

“FEASIBILITY STUDY FOR SETTING UP A NEW AUTOCLAVED AERATED CONCRETE BLOCKS MANUFACTURING PLANT”

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ABSTRACT

This paper presents the research study of the project conducted to study the feasibility of setting up a AAC Blocks Manufacturing Plant .

The object of this feasibility study is to provide a frame work about the technical, economical & financial aspects in a broader sense and implementation of the project under the projected time-frame. In other words the study is aimed at analyzing Technical, Economical and Financial viability of setting up an AAC Blocks Manufacturing Plant .

Fly ash is a major raw material source (65-70% of finished goods is fly ash) and by locating the plant almost adjacent to raw material source gives manifold advantage both logistically and commercially. The unit will be located in MIDC Butibori that is having direct AACess to all corners of the country through 4-laned national highways. The land is ideally located as it can cater to Nagpur (about 25 Kms) and surrounding markets very conveniently

The current presumptions will be adequate and necessary for operation of 150,000 cu meter AAC unit. The plant design, OH cranes, rails have been planned in such a manner that the unit can double up its capacity simply by installing autoclaving chambers, with minimal changes in the infrastructure in the years to come.

CHAPTER II

INTRODUCTION

The Feasibility study is based on setting up an AAC blocks manufacturing plant on proposed & allotted land at MIDC Butibori by the government for industrial use having installed capacity of 1,50,000 cu.m. p.a. AAC blocks are next generation construction material that are extensively in used in developed markets. It has started gaining AACeptance in Indian construction markets in last decade and it will used extensively in future as government is promoting the same since it consumed environmentally hazardous fly ash (generated by coal based thermal power plants) that is abundant in India.

There is an established and rapidly growing market demand for AAC products manufactured in Vidarbha, West Chattisgarh, North Andhra Pradesh and rest of Maharashtra and to meet the demand the product is being transported from large distances at present.

PROJECT AT A GLANCE:

Name of the product	:	Autoclaved Aerated Concrete Blocks
Nature of Industry	:	Manufacturing
Approx .Land Area Required	:	28,200 sq. m.
Proposed Built up area	:	Factory Shed : 5600 Sq Mtrs
Proposed Capacity of the unit	:	150,000 Cubic Metre per annum
Raw Material Required	:	It is made with mixture of fine powder of
		Fly Ash, Cement, Quick Lime, Gypsum &
		Alumina
Assumed Sales Price of AAC Blocks	:	₹ 2800/- per Cu Metre (Excl. of duties & taxes)
No of working days assumed	:	300 working days
No of Shifts	:	3 Shifts (full capacity)
Man Power Requirement	:	Managerial Staff, Skilled and unskilled labors
		and others – 60 Total
Power Requirement Assumed	:	700 KVA
Connectivity	:	Road and Rail
Loan Period (Including proposed repayment holiday)	:	Seven years three months
Door to Door repayment (including construction period)	:	Eight years six months

PROJECT COST :-

(Rs in Lacs)

	PARTICULARS		ESTIMATED AMOUNT
01	Land	:	91.80
02	Civil Work #	:	815.58
03	Plant & Machinery #	:	1858.77
04	Electric Installation	:	71.05
05	Furniture & Fixtures	:	1.23
06	Preoperative Expenses	:	20.00
07	Margin money for working Capital	:	147.70
08	Margin money for working Capital	:	158.00
	Total	:	3164.13

MEANS OF FINANCE:

(Rs In Lacs)

	PARTICULARS		ESTIMATED AMOUNT
01	Promoters Contribution	:	934.13
02	Term Loan From Bank		2230.00
	Total	:	3164.13

WORKING CAPITAL REQUIREMENTS:

(Rs In Lacs)

PARTICULARS	AMOUNT
Total Working Capital Gap	610.00
25% Margin Money Covered In Project Cost	160.00
Working Capital Limit From Bank	450.00

