الأعمال المتقدمة للإستشارات المالية والإدارية
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Submitted to

MINISTRY OF COMMERCE, INDUSTRY AND INVESTMENT PROMOTION
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PUBLIC ESTABLISHMENT FOR INDUSTRIAL ESTATES
SULTANATE OF OMAN

JUNE 2021

PRE-FEASIBILITY REPORT (DRAFT)

FOR

SETTING UP A FLOAT GLASS MANUFACTURING UNIT IN OMAN

CONTENTS

1. INTRODUCTION

1.1. PROJECT BRIEF

Name of Product		**Float Glass**
Size of Domestic Market (2019)		48,000 Tons/Annum
Export Potential – (GCC imports – 2019)		365,000 Tons / Annum
Capacity of the Project		400 Tons per Day (120,000 tons per year)
Total Investment		RO 30.912 million
Equity Investment		RO 12.364 Million
Key Appraisal Criteria:		
IRR on total investment		14.41%
IRR on Equity		21.72%
Payback period of Total Investment		6 Years 6 Months
Payback period on equity		5 Years 11 Months
Break Even Point (as % of Capacity)		61.6%
Cash Break Even Point (as % of Capacity)		35.5%
DSCR		1.94
Total debt equity ratio		1.50 : 1
Manpower	Total	128
	Nationals	47

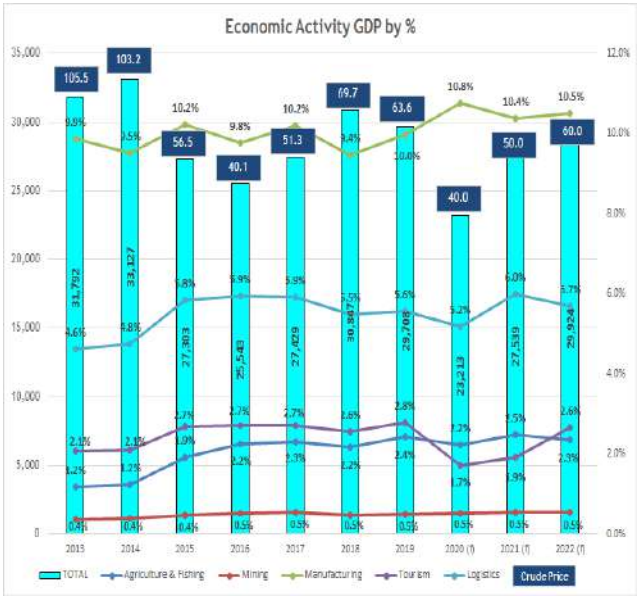
1.2. PROJECT RATIONALE

- Availability of Major raw materials - sand, soda ash (sodium carbonate), dolomite, limestone and salt cake (sodium sulfate) - required for the manufacture of float glass are abundantly available.
- No float glass manufacturing unit is in Oman and the entire requirement is met from import.
- The regional and local demand for float glass has grown.

2. INDUSTRY ANALYSIS

2.1. MACROECONOMIC CONDITIONS

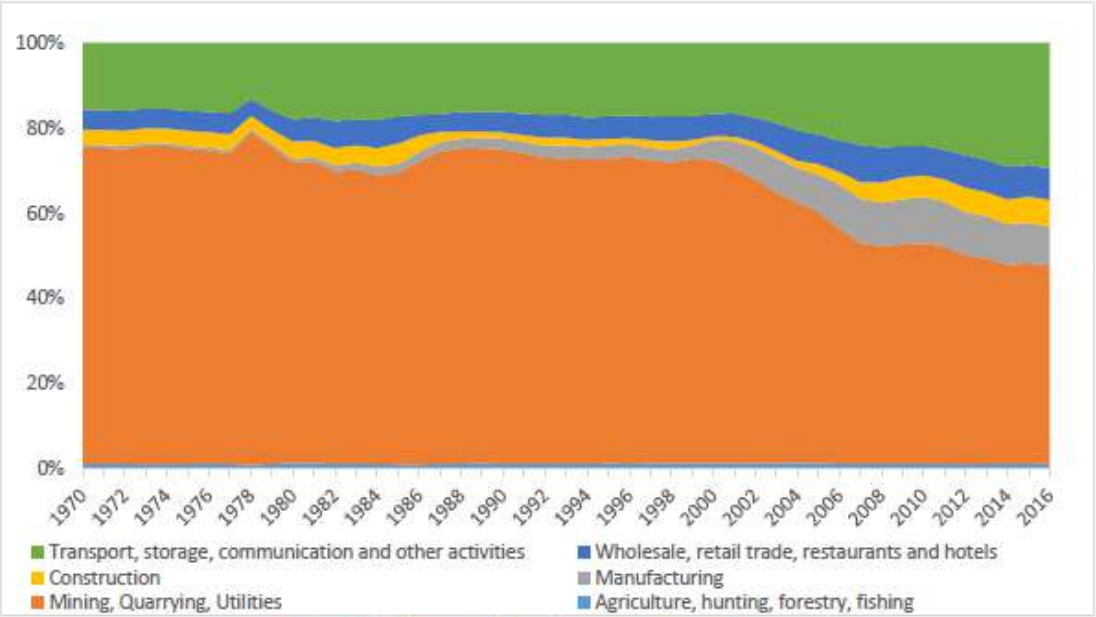
The recently published statistical bulletin from National Centre for Statistics and Information (NCSI) indicates that the GDP at market prices reduced by 15% during Year 2020 when compared to the Year 2019. This is mainly due to the dual impact of slump in oil prices and the COVID – 19 pandemic. As per the World Bank outlook a revival is expected in 2021 and in 2022 on an average of around 4%. The estimated GDP of Oman considering the past trend, current situation and the expected recovery is illustrated below:



Our average price of Oil for 2020 is USD 46/Barrel. We expect this to go up to USD 50/barrel in 2021 and USD 60/barrel in 2022.

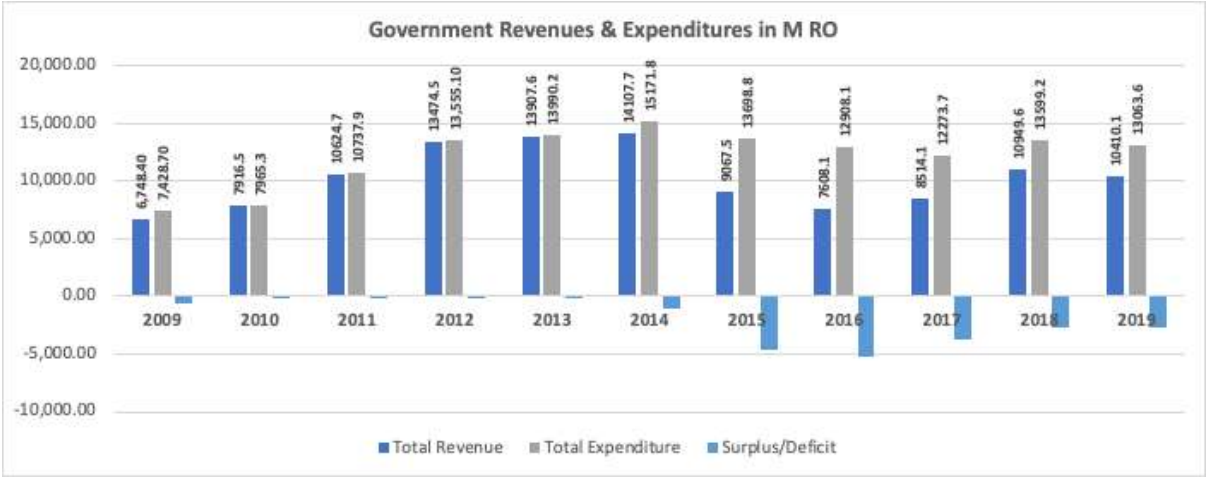
2.2. TREND IN ECONOMIC DIVERSIFICATION

Since the beginning of the millennium our economic activity has significantly moved away from oil as indicated below. The following graph gives data up to 2016. In 2019 Crude Petroleum contributed to 29.11% of GDP.



Source: UNIDO elaboration based on UN Statistics Division (2018)

However the Government income is still substantially dependent on Oil sector. The tightening of spending, introduction of VAT and increased revenues from Gas are expected to contain deficits to manageable levels by 2022.



2.3. OVERVIEW OF CONSTRUCTION SECTOR IN OMAN

The following table illustrates the trend in the growth of the construction sector GDP during 2010 to 2019.

Details	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
GDP (RO Million)	21,935	26,152	29,458	30,292	31,174	26,500	25,354	27,216	30,489	29,276
Construction GDP (RO Million)	1,314	1,390	1,747	1,803	1,904	2,067	2,285	2,080	1,986	1855
Growth Rate (%)	6%	6%	26%	3%	6%	9%	11%	-9%	-5%	-7%
Construction / Total GDP (%)	6.0%	5.3%	5.9%	6.0%	6.1%	7.8%	9.0%	7.6%	6.5%	6.3%

Source: Statistical Year Book – 2019 & Monthly Statistical Bulletin April 2020, NCSI

As it can be seen from the table above:

- Oman's GDP was on the rise from 2010 till 2014 for almost 4 years with a CAGR of 9.19%. Construction sector GDP was also on the rise during the same period with a CAGR of 9.72%.
- Due to the sliding oil prices, the overall GDP declined during 2015 and 2016. However, the completion of the approved / ongoing projects has sustained the construction sector GDP during these years (2015 and 2016).
- Due to gradual increase in oil prices, the GDP has grown during 2017 and 2018 but declined by 4% during 2019. But the growth rate in construction GDP in Oman continued its slide from 2017 onwards.

The COVID-19 pandemic is projected to trigger long-term and short-term impacts on the construction and building industry. To contain the spread of the virus, many construction sites are being shut down while construction projects are being put on hold or re-evaluated.

The current year i.e., 2020, it is expected that the construction sector growth will be depressed considerably.

2.4. OVERVIEW OF GLASS MANUFACTURING SECTOR IN OMAN

The following table illustrates the overall performance of the Glass sector in Oman.

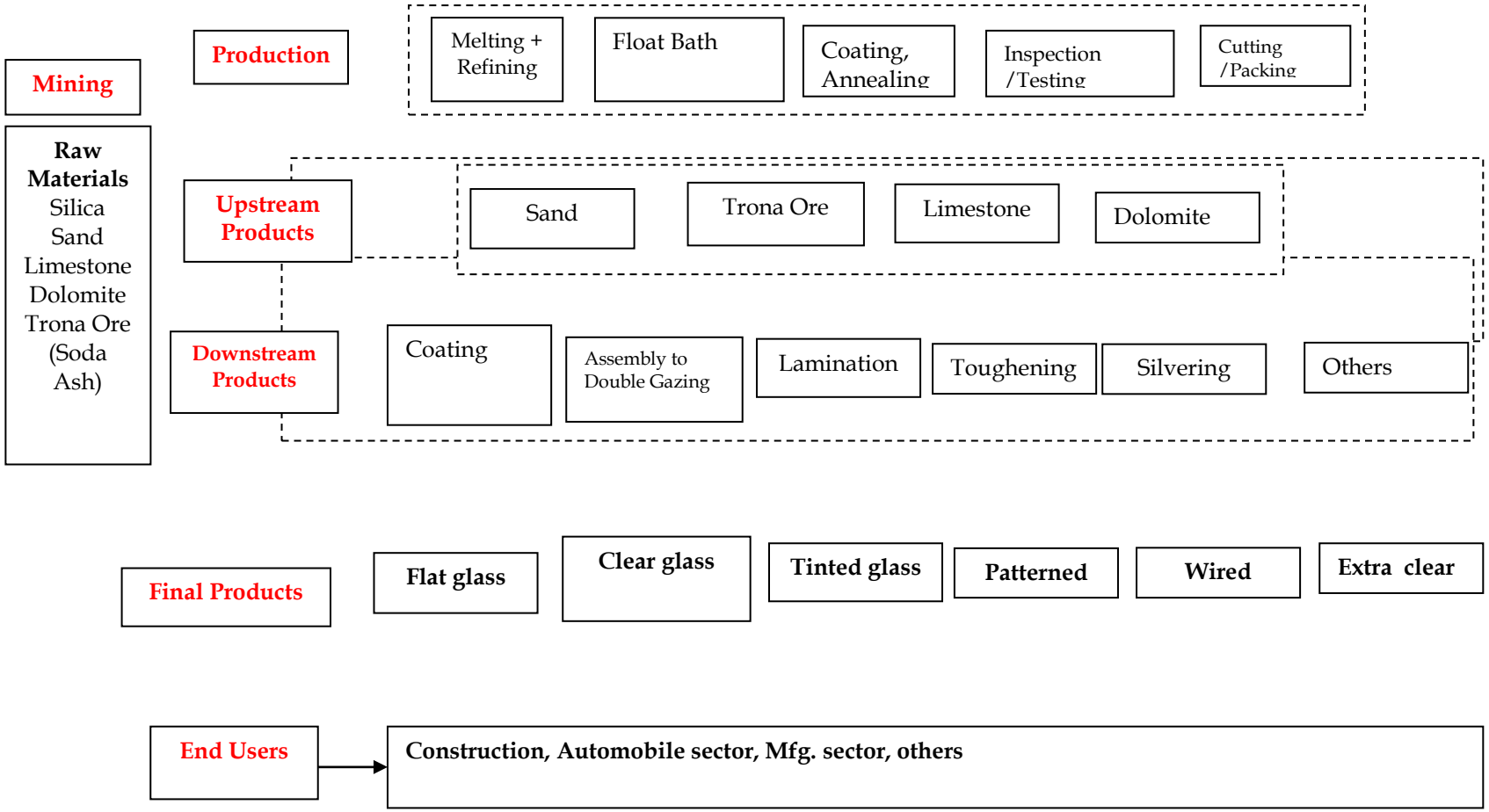
Year	Total Units	Total Employees	Book Value of Fixed Assets (VFA)	Materials	Imported Materials	Output	Value Added (VA)	Labour Efficiency (RO/ Employee)	Capital Efficiency (VA /VFA)
	No.	No.	(RO million)					Rial Omani	
2013	11	817	14.2	7.3	6.1	19.5	8.9	10,833	0.6
2014	13	936	18.0	6.9	5.5	18.5	8.9	9,513	0.5
2015	14	964	8.3	6.0	4.4	21.1	10.7	11,082	1.3
2016	16	1,056	15.4	8.2	6.9	23.9	10.8	10,249	0.7
2017	17	1,150	22.0	8.4	7.5	25.5	12.4	10,795	0.6

Following are the key inferences with respect to the sector performance:

- The increase in the level of employment, value of fixed assets and output indicate a growth in the sector performance.
- The labour efficiency and the capital efficiency remain the same, indicating limited change in technology improvements in the sector.

