loan instalments.

18 Break-even analysis

The unit needs to run at 43% of capacity to break even in Year 3, well below the 70% assumed for that year. Cash break-even, which excludes depreciation and write-offs, is 34.9%.

Particulars (₹ lakh)	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Revenue from operations	2,537.57	2,749.03	2,960.50	3,171.96	3,383.42
Variable costs	1,888.91	2,046.32	2,203.73	2,361.14	2,518.55
Contribution	648.66	702.71	756.77	810.82	864.87
Fixed costs (incl. depreciation and interest)	494.38	479.86	464.45	449.74	435.27
Break-even as % of installed capacity	45.7	44.4	43.0	41.6	40.3
Cash break-even as % of installed capacity	35.1	35.2	34.9	34.6	34.1
Break-even sales	1,934.02	1,877.23	1,816.94	1,759.40	1,702.80



Break-even chart at Year 3 prices and costs, scaled to full capacity. Shaded areas show the loss zone (left) and profit zone (right).

19 Financial ratios

Liquidity and leverage improve over the projection. The current ratio stays at or above 1.59, while debt-equity drops from 1.98 to zero as the term loan is repaid.

Ratio	Year 1 FY 2027-28	Year 2 FY 2028-29	Year 3 FY 2029-30	Year 4 FY 2030-31	Year 5 FY 2031-32
Current ratio	1.59	1.84	2.12	2.43	2.78
Quick ratio	1.06	1.27	1.53	1.81	2.13
Debt-equity ratio (term loan / net worth)	1.98	1.05	0.51	0.20	0.00
Total outside liabilities / net worth	3.25	1.92	1.14	0.67	0.37
Interest coverage ratio	2.36	3.21	4.46	6.44	10.28
DSCR	2.10	1.55	1.66	1.77	1.87
Gross profit margin (%)	20.9	21.1	21.3	21.5	21.6
Operating profit (EBITDA) margin (%)	15.1	15.4	15.7	15.9	16.0
Net profit margin (%)	4.6	6.1	7.4	8.5	9.5
Return on capital employed (%)	19.6	23.3	26.0	27.7	28.6
Break-even (% of installed capacity)	45.7	44.4	43.0	41.6	40.3

20 Key assumptions

- Commercial production starts in April 2027, and all assets are in use from the first year.
- Capacity utilisation of 60% in Year 1, rising to 80% by Year 5, over 330 working days a year.
- Selling price of ₹71,200 per MT, excluding GST, held constant through the projection.
- Raw materials at 63% of sales, packing materials at 1.3%, power and fuel at 6.6%, and selling and distribution at 3.5%.
- Wages and salaries rise by 5% a year; repairs and administrative overheads rise by 5% a year.
- Working capital based on 30 days of raw material, 5 days of work in progress, 15 days of finished goods and 45 days of receivables, less 30 days of creditors.
- Term loan at 10.5% interest with a 6-month moratorium and 54 monthly instalments; cash credit at 11% on 75% of the working capital requirement.
- Depreciation on the written-down value method at Income Tax Act rates; income tax at a flat 25% of profit for simplicity.
- Contingency of 5% on building and machinery; preliminary and pre-operative expenses written off over five years.
- All amounts in ₹ lakh unless stated otherwise, excluding GST.

21 Conclusion

The model shows that a high carbon ferro manganese unit sized at 18 MT per day can be financed 75:25 by a bank and its promoter, service its loan with an average DSCR of 1.79, and return about 21.4% a year on a project cost of ₹1,021.21 lakh. These are sample figures. A real project needs a report built on its own site, quotations and market.

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A Annexure: monthly loan repayment schedule

Term loan of ₹765.91 lakh at 10.5% a year. Amounts in ₹ lakh.