LITERATURE REVIEW:-

As per a report published by Economy Watch (2010) – Construction Industry Trends all over the world show a rise in its rate of growth. This industry is composed of many components including construction of heavy and civil engineering (highways, bridges, railway tracks, airports, etc.), real estate (both residential as well as commercial) development, and specialized construction products (such as architectural products, electrical connections, decorative items, etc.). All these segments cannot be expected to show similar trends and in fact are showing differential growth pattern all over the world. India is seeing a boom in the construction sector mainly due to the government initiative in expansion of the developmental facilities. Economic upsurge has also generated enhanced generation of demand in the real estate sector (both residential as well as commercial). Construction Industry in India is rising at a phenomenal rate of 7 to 8% p.a.

As stated by Nargis Namazi (2011) in an article published in Business Review – across the world, the construction industry is witnessing a tremendous boom.

Singh Vandana (2009) concluded her research paper with the remark that the Real Estate is a very wide concept and it is highly affected by the macro-economic factors like GDP, FDI, per capital income, interest rates and employment in the nation.

ABOUT THE PRODUCT: AUTOCLAVED AERATED CONCRETE (AAC) BLOCK

AAC is an environmentally friendly material. AAC is inert and non-toxic. It is produced with environmentally sound, low cost, and readily available raw materials. In fact, by using fly ash, a waste product of coal-fired electrical generators, AAC even mitigates a solid waste disposal problem faced by electrical utilities. Manufacturing requires relatively small amounts of energy and does not release pollutants; scrap can even be ground and put back into the mix.. On the contrary, AAC allows vapors and concentrations of other gasses to diffuse through its cellular structure and has been endorsed by European environmental agencies, including the Federal Association for Healthy Building Products and the International Institute for Healthy Construction.

Environmental concerns about plastic foam and fibrous insulation materials are other reasons to consider AAC as an alternative to currently used materials.

Industry Outlook:

The AAC Block industry is in early stages in the country. The consumers of this industry can be profiled as government supplies, real estate developers/builders and individuals. Construction segment is the biggest consumers of AAC blocks. The construction segment has further gained significance with the NDA led new government at the Centre envisaging a roll out package to boost housing sector. Therefore, it can be concluded as the sunshine sector due its advantage over the traditional red clay bricks.

Construction industry is one of the most rapidly developing sector in India since last decade and it is expected to out-pace the growth of other industries in present decade as well. Construction industry is also very vital because anybody who is concerned with economic development these days highlights the need for infrastructure development. This has resulted in higher demand for building material supply industry like steel, cement, bricks, sand and builder hardware, paints etc. This has further gained substance with the NDA (BJP) led new government at the Centre envisaging a roll out package to boost housing sector.

AAC blocks are substitute to traditional red bricks and are better in terms of supply strength and environmental effects for lesser energy consumption and waste recycling. AAC is made with fine aggregates, cement, and an expansion agent that causes the fresh mixture to rise like bread dough.

The product viability arises from the fact that there is a huge existing market for conventional clay bricks which neither offers huge technical advantages obtained from AAC, neither is the manufacturing environment friendly compared to AAC production. An alternative to conventional clay bricks is fly ash brick made using fly ash & sand is also equally expensive and very heavy. They also lack desired quality and strength as the sector is mostly un-organised and controlled by fly by night operators. So the AAC has a ready market and as can be observed from financial reports, it is remunerative to sell AAC bricks even at lower price than clay bricks.