2.5. VALUE-CHAIN OF FLOAT GLASS PRODUCTS AND USES

The following chart illustrates the overall value chain of Float glass products:



2.6. REGIONAL (GCC) AND LOCAL VALUE-CHAIN

GCC Float Glass supply chains are very large and include a number of vendors, distribution centers, suppliers, buyers, manufacturing plants (except Bahrain), and logistics service providers. The major producers of Float glass are listed in the section on market analysis. However, it has to be noted the upstream mining and mineral related activities are absent in the GCC countries.

2.7. VALUE CHAIN IN OMAN

As of now, only imports and distribution of float glass to end users is happening in Oman. However, Oman is blessed with enormous amount of superior quality mineral resources viz. Sand, Soda Ash, Limestone, Dolomite, Sodium Sulphate, Aluminium Hydrate and Cullet, which are the major raw materials for the production of float glass products.

Following companies are engaged in the mining& mineral processing activities:

Company	Products
Northern Minerals Co. Llc	Lime Stone Products Calcium Products Dolomite
Industrial Minerals Co. Llc	
Global Mining Co	Limestone Products
Desert Enterprises	Limestone Products

However, the suitability / acceptability / usage of these minerals by the local manufacturers will be validated during the primary survey phase.

2.8. MISSING VALUE CHAIN ACTIVITIES IN OMAN

- While there is abundant availability of minerals that are currently mined in Oman, the activities related to processing of these minerals and supply to the glass manufacturers need to studied further.
- In terms of product diversification (other than containers and fiber glass products) the possibilities to produce for products that are used in construction need to be explored.
- Possibilities to manufacture other products for different applications are limited due to non-availability of end users like OE automobile manufacturers, solar industry, electronic goods manufacturers etc.

3. MARKET ANALYSIS

3.1. PRODUCT & ITS USES

3.1.1. Product Description

Float glass is a sheet of glass made by floating molten glass on a bed of molten tin. Glass process method gives the sheet uniform thickness and very flat surfaces. Modern windows are made from float glass. Most float glass is soda-lime glass, but relatively minor quantities of specialty borosilicate and flat panel display glass are also produced using the float glass process.

- Float glass is manufactured using a melt process whereby recycled glass, silica sand, lime, potash and soda are melted in a furnace and floated onto a bed of molten tin.
- The molten mass solidifies slowly while flowing over the bed of molten tin, after which it is annealed to remove stresses, induced during the cooling process. Annealing also allows the glass to reach a more stable state resulting in a higher density and higher refractive index.

Float glass is used for smaller windows in domestic housing. Larger windows are made from toughened glasses. Glass is used for windows for aesthetic and functional reasons, allowing the occupants to see out and at the same time allowing light in.

Float glass is becoming more and more popular in commercial applications as it allows structures to be constructed that give the impression of being outside with the benefits of being inside protected from the elements. Glass is also playing an increasing role in buildings where it provides an attractive and easy to maintain exterior surface.

3.1.2. Product specifications

The different varieties of Float glass are:

- Clear Float
- Heavy Float
- Tinted Solar shield

These are available in a range of glass thicknesses and sizes, many float products can be used monolithically—but they can also be coated, tempered, laminated, bent, insulated, and silvered for use as mirrors. Beautiful works of art on their own, float solutions serve as the canvas for the unique artistic vision of architects, builders, manufacturers, and designers.

Clear Float: Widely valued for its extraordinary levels of clarity and colourlessness—as well as its high visibility and light transmission. Clear float glass is beautiful. Clear float solutions offer a wealth of product benefits, including outstanding clarity, excellent colour neutrality, and superior levels of visibility and light transmission.

Heavy Float: When additional strength is needed, heavy float products are an obvious choice—featuring greater glass thicknesses, along high levels of clarity and colour neutrality. Heavy float glass has a wealth of applications in the commercial and residential construction industries—as well as the specialty glass marketplace. With thicknesses ranging from 5/16" to 3/4", these practical solutions offer increased strength, greater spans, reduced deflection, high daylight transmittance, and enhanced noise suppression.

Tinted Solar shield: Tinted Solar shield solutions combine lovely aesthetics with outstanding performance—reducing energy consumption and creating more comfortable interiors for commercial buildings, homes, and automobiles. During the process, molten glass is introduced to a molten tin bath. The molten glass floats on the tin and spreads out thus seeking a controlled level. Control heating will then allows the glass to flow and form a

float ribbon of uniform thickness while on the tin bath. Glass is then slowly cooled and fed off from the molten tin into the annealing lehr for further cooling. The glass thickness varies by changing the speed at which the glass ribbon moves into the annealing lehr.

3.1.3. Substrate & Applications

Glass Type	Thickness	Application
Clear	1.7mm - 25mm	Ideal where high visibility & clarity are required.
Crystal Clear	5mm - 12mm	Remarkable clarity & sparkling edge in any thickness.
Green	3mm - 12mm	Suitable when high light transmission & reduced solar heat gain is required.
Grey/ Bronze/ Blue	3mm - 12mm	Suitable where reduced light transmission & reduced solar-heat gain are required. Besides, colour is desired to enhance aesthetics & increase design flexibility.
Blue Green	6mm - 8mm	An exceptional combination of high visible light transmittance & low solar heat transmittance.
Azurlite	3.2mm - 10mm	Aquamarine appearance with unsurpassed performance. Desirable low shading coefficient & high visible light transmittance.
Evergreen/Solar Green	3mm - 6mm 3mm - 8mm	A high performance green tinted glass with superior solar control characteristic.
Pink	3mm - 10mm	A unique colour on its own.

3.1.4. Characteristics

Clear Float Glass is a distortion-free, precision flat and transparent glass

Some of the outstanding characteristics are as follows:

- Clear Float Glass processes exceptionally smooth flatness, Allowing distortion-free viewing and fine transmitted images.
- It has excellent light transmittance, creating a higher luminous interior.
- The surface is fire-polished, thus giving a higher quality lustre and superb smoothness.
- It is the finest glass for silvering of mirror, producing fine reflected images.
- Can be further fabricated into reflective, Low-E, laminated, security, insulated, heat-treated & ceramic decorated glass
- May be specified against using toughened glass in certain wind load areas where glass surface optics are critical

3.2. PRODUCT USES & APPLICATIONS

Float glass is commonly used in buildings as a transparent material for windows and as internal glazed partitions, architectural, and automotive applications. Applications include:

- Residential applications (External use of windows, doors, shop fronts, in offices, houses, shops etc.)
- Architectural applications (interior glass screens, partitions, balustrades, shop display windows, show cases, display shelves etc.)
- Automotive applications
- Application in Solar Industry
- Other special applications, like mirror and furniture, etc.

3.3. INDUSTRY OVERVIEW

3.3.1. Global Scenario

The global flat glass market as per the report of Research & Markets was worth US$ 104.5 Billion in 2018.

- The construction industry is the key factor driving the growth of the market. Furthermore, the increasing infrastructural expenditure on the construction of eco-friendly green buildings, which aid in minimizing carbon emissions into the environment, is also driving the market growth.
- Moreover, the automotive industry is another factor contributing to the market growth. The automobile manufacturers are increasingly employing tempered glass due to its shatterproof properties that can prevent severe injuries and possible life threats in case of accidents.
- Other factors such as the implementation of nanotechnology to produce lightweight glazing glass and solar control panels coupled with the increasing urbanization and rising disposable incomes are further creating a positive outlook for the market.

Looking forward, the market is expected to reach a value of US$ 153.3 Billion by 2024, registering a CAGR of 6.6% during 2019-2024.

3.3.2. Global Trade

The 4-digit Harmonized Tariff System code prefix is 7005 for float glass products. The following sections provide an overview of the global trade of various float glass products.

3.3.2.1. Major Global Exporters

Country	2015	2016	2017	2018	2019	
	Figures in USD Million					%
Germany	501	556	573	858	627	12%
China	618	612	671	677	613	12%
USA	451	419	426	421	399	8%
Japan	332	349	272	285	327	6%
Malaysia	6	7	97	241	312	6%
Belgium	286	236	268	289	285	5%
France	235	241	271	290	280	5%
Hong Kong	221	150	142	109	212	4%
Russian	130	163	220	209	176	3%
Others	2,141	2,170	2,270	2,441	2,006	38%
Total	**4,922**	**4,902**	**5,210**	**5,819**	**5,236**	**100%**

3.3.2.2. Major Importers

Country	2015	2016	2017	2018	2019	
	Figures in USD Million					%
China	544	595	593	546	696	12%
Canada	270	282	294	300	279	5%
Korea	262	190	196	228	205	4%
Poland	173	211	247	326	200	4%
Hong Kong	225	176	114	90	197	3%
Germany	152	178	210	208	181	3%
Malaysia	246	230	196	191	166	3%
India	125	145	171	165	148	3%
France	165	189	167	163	140	2%
Others	3,333	3,559	3,887	4,031	3,416	61%
Total	**5,496**	**5,755**	**6,074**	**6,248**	**5,627**	**100%**

3.3.3. Major Global Producers

The market for flat glass is highly competitive in nature owing to the presence of several major players.

Company		Country
1	AGC Inc	Japan
2	Saint Gobain	France
3	Guardian Industries	USA
4	ŞIŞECAM Group	Turkey
5	Nippon Sheet Glass Co. Ltd	UK

The global tempered flat glass market witnessed a consumption of over 85 million tons in 2018.

3.4. ESTIMATE OF DOMESTIC DEMAND

The entire requirement of float glass in the country is met from import, in the absence of a local manufacturer.

3.4.1. Local Production

Float glass are not manufactured locally.

3.4.2. Foreign Trade

3.4.2.1.HS Codes Considered

The Float glass products are categorized under the following HS codes:

- HS Code 70051000 - Float Glass & Surface Ground / Polished glass sheets
- HS Code; 70052100 Float Glass & Surface Ground / Polished glass sheets-colored
- HS Code; 70052900 Float Glass & Surface Ground / Polished glass sheets-whether or not absorbent

3.4.2.2.Trend in Foreign Trade

The following table illustrates the foreign trade (Import, Export and net-import) of the products:

Details	2014	2015	2016	2017	2018	2019
	Figures in tons					
Import						
HSC - 70051000	16,579	14,351	17,476	15,007	16,988	14,373
HSC - 70052100	1,981	2,175	2,783	5,466	4,329	2,657
HSC -70052900	16,129	20,549	23,817	30,962	30,203	31,210
Total	**34,689**	**37,075**	**44,076**	**51,436**	**51,520**	**48,241**
Export/Re export	-	-	-	-	-	-
Net Import	**34,689**	**37,075**	**44,076**	**51,436**	**51,520**	**48,241**

(Source: Foreign Trade Statistics, ROP)

3.4.2.3.Import Sources

- **HS Code 70051000 : Float Glass & Surface Ground / Polished glass sheets**

Countries	2018			2019			
	Tons	RO'000	RO / Ton	Tons	RO'000	% of Total	RO / Ton
China	9,677	1,321	137	8,430	1,110	58.7%	132
UAE	5,984	2,023	338	4,329	1,166	30.1%	269
Saudi	29	4	141	606	128	4.2%	212
Malaysia	-	-		420	62	2.9%	147
India	205	102	500	387	165	2.7%	427
Spain	79	13	163	106	17	0.7%	157
Singapore	473	75	158	54	6.8	0.4%	126
Egypt	-	-		22	0.8	0.2%	37
Belgium	0.3	7.8	23975	11	6.4	0.1%	609
Others	1	4.1	4811	9	19	0.1%	2036
Iran	540	53	97				
TOTAL	**16,988**	**3,602**	**212**	**14,373**	**2,680**	**100.0%**	**186**

The major imports are from China at very competitive prices. However, there is sizeable import of premium products from UAE.