No.	Month	Opening balance	Interest	Principal	Instalment	Closing balance
1	Apr 2027	765.91	6.70	–	6.70	765.91
2	May 2027	765.91	6.70	–	6.70	765.91
3	Jun 2027	765.91	6.70	–	6.70	765.91
4	Jul 2027	765.91	6.70	–	6.70	765.91
5	Aug 2027	765.91	6.70	–	6.70	765.91
6	Sep 2027	765.91	6.70	–	6.70	765.91
7	Oct 2027	765.91	6.70	11.16	17.86	754.75
8	Nov 2027	754.75	6.60	11.25	17.86	743.50
9	Dec 2027	743.50	6.51	11.35	17.86	732.15
10	Jan 2028	732.15	6.41	11.45	17.86	720.70
11	Feb 2028	720.70	6.31	11.55	17.86	709.14
12	Mar 2028	709.14	6.21	11.65	17.86	697.49
13	Apr 2028	697.49	6.10	11.76	17.86	685.74
14	May 2028	685.74	6.00	11.86	17.86	673.88
15	Jun 2028	673.88	5.90	11.96	17.86	661.92
16	Jul 2028	661.92	5.79	12.07	17.86	649.85
17	Aug 2028	649.85	5.69	12.17	17.86	637.68
18	Sep 2028	637.68	5.58	12.28	17.86	625.40
19	Oct 2028	625.40	5.47	12.39	17.86	613.01
20	Nov 2028	613.01	5.36	12.49	17.86	600.52
21	Dec 2028	600.52	5.25	12.60	17.86	587.92
22	Jan 2029	587.92	5.14	12.71	17.86	575.20
23	Feb 2029	575.20	5.03	12.83	17.86	562.38
24	Mar 2029	562.38	4.92	12.94	17.86	549.44
25	Apr 2029	549.44	4.81	13.05	17.86	536.39
26	May 2029	536.39	4.69	13.16	17.86	523.22
27	Jun 2029	523.22	4.58	13.28	17.86	509.94
28	Jul 2029	509.94	4.46	13.40	17.86	496.55
29	Aug 2029	496.55	4.34	13.51	17.86	483.03
30	Sep 2029	483.03	4.23	13.63	17.86	469.40
31	Oct 2029	469.40	4.11	13.75	17.86	455.65
32	Nov 2029	455.65	3.99	13.87	17.86	441.78
33	Dec 2029	441.78	3.87	13.99	17.86	427.79
34	Jan 2030	427.79	3.74	14.11	17.86	413.67
35	Feb 2030	413.67	3.62	14.24	17.86	399.43
36	Mar 2030	399.43	3.50	14.36	17.86	385.07
37	Apr 2030	385.07	3.37	14.49	17.86	370.58
38	May 2030	370.58	3.24	14.62	17.86	355.97
39	Jun 2030	355.97	3.11	14.74	17.86	341.22

No.	Month	Opening balance	Interest	Principal	Instalment	Closing balance
40	Jul 2030	341.22	2.99	14.87	17.86	326.35
41	Aug 2030	326.35	2.86	15.00	17.86	311.35
42	Sep 2030	311.35	2.72	15.13	17.86	296.22
43	Oct 2030	296.22	2.59	15.27	17.86	280.95
44	Nov 2030	280.95	2.46	15.40	17.86	265.55
45	Dec 2030	265.55	2.32	15.53	17.86	250.01
46	Jan 2031	250.01	2.19	15.67	17.86	234.34
47	Feb 2031	234.34	2.05	15.81	17.86	218.54
48	Mar 2031	218.54	1.91	15.95	17.86	202.59
49	Apr 2031	202.59	1.77	16.09	17.86	186.51
50	May 2031	186.51	1.63	16.23	17.86	170.28
51	Jun 2031	170.28	1.49	16.37	17.86	153.91
52	Jul 2031	153.91	1.35	16.51	17.86	137.40
53	Aug 2031	137.40	1.20	16.66	17.86	120.74
54	Sep 2031	120.74	1.06	16.80	17.86	103.94
55	Oct 2031	103.94	0.91	16.95	17.86	86.99
56	Nov 2031	86.99	0.76	17.10	17.86	69.90
57	Dec 2031	69.90	0.61	17.25	17.86	52.65
58	Jan 2032	52.65	0.46	17.40	17.86	35.25
59	Feb 2032	35.25	0.31	17.55	17.86	17.70
60	Mar 2032	17.70	0.15	17.70	17.86	–