FINANCIAL ANALYSIS

1. SENSIVITY ANALYSIS:

Scenario 1: When Sale Price remains constant and Raw Material and Production Cost increases by 5%

(Rs Lacs)

Particulars	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Net Sales (₹ In Lacs)	1,487	2,491	2,720	2,730	3,130	3,150	3,350	3,360
Operating Profit (₹ In Lacs)	413	636	529	505	475	347	233	84
PAT (₹ In Lacs)	(71)	128	82	67	73	15	(26)	(102)
Break Even Sales (BEP) In Cu. M.	61234	78895	87175	99681	108664	129397	158758	245375
ROCE	5.33%	13.51%	11.73%	12.25%	11.89%	8.42%	1.13%	-7.92%
ISCR	1.60	2.50	2.45	2.48	3.10	3.42	6.20	65.33
DSCR	1.60	1.16	1.08	1.05	0.82	0.66	0.53	0.53
Average DSCR	0.93							

Scenario 2: Sale Price rise by 5% and Raw Material and Production Cost rise by 10%

(Rs Lacs)

Particulars	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Net Sales (` In Lacs)	1,487	2,615	2,999	3,160	3,805	4,020	4,489	4,728
Operating Profit (` In Lacs)	413	678	608	610	615	495	384	210
PAT (` In Lacs)	(71)	155	137	143	176	130	94	9
Break Even Sales (BEP) In Cu. M.	61234	75034	79045	85942	89438	100354	114674	154965
ROCE	5.33%	14.36%	13.43%	14.61%	15.24%	12.97%	7.34%	0.60%
ISCR	1.60	2.61	2.70	2.84	3.78	4.49	9.10	116.55
DSCR	1.60	1.21	1.19	1.21	1.00	0.86	0.77	0.95
Average DSCR	1.10							

Scenario 3: When Sale Price fall by 5% and Raw Material and Production Cost increase by 5%

(Rs Lacs)

Particulars	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Net Sales (` In Lacs)	1,487	2,366	2,455	2,341	2,550	2,438	2,464	2,347
Operating Profit (` In Lacs)	413	516	272	128	(87)	(344)	(627)	(898)
PAT (` In Lacs)	(71)	22	(166)	(295)	(461)	(671)	(896)	(1,130)
Break Even Sales (BEP) In Cu. M.	61234	94658	137791	266653	2924256	-258514	-111391	-67117
ROCE	5.33%	10.09%	2.58%	-5.54%	-49.04%	115.91%	59.04%	43.79%
ISCR	1.60	2.07	1.35	0.75	(0.44)	(3.00)	(14.67)	(410.74)
DSCR	1.60	0.96	0.59	0.32	(0.12)	(0.58)	(1.25)	(3.35)
Average DSCR	(0.23)							

2. Key Financial Indicators:

(Rs Lacs)

Particulars / Period	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
No. of Months	10	12	12	12	12	12	12	12
Net Sales	1,486.80	2,664.94	3,114.63	3,344.25	4,103.06	4,417.88	5,027.69	5,395.20
PBILDT	413.20	774.22	834.46	980.64	1,222.96	1,313.07	1,507.23	1,619.74

PBT	(71.05)	280.56	411.38	589.66	900.76	1,064.83	1,337.69	1,514.27
PAT	(71.05)	218.54	288.79	392.66	586.18	684.33	855.76	965.60
Net Cash AACruals	131.74	461.88	532.13	636.00	829.50	927.55	1,098.80	1,206.29
PBILDT / Net Sales (%)	27.79%	29.05%	26.79%	29.32%	29.81%	29.72%	29.98%	30.02%
PAT / Net Sales (%)	-4.78%	8.20%	9.27%	11.74%	14.29%	15.49%	17.02%	17.90%
Gross Block	3,032.74	3,032.74	3,032.74	3,032.74	3,032.74	3,032.74	3,032.74	3,032.74
Net Block	2,820.24	2,576.90	2,333.55	2,090.21	1,846.88	1,603.66	1,360.62	1,119.93
Paid up Capital	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00
Tangible Networth (TNW)	276.14	494.68	783.47	1,176.13	1,762.30	2,446.64	3,302.40	4,267.99
Group Investments	-	-	-	-	-	-	-	-
Adjusted TNW	276.14	494.68	783.47	1,176.13	1,762.30	2,446.64	3,302.40	4,267.99
LTD/TNW	7.05	3.36	1.76	0.82	0.29	0.03	-	-
DFS/TNW								
TOL/TNW	8.68	4.27	2.33	1.20	0.55	0.21	0.14	0.11
Current Assets	648.61	952.86	1,109.82	1,196.20	1,463.64	1,574.10	1,782.57	1,912.05
Current liabilities	413.53	772.48	788.85	797.67	936.05	981.99	987.90	616.57
Net Working Capital	235.08	180.38	320.97	398.53	527.59	592.11	794.67	1,295.48
Current Ratio	1.57	1.23	1.41	1.50	1.56	1.60	1.80	3.10
Other Indicators								
ROCE (%)	5.33%	16.26%	17.65%	20.92%	24.41%	24.31%	22.18%	19.31%
ISCR	1.60	2.87	3.37	4.03	6.51	9.68	27.38	559.27
DSCR	1.60	1.33	1.49	1.71	1.72	1.86	2.33	4.57
Average DSCR	2.08							