- **HS Code 70052100 : Float Glass & Surface Ground / Polished glass sheets- colored**

Countries	2018			2019			
	Tons	RO'000	RO / Ton	Tons	RO'000	% of Total	RO / Ton
UAE	2,576	1,230	478	1,432	414	53.9%	289
Iran	1,583	126	79	639	79	24.1%	123
China	144	29	199	585	73	22.0%	125
Saudi	26	11	419	1	2	0.0%	3553
Switzerland	0	7	75791	0	0	0.0%	3200
TOTAL	**4,329**	**1,402**	324	**2,657**	**568**	100.0%	214

As it can be seen, most of the **coloured** glasses of premium quality are imported from UAE and cheaper products are imported from Iran and China.

- **HSC 70052900 : Float Glass & Surface Ground / Polished glass sheets- whether or not absorbent**

Countries	2018			2019			
	Tons	RO'000	RO / Ton	Tons	RO'000	% of Total	RO / Ton
UAE	21,007	2,742	131	18,409	2,777	59.0%	151
Iran	6,100	331	54	6,987	436	22.4%	62
Malaysia	59	9	154	5,431	1,061	17.4%	195
China	364	65	178	353	43	1.1%	121
India	29	13	455	17	3	0.1%	191
Others	2,645	590	223	14	12		875
TOTAL	**30,203**	**3,750**	124	**31,210**	**4,331**	100.0%	139

Major imports are from UAE followed by Iran and Malaysis.

3.4.2.4.Summary of Import Quantity/Value/Unit Value

HS CODES	2014	2015	2016	2017	2018	2019
	Import quantity in Tons					
HSC. 70051000	16,579	14,351	17,476	15,007	16,988	14,373
HSC. 70052100	1,981	2,175	2,783	5,466	4,329	2,657
HSC. 70052900	16,129	20,549	23,817	30,962	30,203	31,210
Total Import	**34,689**	**37,075**	**44,076**	**51,436**	**51,520**	**48,241**
Export/Re export	-	-	-	-	-	-
Consumption	**34,689**	**37,075**	**44,076**	**51,436**	**51,520**	**48,241**
	Import Value in RO '000					
70051000	4,032	2,888	2,497	2,434	3,602	2,680
70052100	397	458	495	1,134	1,402	568
70052900	2,565	2,677	4,119	3,630	3,750	4,331
Total Value of imports	**6,994**	**6,023**	**7,112**	**7,199**	**8,755**	**7,579**
	Unit Value of Imports (RO / ton)					
70051000	243	201	143	162	212	186
70052100	200	211	178	208	324	214
70052900	159	130	173	117	124	139
Weighted Average	**202**	**162**	**161**	**140**	**170**	**157**

3.4.2.5.Estimated Demand / Consumption

Year	2014	2015	2016	2017	2018	2019	CAGR (2014 -2019)
	Figures in tons						
Local Production	Nil						
Imports	**34,689**	**37,075**	**44,076**	**51,436**	**51,520**	**48,241**	6.8%
Exports	Nil						
Re-exports	Nil						
Estimated Consumption (Local Production + Imports - Exports - Re-exports	**34,689**	**37,075**	**44,076**	**51,436**	**51,520**	**48,241**	
YOY Growth	**6.9%**	**18.9%**	**16.7%**	**0.2%**	**-6.4%**	**6.9%**	**6.8%**

- There has been considerable increase in consumption over the past 6 years (CAGR during 2014 to 2019 : 6.8%)
- The market is being catered to by a range of products with different price points.

- While the low end / cheap products are imported from China and Iran, UAE mainly focuses of the high value products.

3.5. DEMAND PROJECTION

Market for float glass has always been driven by the demand for building glass and automotive glass, which in turn depend on economic growth. Both construction sector and automotive have been impacted by the current outbreak of COVID-19 and the drop in oil prices.

Real estate market is particularly going through a tough phase and is expected to remain sluggish for the remaining quarters of this year. However, new applications for glass would contribute to market growth in the coming years.

3.5.1. Domestic Market

The total import of float glass in Oman in the year 2019, as per the data of Import Export Statistics is 48,241 Tons. As there is no local production, the entire requirement is met from import. The construction work is increasing and the requirement of float glass is also increasing. For a developing nation, construction activity has to play an active role. Hence the demand for float glass is expected to a dip of 15% in 2020 due to the impact of Covid 19 and expected to grow at a rate of around 3% per annum from 2022 onwards (conservatively).

Based on this the Local demand for float glass is projected as below:

Year	2019	2020	2021	2022	2023	2024	2025
Demand (Tones)	48,241						
Projected Growth rate	%	-15%	0%	3%	3%	3%	3%
Projected Demand		41,005	41,005	42,235	43,502	44,807	46,151

3.6. MAJOR SOURCES OF SUPPLY

The entire supply of float glass in Oman is from import as no float glass unit is functioning in the country.

3.7. MARKETING MIX STRATEGY OF COMPETITORS

3.7.1. Product Sizes

The products are sold based on the thickness. The details of the thickness of float glass sheets are given below.

Float Glass - Sizes	
Sl. No	***Thickness***
1	2 mm
2	3 mm
3	4 mm
4	5 mm
5	6 mm
6	8 mm
7	9 mm
8	10 mm
9	12 mm

3.7.2. Product Quality

Almost all flat glass produced today is Float Glass. It is shaped by drawing a wide sheet of molten glass into a furnace containing a bath of molten tin. The float process produces large volumes of glass with exceptionally good surface and optical qualities. When glass is shaped in a float bath, both sides come out with a brilliant finish and require no grinding or polishing. The float glass has been produced in all standard colors including clear, green, blue, gray, dark gray, and bronze. Both surfaces of the quality flat glass would be parallel. The quality of raw materials and other refining agents used, controlled ratio of

their mixing and accurate furnace heating during the manufacturing process ensure the quality of the products.

3.7.3. Pricing

The pricing depends on the thickness, volume of off-take, and the prospects of supplies. The following table illustrates the selling prices of float glass:

Float Glass – Selling Price (RO / Sq. M)	
Thickness	**Wholesale**
2 mm	1.1
3 mm	1.5
4 mm	1.8
5 mm	1.9
6 mm	2.3
8 mm	3.3
9 mm	4.4
10 mm	5.1
12 mm	6.5

The prices given in the table above are for the bulk purchases.

3.7.4. Promotion

Float glass is an industrial product which requires certain types of promotional tools to reach the end users of float glass, sub-contractors. It is necessary to identify he preferable promotional tools from the sub-contractors view in order to develop the appropriate promotional strategy for the company.

The following sales promotional efforts may also considered.

- Personal selling – direct to the Sub-contractors
- Brochures – gives the user a good insight about all product specification along with different product pictures for the product itself and, sometime, for the installation process
- Participation in Trade shows/Building Materials Fairs
- Advertisement in Electronic & print media
- Sales promotion programs
- Installation facilities
- After sales services

3.7.5. Trade Credit

The industry practice is to offer a reasonable credit period depending on the credit worthiness of the client. Often discounts of 5 – 10 percent are also given to the clients.

3.7.6. Distribution

The distribution process for float glass in Oman is following both the direct and indirect distribution. The end user of the float glass is the body which handles the installation of float glass.

From the origin of country, sub-contractor who represents the big companies imports the products directly. The sub-contractors, who represent small companies/ workshops, get the product through Importers/Distributors. Thus the company can follow both the distribution channels.

3.8. PROPOSED MARKETING MIX STRATEGY FOR THE COMPANY

3.8.1. Product Mix

The demand for float glass and their segmentation has been worked out in the earlier section. It was clear from the study that floats glass sheets available in different thickness. The various thickness of float glass finds usage in the residential and architectural activities. Hence the company will have to make available float glass in a variety of thickness as per the requirements in the market. The exact product mix will vary depending on the project to which supplies are committed.

However based on the current market trends, the following product mix is proposed:

Float glass – Product Mix	
Thickness	***Mix - %***
2 mm	5
3 mm	5
4 mm	10
5 mm	25
6 mm	15
8 mm	10
9 mm	10
10 mm	10
12 mm	10
	100%

3.8.2. Target Market

The project being located in Oman, it can market the products in all the regions. The target market groups for the product are:

- Building Contractors
- Wholesalers
- Retailers
- Furniture manufacturers

The company may be able to focus on the above groups.

3.8.3. Pricing

The product of the proposed unit will have the competitive advantage when compared to the imported products available in the market.

- No customs duty for import of raw materials
- Transportation cost
- Price preferences for government purchases.

The following table provides the projected prices for different products.

Average Selling Price of Float Glass				
S. No.	***Thickness***	***RO / Sq. M***		
		Retail Price	***Wholesale price***	***Ex-factory Realisation***
1	2 mm	1.350	1.1	0.81
2	3 mm	2.000	1.5	1.20
3	4 mm	2.250	1.8	1.35
4	5mm	2.500	1.9	1.50
6	6 mm	3.000	2.3	1.80
7	8 mm	4.500	3.3	2.70
8	9 mm	6.000	4.4	3.60
9	10 mm	7.000	5.1	4.20
10	12 mm	6.5		5.40

3.8.4. Promotion

The company shall concentrate on building healthy personal contacts with contractors, consultants, government officials concerned and the public. The company will also consider the following promotional activities:

- Participation in Building Materials Fairs
- Advertisement in Electronic & print media
- Sales promotion programs

The company could also offer its customers a credit period of 90 days as per the industry norms.

3.8.5. Distribution

The company would concentrate on direct marketing to the contractors and retailers in Oman and through wholesalers in other GCC countries. Direct marketing will also be undertaken with big contractors and furniture manufacturing units. A competent marketing team comprising of Marketing Manager and marketing Executives will be engaged in marketing the products. The vehicles will be provided for transportation of float glass to the Distributors/Wholesalers/Retailers.

3.9. DEMAND ESTIMATES FOR FLOAT GLASS IN GCC COUNTRIES

GCC member states are considered as the future growth areas for float glass due to their application in the construction sector. More than 10 major float glass manufacturing units having the capacity about 6000 Metric tons/day are functioning in GCC countries. But the production is not sufficient to meet the growing demand for float glass.

3.9.1. Major GCC Producers

The details of the existing major float/flat glass manufacturing units in GCC countries are given in the following Table:

Name of Units	Products	Capacity *((MT/Day)*	Country
Emirates Float Glass	Float	600	UAE
Emirates Float Glass – 2nd plant	Float	600	
Guardian Industries	Float	600	
Guardian RAK	Float	700	
Arabian United Float Company	Float	600	Saudi Arabia
Saudi Guardian Float Glass Co	Float	450	
National Co for Glass industry(ZOUJAJ)	Flat	400	
Obaikan glass Company	Flat	800	
Guardian Zoujaj Inter Float Glass Co	Float	700	Qatar
United Glass Co	Flat	400	Kuwait

The table below illustrates the consumption of float glass of GCC countries for the year 2017 & 2018 based on the Import-export data.

3.9.2. Details of Consumption

Float Glass – Consumption of Other GCC Countries			
Countries	**Details**	*2017*	*2018*
		Quantity (MT)	
Saudi Arabia	Import	65,557	92,441
	Export/Re Export	189,979	183,141
	Local Production	240,000	240,000
	Demand	**115,578**	**149,300**
UAE	Import	182,315	183,510
	Export/Re Export	202,142	211,677
	Local Production	750,000	750,000
	Demand	**730,173**	**721,833**
Qatar	Import	29,829	48,586
	Export/Re Export	0	0
	Local Production	210,000	210,000
	Demand	**239,829**	**258,586**
Kuwait	Import	**40,884**	**27,278**
	Export/Re Export	53	104
	Local Production	0	0
	Demand	**40,831**	**27,174**
Bahrain	Import	12,014	12,953
	Export/Re Export	7	166
	Local Production	0	0
	Demand	**12,007**	**12,787**
Total	**Import**	**330,599**	**364,768**
	Export/Re Export	392,181	395,088
	Local Production	1,200,000	1,200,000
	Demand	**1,138,418**	**1,169,680**

3.10. EXPORT POTENTIAL FOR THE PROPOSED PROJECT

3.10.1. Target Market

With major local producers in each of the GCC countries, the import by a country can be considered as the overall export potential for the project proposed in Oman.

While the total GCC import is over 395,000 tons in 2018 almost 50% of the import is by UAE (over 183,000 tons).

Hence, UAE would be a potential target market for the project.

3.10.2. Imports into UAE – Trend Analysis

The following table illustrates the import trend of UAE over the past 5 years and the source of imports for the year 2018.

HS Code	2015			2016			2017			2018		
	Tons	*USD '000*	*Rate (USD/Ton)*	*Tons*	*USD '000*	*Rate (USD/Ton)*	*Tons*	*USD '000*	*Rate (USD/Ton)*	*Tons*	*USD '000*	*Rate (USD/Ton)*
700510	37413	35,388	946	36771	34,067	926	56490	50,533	895	56722	54,684	964
700521	54798	49,734	908	47188	44,900	952	93771	79,552	848	89431	74,101	829
700529 & 30	21,934	12,940	1,372	22,271	13,782	2,429	32,054	20,930	2,243	37,358	25,088	2,369
Total	**114,145**	**98,062**	**859**	**106,230**	**92,749**	**873**	**182,315**	**151,015**	**828**	**183,511**	**153,873**	**838**

3.10.3. Import sources

The following tables illustrate the import sources for the various HS Codes.

Countries	2015			2016			2017			2018		
	Tons	*USD '000*	*Rate/Ton (USD)*	*Tons*	*USD '000*	*Rate/Ton (USD)*	*Tons*	*USD '000*	*Rate/Ton (USD)*	*Tons*	*USD '000*	*Rate/Ton (USD)*
India	12,860	12,661	985	12,030	13,183	1,096	33,013	29,943	907	38,782	33,632	867
China	26,318	18,020	685	24,202	14,080	582	24,005	15,320	638	30,978	19,579	632
Belgium	16,828	14,167	842	17,979	15,574	866	24,265	21,032	867	27,071	22,682	838
Saudi Arabia	8,496	4,682	551	9,466	4,902	518	13,506	7,557	560	19,892	13,003	654
USA	17,617	20,682	1,174	14,004	16,821	1,201	26,120	25,357	971	17,457	18,720	1072
Germany	2,318	3,156	1,362	3,185	5,231	1,642	5,237	7,134	1,362	7,390	10,689	1446
Iran	2,747	482	175	2,249	491	218	7,156	2,217	310	7,027	3,179	452
Switzerland	4,462	5,979	1,340	3,585	5,135	1,432	11,380	12,701	1,116	6,980	8,852	1268
Indonesia	5,516	5,196	942	4,541	4,364	961	5,981	5,766	964	6,029	5,531	917
Russia	925	439	475	150	184	1,227	6,182	5,089	823	5,143	4,972	967
Others	16057	12598	785	14839	12784	862	25,470	18,899	742	16,761	13,035	778
TOTAL	**114,144**	**98,062**	**859**	**106,230**	**92,749**	**873**	**182,315**	**151,015**	**828**	**183,510**	**153,874**	**839**

3.11. PROJECTED MARKET SHARE

The unit with a production capacity of 400 MT per day can effectively leverage its capability to service the large size corporate customers.

DETAILS	2022	2023	2024	2025	2026
Total Local demand (Tons)	42,235	43,502	44,807	46,151	46,151
Estimated Domestic sales (%)	30%	40%	50%	50%	50%
Estimated Domestic sales (Tons)	12,670	17,401	22,403	23,076	23,076
Production Capacity (Tons / Year)	132,000	132,000	132,000	132,000	132,000
Projected Capacity utilization	60%	80%	90%	90%	90%
Projected Production (Tons)	79,200	105,600	118,800	118,800	118,800
Balance Quantity for Export Market (Tons)	66,530	88,199	96,397	95,724	95,724

Considering the market potential in Oman and GCC Countries, and the conservative nature of the market projections (50% of Oman demand and about 8% of GCC imports) , the proposed market shares are achievable, by following the marketing mix strategy proposed earlier in the report.

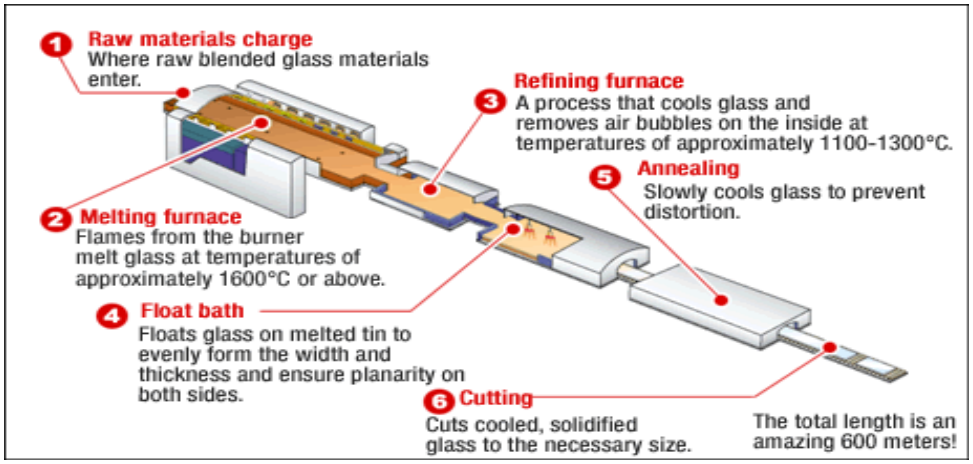
4. TECHNICAL ANALYSIS

4.1. LOCATION

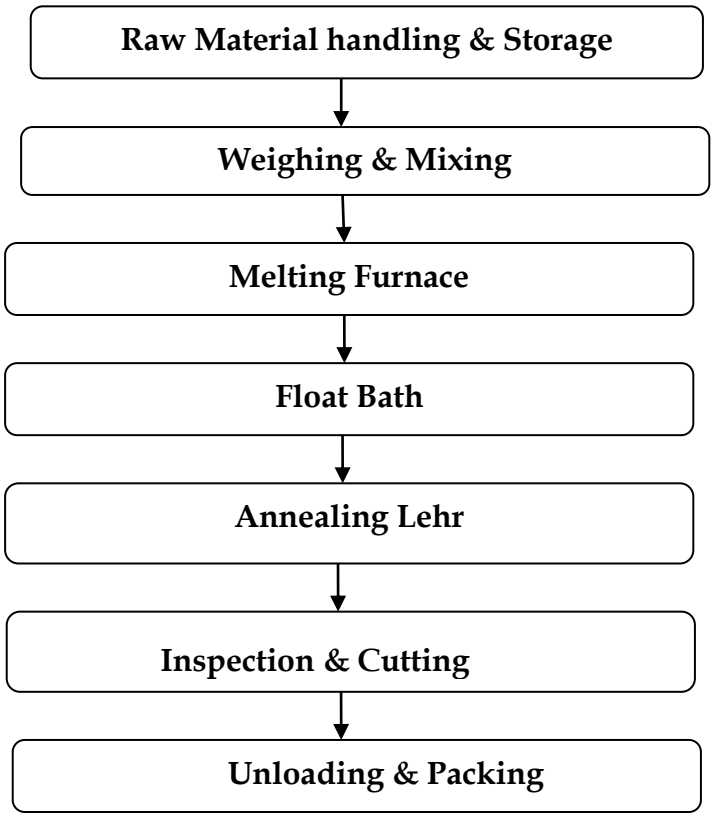
The Float Glass Plant is proposed to be located in Oman

4.2. PROCESS AND TECHNOLOGY

4.2.1. Production Process – Illustration



The process involved in the Float Glass Plant is depicted below.



4.2.2. Raw Material Handling & Storage

The raw materials such as sand, soda ash, dolomite, lime stone, salt cake and cullet are received and stored in silos or optional storage areas. The raw materials are then drawn down from the silos for batch weighing and mixing.

4.2.3. Weighing & Mixing

Cullet, which is crushed glass from edge trim of the cut lites or from broken cut lites, is blended with weighed quantities of other raw materials. The cullet is added to the mixed batch to make up from 15% to 30% of each batch.

4.2.4. Melting Furnace

The mixture is then delivered to the melting furnace as required. The batch house consists of silos, hoppers, conveyors, chutes, dust collectors and the necessary controls to properly handle the raw materials and mixed batch. The raw materials storage and handling is designed to suit the types of glass which will be produced along with the availability and cost of the raw materials. The mixed batch is delivered from the batch house to the furnace storage bin, by a belt conveyor system and then fed into the furnace at a controlled rate by the batch charger. As the batch is fed into the furnace melter area, it is heated by the fuel burners to approximately 1580 ˚C. From the melter the molten glass flows through the refiner, then through the waist area where stirrers homogenize the glass. Then, the glass is flown into the working end where it is allowed to cool slowly to the proper temperature for delivery to the float tin bath.

4.2.5. Float Bath

From the working end of the melting furnace, the glass flows through the canal area and then into the float bath onto molten tin. The float bath atmosphere is controlled by a mixture of nitrogen and hydrogen gases to prevent the tin from oxidizing. The molten glass which drops to 1100 ˚C,

forms a continuous ribbon that floats on the molten tin. As the continuous ribbon moves through the float bath, its temperature is gradually reduced allowing the glass to become flat and parallel.

4.2.6. Annealing Lehr

The annealing lehr controls the cooling of the glass when the glass enters it. The temperature of the glass is reduced according to a precise time/temperature gradient profile, established for each annealing lehr to produce glass that meets industry standards. The time/temperature profile for all of the glass thicknesses and colors produced by the plant is installed in the computerized annealing lehr process control system.

4.2.7. Inspection & Cutting

The cooled glass ribbon exits the annealing lehr and is conveyed to the cutting area by a system of rollers and drives linked to the lehr drive system. The glass is scored by carbide cutting wheels, parallel and perpendicular to the ribbon travel, into sizes that meet the plant's customer requirements. The scored glass ribbon is then separated into lites for packaging by unloading personnel or automatic equipment for transfer to the wareroom for storage or shipment to the customer.

The cut glass lite edges are trimmed off on the cutting systems' edge trim deck, deposited into a hopper with a rotating breaker bar to size the cullet, and then deposited on a belt conveyor for delivery to the batch house cullet silo or a ground storage area.

4.2.8. Unloading & packing

The glass lite are removed from the cutting system unload conveyors onto metal storage or shipping racks or into wooden containers. The racks and containers are then transferred to a close-up area and then moved into the warehouse by lift trucks or placed on trailers and towed by a tractor. The

wareroom is used to store the packaged glass products prior to their shipment along with the pre-staging of products prior to the shipment of the glass to customers.

4.2.9. Effluent Treatment

The equipment required for effluent treatment is included in the plant and machinery.

4.3. List of Machinery Suppliers

The equipment required for effluent treatment is included in the plant and machinery.

No	Detail
1	Shanghai Glasstem Machinery Co Ltd, Suite-706, Wenhaoge, Orient Garden, Hangzhou-310014, China info@glasstem.com
2	Qinhuandao Yaohua Glass machine Manf Co. Ltd, No.141, YouYi Road, Haihang District, Qinhuangdao, China. yhgmc@163.com
3	Electroglass Ltd, 4, Brunei Road, Manor Trading estate, Benfleet, Essex, SST4PS, England info@electroglass.co.uk
4	Sdc Foreign And Domestic Trade Co Ltd, Turkey sdc@sdctr.com

4.4. Land

A total land area of 300,000 m^2 is required for the float glass line. The total cost of site development and related work comes to RO 198,000. Site development includes, soil testing, fencing, parking lot, sewage, provisions for roads, gas connection, etc.

4.5. BUILDING & CIVIL WORKS

A total built up space of 13,830 M^2 is required for the proposed activities. The total cost works out to RO 2,574,000. Details are in Annexure- 1.2

4.6. PLANT CAPACITY & MACHINERY

The installed capacity of the plant is 132,000 metric tons of glass sheets of different thicknesses, varying from 2 mm to 12 mm, per annum.

The total cost of plant and machinery comes to RO 22.170 million. Details are given in Annexure -1.3.

4.7. VEHICLES

Float liners are required for transportation of finished products. Other vehicles such as loaders and forklifts are also provided. The estimated cost is RO 225,000. Details are provided in Annexure 1.4.

4.8. FURNITURE

The total estimated cost of furniture, furnishing and equipment is RO 102,000. The details and the break-up of the estimates are given in Annexure - 1.5.

4.9. RAW MATERIALS AND CONSUMABLES

Sand, soda ash and lime stone are the main raw materials for the manufacture of glass. The raw materials, except soda ash, are available in Oman. Other consumables can be purchased from the local market. Please refer Annexure - 2.1.

4.9.1. Packing Materials

Packing materials such as wooden pallets are required for the project. A sum of RO 980,000 is required for packing materials at installed capacity. Details are given in Annexure – 2.1

4.10. UTILITIES

The utilities required are: -

4.10.1. Water

Water is required for processing as well as general consumption. It is estimated that 187,500 cubic metre of water is required per annum and the cost at installed capacity works out to RO 144,375.

4.10.2. Electricity

Electricity is used for the furnace heating, machine operations and for general purpose lighting. It is estimated that the annual requirement is 26.25 million KWH and the cost works out to RO 787,500.

4.10.3. Natural Gas

Natural gas is required for heating of glass melting furnace. It is estimated that 22,500,000 cubic metre of gas is required per annum at installed capacity. The cost works out to RO 1.3 million escalated by 3% every year.

4.11. MANPOWER

The total manpower required for the operation is 128. The annual wages and salaries work out to be RO. 978,768.

4.12. PROJECT IMPLEMENTATION

The critical activities include civil construction, acquisition and the erection of the plant and machinery. Construction of building will take about 12 months. Placing of orders for machinery to be planned in such a way that the machinery arrives at the site as soon as the building is completed The Company can start production after 18 months from the start of preliminary activity.

5. FINANCIAL ANALYSIS

5.1. COST OF PROJECT

The total cost of the project is estimated at RO 30.912 million. Details are given in Annexure – I. The break-up is given below:

PROJECT COST	TOTAL COST (RO)
Land for Plant Site	198,000
Building & Civil Works	2,574,000
Plant & Machinery	22,170,000
Vehicles and Internal Transport	225,000
Furniture & Office Equipment	102,000
Pre- Operative Expenses	1,450,000
Contingency & Escalation	1,320,000
Sub Total	**28,039,000**
Working Capital	2,873,000
TOTAL	**30,612,000**

5.1.1. Land

The total extent of land is 300,000 Sq. M. The land is to be taken on lease.