3. DSCR

(Rs Lacs)

Particulars	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
PAT	(71.05)	218.54	288.79	392.66	586.18	684.33	855.76	965.60
Depreciation	202.79	243.35	243.35	243.35	243.32	243.22	243.04	240.69
Interest on Term Loan	220.71	247.44	224.09	209.98	150.63	106.92	41.65	2.16
Total	352.45	709.32	756.23	845.98	980.13	1,034.47	1,140.45	1,208.45
SERVICE:								
Repayment of Term Loan	-	284.00	284.00	284.00	418.00	448.00	448.00	64.00
Interest On Term Loan	220.71	247.44	224.09	209.98	150.63	106.92	41.65	2.16
Total	220.71	531.44	508.09	493.98	568.63	554.92	489.65	66.16
ISCR	1.60	2.87	3.37	4.03	6.51	9.68	27.38	559.27
DSCR	1.60	1.33	1.49	1.71	1.72	1.86	2.33	4.57

SWOT ANALYSIS

STRENGTH:

Promoters will have good experience, skills, resources and networking of marketing and business which can be cashed well.

Round the year availability of raw material.

Vast growing domestic market.

Updated plant and machinery use of latest technology in the manufacturing process.

Appropriate location.

Environmentally green project.

WEAKNESS:

Manpower remuneration less attractive in comparison to contemporary discipline for talent.

Promoters will have little or no industrial experience.

OPPORTUNITIES:

Vast potential and Scope of Central India market.

The industry is expected to grow at fast pace of about 1.5 times of GDP growth rate.

Clay brick market is unable to keep pace with demand and alternative and environmentally friendly modern technology remains the best bet.

THREATS:

Alternative more environmental friendly technology breakthrough may be a possible substitute to the use of AAC.

The growing global concerns arising out of the impact of crude prices along with increased inflation on domestic front.

Competition from national as well and International players

Loss of trained manpower to new competitors as this industry is still in nascent stage.

Industry is regulated by very small unorganized players.

CONCLUSION:

After analyzing the project details and other relevant data in detail and from the information collected from internet & existing players in the industry which i believe to be true and subject to my observations in the overview, the proposed manufacturing plant is considered "Financially Viable and Technically Feasible".

This seems a temporary phase with economy/construction sector expected to bounce dynamically with the government thrust on housing sector. The unit is expected to achieve the breakeven in 2nd year of operation and thereafter sales will be showing a growing trend. The unit will belong to the sunshine booming sector with latest technology. There is ready market for the AAC Blocks. The proposed unit will enjoy monopoly in central India as heavy capital cost creates entry barrier for the competition. Moreover, any player coming with such AAC block unit has to go through the same process incurring same cost/higher cost due to dollar exchange rate and increase in cost inflation in construction and steel costs.

Hence in our opinion the research study presented for manufacture of Autoclaved Aerated Concrete manufacturing unit is
“Technically as well as Economically Viable & Financially Feasible”.

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