5.1.2. Building & Civil Works

The total cost of building and civil works is estimated at RO 2.574 million. Details are given in Annexure- 1.2.

5.1.3. Plant & Machinery

The main Plant and Machinery is proposed to be imported. The total cost of plant and machinery is estimated at RO 22.170 million. Details are given in Annexure- 1.3.

5.1.4. Vehicles & Internal Transport

The total cost of vehicles and internal transport is estimated at RO 225,000. Details are given in Annexure- 1.4.

5.1.5. Furniture & Office Equipment

The total cost of furniture and office equipment is estimated at RO 102,000. Details are given in annexure- 1.5.

5.1.6. Pre-Operative Expenses

The pre-operative expenses include expenses for feasibility study, interest during project implementation, salaries and wages of project staff, travel and communication, legal fees, audit fees and other miscellaneous expenses. The total pre-operative expenses are estimated at RO 1.45 million. Details are given in Annexure- 1.6.

5.1.7. Contingency & Escalation

A provision of 5 % of the estimated cost of items including building, plant & machinery, vehicles, technical know-how fee etc., is provided in the Project cost towards price escalation and any unforeseen expenses. This works out to RO 1.320 million. Details are given in Annexure- 1.6.

5.1.8. Working Capital

Following assumptions are made for the computation of working capital.

Particulars	*Period*
Accounts Receivable	3 Months
Raw Materials	2 Months
Consumables & packing	1 Month

Particulars	*Period*
Utilities	1 Month
Factory Wages	1 Month
Administration Expenses	1 Month
Sales Expenses	1 Month
Work in Progress	5 Days
Finished Goods	1 Month
Finance Cost	1 Month

The working capital requirements for the first 4 years are given below. The working capital requirement in the first year comes to RO 2.873 million. Details are given in Annexure 1.8.

Particulars	Year 1	Year 2	Year 3	Year 4
Working Capital Requirement (RO '000)	2,873	3,754	4,119	4,136

5.2. MEANS OF FINANCE

It is proposed to finance the Project as indicated in the following table.

Details	*Total Cost (RO)*
Equity Capital	12,364,800
Bank Term Loan (@ 6% interest rate)	16,536,100
Sub-Total	**28,900,900**
Commercial Loan for WC (@ 6% interest)	2,011,100
TOTAL	**30,912,000**

5.3. COST OF SALES

The estimated cost of sale for first ten years of operation is given in Annexure-2 and those of first five years are summarized as below:

	Year of Operation	1	2	3	4	5
No	**Item**	**In RO '000**				
1	Raw Material	3,400	4,533	5,100	5,100	5,100
2	Packing material & Consumables	588	784	882	882	882
3	Utilities	1,415	1,919	2,195	2,233	2,272
4	Factory Wages	649	666	682	699	717
5	**PRIME COST**	6,053	7,901	8,859	8,914	8,970
7	Factory Overheads	395	864	864	864	864
8	Misc. Factory Exp.	129	175	194	196	197
9	**FACTORY COST**	6,576	8,941	9,918	9,974	10,031
10	Rent for Land	300	300	300	300	300
11	Admin. Salaries	249	256	262	269	275
12	Admin. Expenses	53	53	53	53	53
13	Total Admin expenses	602	609	615	621	628
14	Sales Salaries	80	82	84	86	88
15	Sales Expenses	30	30	30	30	30
16	Total sales & distribution costs	110	112	114	116	118
17	**OPERATING COST**	7,288	9,661	10,646	10,711	10,777
18	Interest on Bank Term Loan	992	961	837	713	589
19	Interest on working capital loan	121	121	121	121	121
20	Depreciation	2,554	2,554	2,554	2,554	2,554
21	Prelim Expenses written off	1,450	-	-	-	-
22	**COST OF SALE**	**11,293**	**12,215**	**13,201**	**13,265**	**13,332**

5.3.1. Raw Materials

The cost of raw materials and packing materials works out to RO 6.646 million in the first year of operation. Please refer Annexure 2.1 for details.

5.3.2. Utilities

The total cost of utilities is RO 2.271 million. The basis of estimate and the break up are given in Annexure – 2.2. It may be noted that gas cost of considered at USD 4.5 per MMBTU i.e., RO 0.0585 per M^3 with an escalation of 3% every year.

5.3.3. Salaries & Wages

The cost of salaries and wages in the normal year of operation is RO 978,768. Details are given in Annexure 2.3.

5.3.4. Factory Overheads

The annual expenses include repairs and maintenance, civil repairs, cost of spares, spare parts, insurance and vehicle expense and the same is estimated at RO 395,010 for the first year, RO 864,150 for the second year onwards. Details are given in Annexure- 2.4.

5.3.5. Administrative Expenses

The basis of estimates of administrative expenses inclusive of salaries & wages is given in Annexure 2.5 and it works out to RO 302,274. Administrative expense include salaries and benefits, rents and rates, vehicle expenses, communication related expenses, stationery, etc.

5.3.6. Sales Expenses

Total sales expenses are estimated at RO 109,968. Details given in Annexure-2.6

5.3.7. Depreciation

Depreciation works out to RO 2.554 million each for first ten years. In addition, a preliminary expense amount of RO 1.401 million is written off in the first year of operation. Depreciation calculation is given in annexure- 2.7. The following are the rates considered for the calculation of depreciation.

Assets	*Life (years)*	*% of depreciation*
Buildings	20	5
Plant & Machinery	10	10
Vehicles and Internal Transport	4	25
Furniture & Office Equipment	5	20

5.3.8. Loan & Interest Calculation

Interest rate for bank term loan is taken at 6% and commercial loan from bank for working capital is taken at 6%. Details of interest calculations are given in Annexure- 2.8

5.4. INCOME TAX

No income tax is provided as the new units are exempted from tax for the first five years. From sixth year onwards, 15% tax is considered.

5.5. SALES REALIZATION

The annual sales realization at installed capacity is given as annexure 3.1. The annual sales realization for the first five years of operation is provided below:

Details	Year 1	Year 2	Year 3	Year 4	Year 5
Local sales (RO)	1,621	2,161	2,431	2,431	2,431
Export Sales (RO)	9,185	12,247	13,778	13,778	13,778
Total sales (RO)	**10,806**	**14,408**	**16,209**	**16,209**	**16,209**

5.6. COST RATIOS

The major cost indicators as a percentage of sales realization are given in Annexure- 3.

Years of Operation	1	2	3	4	5
Raw Material / Total Sales	31.5%	31.5%	31.5%	31.5%	31.5%
Packing Materials/Sales	5.4%	5.4%	5.4%	5.4%	5.4%
Utilities / Total Sales	13.1%	13.3%	13.5%	13.8%	14.0%
Factory wages / Total Sales	6.0%	4.6%	4.2%	4.3%	4.4%
Prime Cost / Total Sales	56.0%	54.8%	54.7%	55.0%	55.3%
Factory exp. / Total Sales	4.8%	7.2%	6.5%	6.5%	6.5%
Factory Cost / Total Sales	60.9%	62.1%	61.2%	61.5%	61.9%
Admin exp. / Total Sales	5.6%	4.2%	3.8%	3.8%	3.9%
Selling exp. / Total Sales	1.0%	0.8%	0.7%	0.7%	0.7%
Finance Cost / Total Sales	10.3%	7.5%	5.9%	5.1%	4.4%
Non-Cash exp. /Total Sales	37.1%	17.7%	15.8%	15.8%	15.8%
Total Cost / Sales	104.5%	84.8%	81.4%	81.8%	82.2%

5.7. NET PROFIT AND PROFITABILITY ANALYSIS

As per the financial projection in Annexure – 3, the venture is financially viable. The summary of the analysis is given below:

	Year of Operation	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Production	60%	80%	90%	90%	90%	90%	90%	90%	90%	90%
	M. Tons	79	106	119	119	119	119	119	119	119	119
S. No	**Parameters**	**In RO '000**									
1	**Operating Cost**	7,288	9,661	10,646	10,711	10,777	10,845	10,915	10,987	11,062	11,138
2	Expected Sales										
a	Local	1,621	2,161	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431
b	Export	9,185	12,247	13,778	13,778	13,778	13,778	13,778	13,778	13,778	13,778
c	**Total**	**10,806**	**14,408**	**16,209**	**16,209**	**16,209**	**16,209**	**16,209**	**16,209**	**16,209**	**16,209**
3	**Profit before Int & dep**	**3,518**	**4,747**	**5,563**	**5,498**	**5,432**	**5,364**	**5,294**	**5,222**	**5,148**	**5,072**
4	Depreciation	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554
5	Finance Cost	1,113	1,082	958	834	710	586	462	338	245	121
6	**Operating profit**	**-149**	**1,111**	**2,051**	**2,110**	**2,168**	**2,224**	**2,278**	**2,330**	**2,349**	**2,397**
7	Other income if any										
8	Prelim Expenses written off	1,478	1,450	0	0	0	0	0	0	0	0
9	Profit/Loss before tax	-1,599	1,111	2,051	2,110	2,168	2,224	2,278	2,330	2,349	2,397
10	Income Tax	0	0	0	0	0	334	342	349	352	360
11	**Profit after tax**	**-1,599**	**1,111**	**2,051**	**2,110**	**2,168**	**1,890**	**1,936**	**1,980**	**1,996**	**2,037**
12	Statutory reserve	0	111	205	211	217	189	194	198	200	204
13	Profit for appropriation	0	1,000	1,846	1,899	1,951	1,701	1,743	1,782	1,797	1,833
14	Dividend	0	0	0	0	0	0	0	0	0	0
15	General reserve	0	1,000	1,846	1,899	1,951	1,701	1,743	1,782	1,797	1,833
16	**Net cash accruals**	**2,405**	**3,665**	**4,605**	**4,665**	**4,722**	**4,445**	**4,491**	**4,535**	**4,551**	**4,592**

5.8. KEY APPRAISAL CRITERIA

The viability of the project based on major appraisal criteria is given below.

Detail	Value
IRR on total investment	14.41%
IRR on Equity	21.72%
Payback period of Total Investment	6 Years 6 Months
Payback period on equity	5 Years 11 Months
Break Even Point (as % of Capacity)	61.6%
Cash Break Even Point (as % of Capacity)	35.5%
DSCR	1.94
Total debt equity ratio	1.50 : 1

5.9. SENSITIVITY ANALYSIS

A sensitivity analysis has been carried out to determine the susceptibility of the project to changes in main variables as given below:

Effect on the IRR on equity investment, based on 10 years of operation due to change in various variables is as follows:

Particulars	Original	Volume Down by 10%	RM Cost up by 10%	Sales Realization Down by 10%
IRR on Investment	14.41	11.8	12.9	9.5
IRR on equity	21.72	16.8	18.9	12.9

6. KEY SUCCESS AND PUSHBACK FACTORS

The following aspects are highlighted as the key success / pushback factors.

6.1. KEY SUCCESS FACTOR

- The project shall ensure import substitution and improve the ICV performance in the sector.
- In the long run, the possibility of value addition of the local raw material if found viable shall give the project a definite competitive advantage.
- The project could also lead to development further downstream SMEs who will be able to perform further value addition and create specific products for the end users.
- The project shall be able to effectively leverage on the government incentives including low cost well developed industrial land, utilities etc.
- Access to well-developed roads and sea ports will help the unit in reaching potential markets (Domestic and Export markets)

6.2. KEY PUSHBACK FACTORS

The market analysis indicates that the other GCC markets have well established players and the privilege of a relatively large domestic market.

The proposed project should ensure that the capital cost and the operating costs are kept at optimum levels to enhance their capability to compete with the established competitors in the domestic market (importers / traders) as well as the established manufacturers in the GCC markets.

The project needs natural gas. Availability of the required quantity at the prices indicated in the report is critical for the success of the project.

7. CONCLUSION

The IRR on Total Investment for the project is 14.41% and the IRR on Equity Investment is 21.72%. Based on the various analyses done on the project, the project is found to be technically feasible and financially viable.

Annexures – Financial Projections

ANNEXURE- 1					
FLOAT GLASS PROJECT					
ESTIMATED PROJECT COST					
S.No	**Item**	**Refer**		**Amount**	**Remarks**
		App.		**(RO)**	
A1	**PROJECT COST**				
1	Land for Plant Site	1.1	198,000		Estimates
2	Building etc.	1.2	2,574,000		Estimates
3	Plant & Machinery	1.3	22,170,000		Estimates
4	Vehicles and Int. Transport	1.4	225,000		Estimates
5	Furniture & Office Equip.	1.5	102,000		Estimates
6	Pre- Operative Expenses	1.6	1,450,000		Estimates
7	Contingency & Escalation	1.7	1,320,000		Estimates
	Sub Total		28,039,000	**28,039,000**	
A2	**WORKING CAPITAL**		2,873,493	**2,873,000**	
A3	**TOTAL CAPITAL**			**30,912,000**	
	Say			**30,912,000**	
B	**MODE OF FINANCE**				
1	Equity			12,364,800	40%
2	Bank Term Loan			16,536,100	
	Sub Total			**28,900,900**	
3	Bank Borrwings for Working Capital			2,011,100	70%
	TOTAL CAPITAL			**30,912,000**	

ANNEXURE- 1.1						
FLOAT GLASS PROJECT						
ESTIMATED COST OF LAND & SITE DEVELOPMENT						
S.No.	**Item**	**Unit**	**Q'ty**	**Rate**	**Amount**	**Remarks**
				(RO)	**(RO)**	
A	**LAND**					
1	Land for Plant	Sq. M	300,000	0	-	On lease (600M x500 M)
B	**SITE DEVELOPMENT**					
1	Soil Testing				6,000	Lumpsum
2	Levelling	Sq. M	30,000	0.500	15,000	10% of total area
3	Landscaping		3000	3	9,000	
4	Paving /Roads	Sq. M	3,000	10	30,000	Int-O-Lock Tiles
5	Sewerage/Drainage				10,000	Lumpsum
6	Gate ,Gate House & Misc.	Set			10,000	Lumpsum
7	Fencing	M	2,191	40	87,636	Concrete / Chain link
8	Prov for gas connection				10,000	
9	Prov for Electric line				10,000	
10	Prov for Water line fron ring main				10,000	
	Sub Total				197,636	
C	**TOTAL**				197,636	
	Say				**198,000**	Sum (B1 to B10)

ANNEXURE- 1.2						
FLOAT GLASS PROJECT						
ESTIMATED COST OF BUILDING & CIVIL WORKS						
S.No.	**Item**	Unit	**Area**	**Rate**	**Amount**	**Remarks**
			(SqM)	**(RO)**	**(RO)**	
A	**MAIN PLANT BUILDINGS**					
1	Building for batch plant	Sq. M	800			Masonary wall & steel roof
2	Furnace Building	Sq. M	1,150			Masonary wall & steel roof
3	Building for TIN BATH	Sq. M	1,150			Masonary wall & steel roof
4	Building for Annealing Lehr	Sq. M	3,000			Masonary wall & steel roof
5	Building for Cold End/Cutting Li	Sq. M	3,000			Masonary wall & steel roof
6	Shielding gas Station Building	Sq. M	250			Masonary wall & steel roof
7	Physical & Chemical Lab	Sq. M	150			Masonary wall & steel roof
8	Glass Quality Testing Lab	Sq. M	150			
	Sub Total		**9,650**	150	**1,447,500**	
B	**GODOWNS / WARE HOUSES**					
1	Raw Material Storage	Sq. M	1000			Masonary wall & steel roof
2	Warehouse	Sq. M	2000			Masonary wall & steel roof
	Sub Total		**3,000**	120	**360,000**	
C	**UTILITIES & MAINTENANCE**					
1	Compressor Room	Sq. M	50			Masonary wall & steel roof
2	Electrical Room	Sq. M	80			Masonary wall & steel roof
3	Workshop	Sq. M	200			Masonary wall & steel roof
4	Effluent treatment	Sq. M	200			Masonary wall & steel roof
5	Boiler House	Sq. M	100			
6	Pump House	Sq. M	50			
	Sub Total		**680**	120	**81,600**	
D	**ADMINISTRATIVE BUILDINGS**					
1	Office	Sq. M	250			RCC
2	Security Office	Sq. M	50			RCC
	Sub Total		**300**	150	**45,000**	
E	**NON FACTORY BUILDINGS**					
1	Canteen	Sq. M	100			Masonary wall & steel roof
2	Change Room	Sq. M	100			Masonary wall & steel roof
	Sub Total		**200**	120	**24,000**	
F	**OTHER CIVIL WORKS**					
1	Water Tank	Set			100,000	
2	Other Misc. Civil Works				100,000	
3	Chimney stack				150,000	
4	Associated Electro-mechanical works		13830	15	207,450	
	Sub Total				557,450	
G	**ENGINEERING FEES**					
1	Design				29,372	At 1.5% on built up area cost
2	Supervision				29,372	At 1.5% on built up area cost
	Sub Total				58,743	
H	**TOTAL**				2,574,293	
	Say				**2,574,000**	

ANNEXURE- 1.3

FLOAT GLASS PROJECT

ESTIMATED COST OF PLANT & MACHINERY

S.No.	Item	Q'ty (Nos.)	Rate	Amount (USD)	Amount (RO)	Remarks
	MAIN PLANT & MACHINERY					
A	**BATCH PLANT AND CULLET RETURN SYSTEM**					
a	**Material Handling System**					
1	Lifting Device	1				
2	Vibrating Feeder	7				
3	Screwing Damper	6				
4	Belt Model Transporter	12				
5	Elevator	8				
6	Vibrating Hopper, Flat Shaking Sieve	2				
b	**Weighing, Mixing & Cullet Return System**	1 set				
1	Platform Balance	6				
2	Mixer	1				
3	Mixer (Standby)	1				
4	Cullet Scale	1				
5	Control System (including software & harware)	1				
6	Bag Model Dust Catcher	5				
7	Filtering Bucket Model Dust Catcher	9				
8	Platform Dust Catcher	1set				
9	De-Iron Separator	4				
10	Heating Device for Water	1 set				
11	Purifying Agent for Compressed Air	1 set				
12	Belt Conveyor with cover & belt					
13	Control Cables					
B	**MELTING FURNACE**					
1	Furnace made of electrofused cast refractory,direct bonding magnesite-chrome brick, checkers, alumina bricks etc with necessary bonding & sealing materials (total weight of material 5450 MT)	Set				
2	Suspended Wall at Charging Side	1				
3	Water-cooled Steel Barrage with its support					
4	Shadow wall	1				
5	Horizontal water-cooled Stirrers & Drive	2				
6	Charging Machine with pushers, hopper etc	1				
7	Combustion air fan	2 set				
8	Combustion air Firing system with flow metyers &	5 set				
9	Natural Gas Firing System with all fittings					
10	Natural Gas injectors with fittings	28				
11	Natural Gas injector cooling system with fittings					
12	Waste gas dampening system with fittings					
13	Working End Heating system with all fittings	2 set				
14	Working End Cooling system with fittings					
15	Instrumentation					
16	Temperature measuring system with thermocouples & optical pyrometers					
17	Glass level monitoring system with camera, adjustable framework & watercooling system					
18	Canal made of refractory bricks with supporting structures					
19	Control System with software	1				
20	Processing steel structures	290 tons				
21	Local / Ductwork	126 tons				
22	Control Cables					

ANNEXURE- 1.3						
FLOAT GLASS PROJECT						
ESTIMATED COST OF PLANT & MACHINERY						
S.No.	**Item**	**Q'ty**	**Rate**	**Amount**	**Amount**	**Remarks**
		(Nos.)		**(USD)**	**(RO)**	
C	**TIN BATH**					
1	Processing steel structures including casing,	250 tons				
	gratings, walkways & de-drossing pockets					
2	Bath made of refractory bricks with bottomlining,	180 tons				
	side walls, & in and out lintels					
3	Bath Roof	250 Sq.M				
4	Side seals for blank side, window side & top rolls si	1 set				
5	Fences and Carbon Pushers	4				
6	Top Rolls (suspended)	10 pairs				
7	Head Coolers & end coolers with their carriages	2 pairs				
8	Heating system with transformers, frame works,	sets				
	bus bars & heating elements					
9	Cooling System with fan sets	3 set				
10	Instrumentation system	set				
11	Temperature measuring system with nickel	set				
	thermocouples for bath, casing and roof including					
	infrared pyrometers					
12	Dew point sensors with electronic device	2				
13	Sensors for bath pressure	2				
14	Monitoring system with cameras & monitors	16				
15	Dross box with Lift Out Rolls, OD.305mm,	set				
	Stainless Steel 25/20,Straight & LOR drive					
16	Control System with utility & operation software	1 set				
	& hardware					
17	Piping / Duct work	1 set				
18	Control cables					
D	**ANNEALING LEHR**					
1	Annealing casing	1 set				
2	Heating system with heating elements & junction	1 set				
	boxes					
3	Cooling system with fan sets (13) ,air flow control					
	valves & actuators					
4	Ductwork with insulation	5 tons				
5	Instrumentation with thermocouples(k-type) &	39				
	infrared pyrometers	5				
6	Lehr Rolls	188				
7	Rolls spoon	1				
8	Lehr Rolls Drive Mechanism	1 set				
9	Control System with software & hardware	1 set				
10	Piping / Ducting	1 set				
11	Control cables					

ANNEXURE- 1.3

FLOAT GLASS PROJECT

ESTIMATED COST OF PLANT & MACHINERY

S.No.	Item	Q'ty (Nos.)	Rate	Amount (USD)	Amount (RO)	Remarks
E	**CUTTING LINE**					
1	Pulling section conveyor	1 set				
2	Emergent cross cutiing machine	1 set				
3	Emergent drop section	1				
4	Conveyor for emergent dropping glass ribbon	1				
5	Crusher for emergent drop section	1				
6	Defect testing	1				
7	Handrail I	5				
8	Length measurement transmitter	1				
9	Longitudinal cutting machine	2				
10	Handrail II	2				
11	Cross cutting machine	1				
12	Cutting conveyor	1				
13	Cross snapping device	1				
14	Accelerating conveyor	1				
15	Snapping device	2 set				
16	Snapping conveyor	1				
17	Longitudinal snapping & separating conveyor	1				
18	Cleaner with compressed air	1				
19	Conveyor before drop section	1				
20	Mail line drop device	1				
21	Conveyor for dropping glass ribbon	1				
22	Crusher for dropping section	1				
23	Conveyor after drop section					
24	Selectivity dropping device	2				
25	Inclined conveyor	2				
26	Powder machine	1				
27	Branch conveyor	2				
28	Wafer separator for branch conveyor	2				
29	Moderate & small size stacker	2				
30	Stacking steering platform	2				
31	Big size stacker	1				
32	Crusher	4				
33	Control System with operating soft-hardwares					
34	Control cables					
F	**PROCESS ELECTRIC CONTROL EQUIPMENTS**					
1	Synthesis transformer station with 10KV transformer (7) & high voltage power distribution cabinet (20)					
2	Low-voltage cable from synthesis transformer station to MCC	ALL				
3	Cable from MCC to various equipments MCC					
4	Motor Control Center	ALL				
5	Bath heating panel MCC	ALL				
6	Lehr heating panel MCC	ALL				
7	Lehr drive panels and motors	1 set				
8	Power panels for utilities MCC					
9	UPS and battery UPS	150 KWh				
10	Control cables					
G	**HYDROGEN PRODUCTION UNIT (WATER Electrolyze) H2**					
1	Electrolyze H2 making equipment	2 set				
2	Electrobath	2 set				
3	Auxiliary Facilities frame	2 set				
4	Accessory equpiment	2 set				
5	Cables					
6	Piping / Ductwork					
7	Control Cables					

ANNEXURE- 1.3

FLOAT GLASS PROJECT

ESTIMATED COST OF PLANT & MACHINERY

S.No.	Item	Q'ty (Nos.)	Rate	Amount (USD)	Amount (RO)	Remarks
H	**NITROGEN PRODUCTION UNIT N2**					
1	Fractionating Tower 800/40	3				
2	Compressor	3				
3	Cooling Dryer	3				
4	Filter	3				
5	Liquid Nitrogen store-tank and low temperature va	1				
6	Purifying Agent	2				
7	Carburetor	1				
8	Ball Valves DN50, DN100 & DN150	92				
9	Other Valve					
10	Seamless Steel Pipe	5 tons				
11	Piping / Ductwork					
12	Control System					
13	Control cables					
I	**N2H2 ATMOSPHERE GAS MIXING STATION**					
1	Rotor Flowmeters DN50,DN 65 & DN200	14				
2	Flashboard Valve DN100	20				
3	Ball Valves DN100 & DN65	30				
4	Seamless Steel Pipe	5 tons				
5	Piping / Ductwork					
6	Control Cables					
J	**SO2 GAS DISTRIBUTION STATION**					
1	Pressure reducers	2				
2	Safety Valves	2				
3	Pressure Gauge	2				
4	Control Cables					
K	**NG DISTRIBUTION**					
1	Isolating Valve	1				
2	Dielectric Joint	1				
3	Filters	2				
4	Pressure Reducers	2				
5	Automatic Block Valves for high and low incoming	2				
6	Flow meter of Turbine type	1				
7	Isolating Valves, Manometers and Thermometers	1 set				
8	Safety Valves					
9	Device for calculation and registration of the compe	1				
10	By pass for the above mentioned equipment	1 set				
11	Piping / Ductwork					
12	Standby Oil Station	1 set				
13	Control Cables					
L	**COMPRESSED AIR**					
1	Compressor	1				
2	Cooling Dryer	1				
3	Filter	1				
4	Micro-heating Rebirthing Dryer	1 unit				
5	Compressed Air store-tank	1				
6	Ball Valve DN100	8				
7	Check Valve DN100	2				
8	Aspiratory Cover	2				
9	Piping / Ductwork					
10	Control Cables					

ANNEXURE- 1.3						
FLOAT GLASS PROJECT						
ESTIMATED COST OF PLANT & MACHINERY						
S.No.	**Item**	**Q'ty**	**Rate**	**Amount**	**Amount**	**Remarks**
		(Nos.)		**(USD)**	**(RO)**	
M	**COOLING WATER NETWORK**					
a	**Recycling Water Pump Station**					
1	Recycling Water Pump	6				
2	Adding pressure pump for clear water	2				
3	Recycling water pump for N2 and H2 station	2				
4	Damper Valve DN200	20				
5	Micro-resistant slow-close check valve DN200	6				
6	Soft connection DN200	12				
7	Seamless Steel Pipe	10 tons				
8	Cooling Tower 400T/H	4				
9	Damper Valve DN350	4				
10	Damper Valve DN300	4				
11	Water softening system					
b	**Recycling Water Pipe Network**					
1	Main Pipe	20 tons				
2	Branching Pipe	10 tons				
3	Main Pipe Valve DN350	8				
4	Branching Pipe Valve DN100	30				
5	Micro-resistant slow-close check valve DN200	6				
6	Connecting Valve					
N	**SURPLUS HEAT BOILER STATION**					
1	Surplus Heat Boiler	2				
2	Fan	2				
3	Damper	2				
4	Accessory Equipment	2				
5	Control Cables					
O	**WAREHOUSE EQUIPMENTS**					
1	Fixed racks for glass packs	20				
2	Fixed double racks for small glass packs	10				
3	A-frame for boxes	40				
4	5-ton traveling crane	1				
5	Forklifts – 5 tons	4				
6	Wooden tools (for glass packing)	1 Set				
P	**PRODUCTION TOOLS**					
1	For forming area	1 set				
2	For annealing area	1 set				
3	Infrared pyrometer	1				
4	Infrared pyrometer	1				
5	Portable Analyzer (H2, 02, H20)	1				
6	Special glass	1				
7	Special gloves, masks… for High Temperature	1				
Q	**PHISICO-CHEMICAL & QUALITY TESTING LABORATORY**					
1	Balance	1				
2	UV spectrophotometer	1				
3	Flame photometer	1				
4	Electro-thermal drier	1				
5	Electric oven	1				
6	Electro thermal distilled water container	1				
7	Pt crucible	1				
8	Pt ware	1				
9	Pliers with Pt head	1 Set				
10	Microscope	1				
11	Density meter	1				
12	Liquefaction jet-lights	1				
13	Refrigerator	1				
14	Moisture meter	1				
15	Standard vibrating sieve	1				
16	Conductance meter	1				
17	Magnetic stirrer	1				
18	Sand bath	1				
	EPC contract value for items A to Q			46,800,000	**18,018,000**	FOB Chinese Port

ANNEXURE- 1.3						
FLOAT GLASS PROJECT						
ESTIMATED COST OF PLANT & MACHINERY						
S.No.	Item	Q'ty	Rate	Amount	Amount	Remarks
		(Nos.)		(USD)	(RO)	
R	ANCILLARY CIVIL/MECHANICAL WORKS / SERVICES - Local					
1	Batch silos for Raw material storage (concrete)				100,000	
2	Cullet Tank				30,000	
3	Red Bricks for Furnace				50,000	
4	Concrete & sheet metal work of Tin Bath				50,000	
5	Elevated water tank				60,000	
6	Fire Protection System				50,000	
7	Effluent Treatment				100,000	
8	Providing pipelines to NG station, Oil station & Water storage locations from outside of the factory				100,000	
	Sub Total				**540,000**	
S	**MAINTENANCE WORKSHOP - Local**				**200,000**	
T	**ELECTRIFICATION - Local**					
1	Switch boards/Distribution boards				100,000	
2	Power cables to transformer station				100,000	
3	Lightning conductors & earthing				50,000	
4	PF correction				25,000	
	Sub Total				**275,000**	
U	**AT SITE COST**					
1	Total Cost of Plant - Import				18,018,000	
2	Total Cost of Plant - Local				1,015,000	
3	Spares - Import				100,000	
4	Spares - Local				25,000	
5	Packing, Insurance Forwarding & Freight - Import				1,351,350	7.5% of EPC contract value
6	C I F Cost				20,509,350	
7	Import duty					
8	Clearing & Transport to Site				410,187	2% of total cost
9	At Site Cost				20,919,537	
V	**ERECTED COST**					
1	At Site Cost				20,919,537	
2	Cost of erection - Local				500,000	
3	Technical Supervision -Import				500,000	
4	Accommodation, Food Etc.				250,000	
	TOTAL ERECTED COST				**22,169,537**	
	Say				**22,170,000**	

ANNEXURE- 1.4					
FLOAT GLASS PROJECT					
ESTIMATED COST OF VEHICLES & INTERNAL TRANSPORT					
S.No.	**Item**	**Q'ty**	**Source**	**Amount**	**Remarks**
		(Nos.)		**(RO)**	
A	**VEHICLES**				
1	Car Saloon	1	15500	15,500	For Gen. Manager
2	Car - Small	5	6000	30,000	For Senior Managers
3	Bus	3	20,000	60,000	For all Staff
	Sub Total	**9**		**105,500**	
B	**TRANSP. EQUIPMENT**				
1	Big, moderate & small size sta	3			Provided in Eqpt supply
2	Fork lift truck	3	10,000	30,000	
3	Shovel Payloader	1	25,000	25,000	
4	Pallet truck	8	500	4,000	
5	Floatliner Trailers	1	40,000	40,000	
6	Registration, Painting, Spares			20,450	10% of cost of vehicles
	Sub Total			**119,450**	
C	**TOTAL**			224,950	
	Say			**225,000**	

ANNEXURE- 1.5					
FLOAT GLASS PROJECT					
S.No	**Item**	**Q'ty**		**Amount**	**Remarks**
				(RO)	
A	**OFFICE**				
1	P.C with Printer	20	300	6,000	
2	Photocopier	2	1,500	4,500	
3	Fax, Telephone	Set		3,000	Lumpsum
4	Other Office Equipment	Set		2,500	Lumpsum
5	Air Conditioners	20	250	5,000	Lumpsum
6	Office Furnitures	Set		10,000	Lumpsum
7	Board room furniture			10,000	Lumpsum
	Sub Total			**41,000**	
B	**ACCOMODATION**				
	Officers & Workers			40,500	
	Sub Total			**40,500**	
C	**FACTORY**				
1	Furniture / Fittings	Set		20,000	Lumpsum
	Sub Total			**20,000**	
D	**TOTAL**			101,500	Sum A + B+C
				102,000	

ANNEXURE- 1.6				
FLOAT GLASS PROJECT				
ESTIMATED COST OF PRE-OPERATIVE EXPENSES				
S.No	**Item**		**Amount**	**Remarks**
		(RO)	**(RO)**	
1	Preliminary Expenses		100,000	Upto formation of Co.
2	Feasibility Studies		12,000	
3	Project Management Expenses		309,120	1% on Project Cost
4	Company Employees			
a	Salary & benefits -General Manager	11,250		3 Months
b	Salary & benefits - Works Manager	3,600		2 Months
c	Salary & benefits - Production Staff	52,310		1 Month
d	Salary & benefits - Admin. Staff	20,790		1 Month
e	Salary & benefits - Sales Staff	6,664		1 Month
f	Visa, Passage etc.	83,900		For Expatriates from RO 900 to RO 2500 based on designation
	Sub Total		178,514	
5	Financing Cost			
a	Institutional Loan Interest	556,416		At 6% for 6months
b	Mortgage & Gurantee Expenses	92,736		At 1% on Institu: Loan
c	Other Bank Charges	2,000		Lumpsum
	Sub Total		651,152	
6	Communication		11,250	Dhs 750/M for 15 Months
7	Travel		10,000	Lumpsum
8	Recruitment Charges		16,200	Lumpsum
9	Audit Fees, Legal Fees		3,000	Lumpsum
10	Insurance		98,976	At 0.4 % of Plant & Bldg.
11	Staff Training		10,000	
12	Air Travel		10,000	
13	Start Up Expenses		10,000	Estimate
14	Product Launching, Advt. etc.		20,000	Provision
15	Miscellaneous		10,000	Provision
16	Total		1,450,212	
	Say..		**1,450,000**	

ANNEXURE- 1.7					
FLOAT GLASS PROJECT					
ESTIMATES OF CONTINGENCY AND ESCALATION					
S.No.	**Item**	**Cost**	**Rate**	**Provision**	**Remarks**
		(RO)	**(%)**	**(RO)**	
A	**FIXED ASSETS**				
1	Land for Plant Site	198000	0.0	-	
2	Building etc.	2574000	5.0	128,700	
3	Plant & Machinery	22170000	5.0	1,108,500	
4	Technical Know-How	0	5.0	-	
5	Vehicles and Int. Transport	225000	5.0	11,250	
6	Furniture & Office Equip.	102000	5.0	5,100	
7	Contingency	1320000	5.0	66,000	
	TOTAL			1,319,550	
	say			**1,320,000**	

ANNEXURE- 1.8								
FLOAT GLASS PROJECT								
ESTIMATES OF WORKING CAPITAL REQUIREMENTS								
S.No.	**Item**	**Req.**		**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Remarks**
					In Dhs '000			
1	Acct. Receivable	3	Months	1822	2415	2662	2678	Cost of sales - Non C Ex.
2	Raw Materials	2	Months	567	756	850	850	
3	Consumables &Packing	1	Months	49	65	74	74	
4	Utilities	1	Month	118	160	183	186	
5	Factory Wages	1	Month	54	55	57	58	
6	Admn. Expenses	1	Month	50	51	51	52	
7	Sales Expenses	1	Month	9	9	9	10	
8	Work in Progress	5	Days	90	122	136	137	At Factory Cost
9	Finished Goods	1	Month	598	796	878	883	At total Cost- Non cash-Selling and Distrbn
10	Finance Cost	1	Month	83	80	70	59	At Finance Cost
11	Total			3440	4510	4969	4986	
12	Payables		Months					
	Raw Materials	2	Months	567	756	850	850	
	Consumables &Packing	0	Months	0	0	0	0	
	subtotal			567	756	850	850	
	Say			**2,873**	**3,754**	**4,119**	**4,136**	

ANNEXURE- 2

FLOAT GLASS PROJECT

COST OF SALE

	Year of Operation		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Production	Capacity	60%	80%	90%	90%	90%	90%	90%	90%	90%	90%
	M.Tons (000)	132	79	106	119	119	119	119	119	119	119	119
No	**Item**		**In RO'000**									
1	Raw Material		3,400	4,533	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100
2	Packing mat &Consumables		588	784	882	882	882	882	882	882	882	882
3	Utilities		1,415	1,919	2,195	2,233	2,272	2,312	2,353	2,395	2,439	2,484
4	Factory Wages		649	666	682	699	717	735	753	772	791	811
5	**PRIME COST**		6,053	7,901	8,859	8,914	8,970	9,028	9,088	9,149	9,212	9,277
7	Factory Overheads		395	864	864	864	864	864	864	864	864	864
8	Misc. Factory Exp.		129	175	194	196	197	198	199	200	202	203
9	**FACTORY COST**		6,576	8,941	9,918	9,974	10,031	10,090	10,151	10,213	10,278	10,344
10	Rent for Land		300	300	300	300	300	300	300	300	300	300
11	Admin. Salaries		249	256	262	269	275	282	289	297	304	312
12	Admin. Expenses		53	53	53	53	53	53	53	53	53	53
13	Total Admin expenses		602	609	615	621	628	635	642	649	657	664
14	Sales Salaries		80	82	84	86	88	90	93	95	97	100
15	Sales Expenses		30	30	30	30	30	30	30	30	30	30
16	Total sales & dist: costs		110	112	114	116	118	120	122	125	127	130
17	**OPERATING COST**		7,288	9,661	10,646	10,711	10,777	10,845	10,915	10,987	11,062	11,138
18	Int on Bank Term Loan Institutional finanace		992	961	837	713	589	465	341	217	124	(0)
19	Interest on working capital loan		121	121	121	121	121	121	121	121	121	121
20	Depreciation		2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554
21	Prelim Expenses written off		1,450	-	-	-	-	-	-	-	-	-
22	**COST OF SALE**		**11,293**	**12,215**	**13,201**	**13,265**	**13,332**	**13,400**	**13,470**	**13,542**	**13,616**	**13,692**

ANNEXURE- 2.1						
FLOAT GLASS PROJECT						
ESTIMATED COST OF RAW MATERIALS						
S.No.	**Item**	**Unit**	**Qty**	**Rate**	**Amount**	**Remarks**
A	**RAW MATERIALS**				**(RO)**	
1	Sand	MT	93,225	17	1,612,793	
2	Soda Ash	MT	32340	100	3,234,000	
3	Limestone	MT	14190	7	99,330	
4	Dolomite	MT	16170	8	124,509	
5	Sodium Sulphate	MT	1650	40	66,000	
6	Aluminium Hydroxide	MT	1980	130	257,400	
7	Cullet	MT	5445	50	272,250	
	Sub Total		165,000		5,666,282	
	Total Raw Materials				**5,666,282**	
B	**CONSUMPTION MATERIALS**					
1	Packaging Materials(Wooden Pallets)	Value per t	8	120,000	960,000	
2	Powders				20,000	
	Sub Total				**980,000**	
	TOTAL MATERIALS				**6,646,282**	

ANNEXURE- 2.2						
FLOAT GLASS PROJECT						
ESTIMATED COST OF UTILITIES						
S.No.	**Item**	**Unit**	**Qty**	**Rate**	**Amount**	**Remarks**
					(RO)	
	UTILITIES					
1	Fuel Gas	CuM	22,500,000	0.0585	1,316,250	
2	Water	Cu M	187,500	0.77	144,375	
3	Electricity	KWH	26,250,000	0.030	787,500	
4	Diesel	Litres	99,000	0.23	23,166	
	TOTAL				**2,271,291**	

ANNEXURE- 2.3							
FLOAT GLASS PROJECT							
ESTIMATES OF ANNUAL SALARIES AND WAGES							
S.No	**Item**	**Number of personnel**		**Salary**		**Amount**	**Remarks**
		Omanis	**Expatriates**	**Omanis**	**Expatriates**	**(RO)**	
A1	**PRODUCTION**						
a	**Basic Salary**						
1	Production Manager	0	1	0	1200	14,400	
2	Furnace -in-charge	1	1	800	700	18,000	
3	Tin Bath-in-charge	1	1	800	700	18,000	
4	Annealing Lehr-in-charge	1	1	800	700	18,000	
5	Supervisors	5	10	600	500	96,000	
6	Skilled workers	10	20	450	350	138,000	
7	Unskilled workers	5	20	330	200	67,800	
8	**Sub Total**	**23**	**54**			**370,200**	
A2	**QUALITY**						
a	**Basic Salary**						
1	Technical Manager		1		1200	14,400	
2	Lab Technicians	2	2	450	350	19,200	
3	**Sub Total**	**2**	**3**			**33,600**	
A3	**MAINTENANCE / SAFETY**						
a	**Basic Salary**						
1	Chief Engineer		1		1000	12,000	
2	Maintenance Engineer		1		700	8,400	
3	Safety Officer	1	0	700		8,400	
4	Plumbers / Fitters etc.	1	2	450	300	12,600	
5	Electricians	1	2	450	300	12,600	
6	Carpenter		2	350	250	6,000	
7	**Sub Total**	**3**	**8**			60,000	
	Total Wages					**463,800**	
	Benefit				40%	185,520	
A4	**TOTAL PRODUCTION**	**28**	**65**			**649,320**	
B	**ADMINISTRATION & ACCOUNTS**						
a	**Administration**						
1	Chief Executive Officer	1		2500		30,000	
2	Admin Manager		1		1200	14,400	
3	Personel Manager	1		1000		12,000	
4	Secretary/clerk/computer opera	1	1	450	350	9,600	
5	Administrative Officer		1	0	700	8,400	
6	PRO	1		650		7,800	
7	Driver	4	1	400	250	22,200	
8	Office Boy/ Messenger	1	2	300	200	8,400	
9	Gate Keeper	3		350		12,600	
	Sub Total	**10**	**6**			**125,400**	
b	**Accounts & Stores**						
1	Finanace Manager		1	0	1000	12,000	
2	Cost Accountant		1		700	8,400	
3	Accountant	1	2	500	400	15,600	

ANNEXURE- 2.3							
FLOAT GLASS PROJECT							
ESTIMATES OF ANNUAL SALARIES AND WAGES							
S.No	**Item**	**Number of personnel**		**Salary**		**Amount**	**Remarks**
		Omanis	**Expatriates**	**Omanis**	**Expatriates**	**(RO)**	
4	Store Keeper	1	1	400	300	8,400	
5	Secretary cum computer operato	1	1	400	300	8,400	
6	Sub Total	3	6			**52,800**	
c	**Total Manpower Cost**						
1	Total Salary					**178,200**	
2	Other Benifits				40%	71,280	
3	**Total Cost**	**13**	**12**			**249,480**	
C	**SALES**						
1	Marketing Manager	1	0	1000		12,000	
2	Sales Executives	2	2	600	500	26,400	
3	Secretary cum computer operato	1		400		4,800	
4	Helpers	2	2	330	250	13,920	
	Sub Total	**6**	**4**			**57,120**	
	Other Benifits				40%	22,848	
	Total Cost					**79,968**	
D	**GRAND TOTAL**	**47**	**81**	128		**978,768**	

ANNEXURE- 2.4					
FLOAT GLASS PROJECT					
ESTIMATES OF ANNUAL FACTORY EXPENSES					
S.No.	**Item**	**Year**	**Year**	**Year**	**Remarks**
		1	**2**	**3**	
1	Repairs & Maintenance	0	110850	110850	At 0.5 % of erected cost of
					Plant and Machinery
2	Civil Repairs	0	25740	25740	At 1 % of cost of Building and Civil Works
3	Spare Parts	110,850	443,400	443,400	At 0.5%, 2.0% and 2.0% of 'at-site' cost
					of Plant and Machinery
4	Insurance	247,440	247,440	247,440	At 1 % of cost Building, Plant and
					Machinery
5	Vehicle Expenses				
a	Cars (5Nos)	14400	14400	14400	At RO 200 pm
b	Bus (2 nos)	7920	7920	7920	At RO 200 pm
c	Forklifts (3 nos)	7200	7200	7200	At RO 200 pm
d	Shovel Payloader	3600	3600	3600	At RO 300 pm
d	Floatliner	3600	3600	3600	At RO 300 pm
6	TOTAL	**395,010**	**864,150**	**864,150**	

ANNEXURE- 2.5				
FLOAT GLASS PROJECT				
ESTIMATES OF ANNUAL ADMINISTRATIVE EXPENSES				
S.No.	**Item**		**Amount**	**Remarks**
		(RO)	**(RO)**	
	ADMINISTRATION			
1	Salaries & Benefits		249,480	
2	Rents and Rates			Cos
3	Vehicle Expenses & Petrol			
a	Cars (5Nos)	5400		At RO 75/Month
b	Bus (3 Nos)	5400		At RO 150/Month
c	Pick Up(0 No)			
d	Sub Total		10,800	
4	Telephone, Fax etc.		12,000	At RO 1,000 /Month
5	Stationery, Postage etc.		1,800	At RO 150/Month
6	Medical Expenses		-	Incl. in Staff Benefits
7	Passage		-	Incl. in Staff Benefits
8	Travel & Recruitment		5,000	Lumpsum
9	Legal, Audit Fees		2,000	Lumpsum
10	Utilities outside Plant		1,800	At RO 150/Month
11	Insurance		5,000	Lumpsum
12	Miscellaneous		14,394	At 5 % of above
13	Total		**302,274**	

ANNEXURE- 2.6				
FLOAT GLASS PROJECT				
ESTIMATES OF ANNUAL SALES EXPENSES				
S.No.	**Item**		**Amount**	**Remarks**
		(RO)	**(RO)**	
	SALES			
1	Salaries		79,968	See Annexure 2.3
2	Advertisement		-	Provided separately
3	Business Promotion		-	Provided separately
4	Export Travel		2,500	Lumpsum
5	Vehicle Expenses & Petrol			
a	Sales Trucks	6000		At RO 500/Month
b	Other Vehicles	7200		At RO 600/Month
c	Sub Total		13,200	
6	Ware housing charges		12,000	
7	Miscellaneous Expenses		2,000	Lumpsum
8	Total		**109,668**	

ANNEXURE- 2.7						
FLOAT GLASS PROJECT						
DEPRECIATION CALCULATIONS						
	Item	**Cost**	**Rate**	**S.V.**	**Amount**	**Renewals**
			(%)	**(RO)**	**(RO)**	
A	**FIXED ASSETS**					
1	Land for Plant Site	198,000	0	0	-	Nil
2	Building etc.	2,574,000	5	1,287,000	128,700	Nil
3	Plant & Machinery	22,170,000	10	0	2,217,000	Year 11
4	Technical Know-How	-	10	0	-	Nil
5	Vehicles and Int. Transp.	225,000	25	112,500	56,250	Years 5, 9
6	Furniture & Office Equip.	102,000	20	0	20,400	Years 6, 11
7	Contingency & Escalation	1,320,000	10	0	132,000	Nil
8	Sub Total	**26,589,000**		**1,399,500**	**2,554,350**	
B	**PRELIM &PRE OPE: EXP**	1,450,000	100	0	**1,450,000**	Nil
C	**WORKING CAPITAL**					
1	Working Capital	4,135,981	0	4135981	-	
D	**TOTAL**			**5,535,481**	**4,004,350**	
	Less Balance Loan			**2,011,100**		
E	**SALVAGE VALUE**			**3,524,381**		
	Note: S.V. = Salvage Value at the end of 10th year.					

ANNEXURE- 2.8								
FLOAT GLASS PROJECT								
LOAN & INTEREST CALCULATIOS								
		TERM LOAN			Working Capital		Annual	
No	**Year**	**Prn**	**Int**	**Rep**	**Prn**	**Int**	**Int**	**Rep**
	7		6%			6%		
1		16,536	496.1	0	2,011	60.3		
2	1	16,536	496.1	0	2,011	60.3	**1112.8**	**0**
3		16,536	496.1	1034	2,011	60.3		
4	2	15,503	465.1	1034	2,011	60.3	**1081.8**	**2067**
5		14,469	434.1	1034	2,011	60.3		
6	3	13,436	403.1	1034	2,011	60.3	**957.8**	**2067**
7		12,402	372.1	1034	2,011	60.3		
8	4	11,369	341.1	1034	2,011	60.3	**833.8**	**2067**
9		10,335	310.1	1034	2,011	60.3		
10	5	9,302	279.0	1034	2,011	60.3	**709.8**	**2067**
11		8,268	248.0	1034	2,011	60.3		
12	6	7,235	217.0	1034	2,011	60.3	**585.7**	**2067**
13		6,201	186.0	1034	2,011	60.3		
14	7	5,168	155.0	1034	2,011	60.3	**461.7**	**2067**
15		4,134	124.0	1034	2,011	60.3		
16	8	3,101	93.0	1034	2,011	60.3	**337.7**	**2067**
17		2,067	82.7	1034	2,011	60.3		
18	9	1,034	41.3	1034	2,011	60.3	**244.7**	**2067**
19		0	0.0	0	2,011	60.3		
20	10	0	0.0	0	2,011	60.3	**120.7**	**0**
21		0	0.0	0	2,011	60.3		

ANNEXURE- 3												
FLOAT GLASS PROJECT												
ESTIMATED WORKING RESULTS												
	Year of Operation		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Production		60%	80%	90%	90%	90%	90%	90%	90%	90%	90%
	M. Tons	000	79	106	119	119	119	119	119	119	119	119
No	**Item**		**In RO '000**									
1	**Operating Cost**		7,288	9,661	10,646	10,711	10,777	10,845	10,915	10,987	11,062	11,138
2	Expected Sales											
a	Local		1,621	2,161	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431
b	Export		9,185	12,247	13,778	13,778	13,778	13,778	13,778	13,778	13,778	13,778
c	**Total**		**10,806**	**14,408**	**16,209**	**16,209**	**16,209**	**16,209**	**16,209**	**16,209**	**16,209**	**16,209**
3	**Profit before Int & dep**		**3,518**	**4,747**	**5,563**	**5,498**	**5,432**	**5,364**	**5,294**	**5,222**	**5,148**	**5,072**
4	Depreciation		2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554
5	Finance Cost		1,113	1,082	958	834	710	586	462	338	245	121
6	**Operating profit**		**-149**	**1,111**	**2,051**	**2,110**	**2,168**	**2,224**	**2,278**	**2,330**	**2,349**	**2,397**
7	Other income if any											
8	Prelim Expenses written off		1,450	0	0	0	0	0	0	0	0	0
9	Profit/Loss before tax		-1,599	1,111	2,051	2,110	2,168	2,224	2,278	2,330	2,349	2,397
10	Income Tax		0	0	0	0	0	334	342	349	352	360
11	**Profit after tax**		**-1,599**	**1,111**	**2,051**	**2,110**	**2,168**	**1,890**	**1,936**	**1,980**	**1,996**	**2,037**
12	Statutory reserve		0	111	205	211	217	189	194	198	200	204
13	Profit for appropriation		0	1,000	1,846	1,899	1,951	1,701	1,743	1,782	1,797	1,833
14	Dividend		0	0	0	0	0	0	0	0	0	0
15	General reserve		0	1,000	1,846	1,899	1,951	1,701	1,743	1,782	1,797	1,833
16	**Net cash accruals**		**2,405**	**3,665**	**4,605**	**4,665**	**4,722**	**4,445**	**4,491**	**4,535**	**4,551**	**4,592**

ANNEXURE- 3.1						
FLOAT GLASS PROJECT						
ESTIMATES OF SALES REALISATION						
S.No.	**Item**	**Unit**	**Qty**	**Rate**	**Amount**	**Remarks**
				60%	**(RO)**	
	Glass Sheets					
1	2 mm	SqM	1,269,200	0.81	1,028,052	
2	3 mm	SqM	846,200	1.20	1,015,440	
3	4 mm	SqM	1,269,200	1.35	1,713,420	
4	5mm	SqM	2,538,800	1.50	3,808,200	
5	6 mm	SqM	1,269,200	1.80	2,284,560	
6	8 mm	SqM	634,600	2.70	1,713,420	
7	9 mm	SqM	564,100	3.60	2,030,760	
8	10 mm	SqM	507,700	4.20	2,132,340	
9	12 mm	SqM	423,000	5.40	2,284,200	
	Sub Total	SqM	9,322,000		**18,010,392**	
	TOTAL				**18,010,392**	

ANNEXURE- 4												
FLOAT GLASS PROJECT												
PROJECTED CASH FLOW STATEMENT												
	Year of Operation		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Production		60%	80%	90%	90%	90%	90%	90%	90%	90%	90%
	Nos	000	79	106	119	119	119	119	119	119	119	119
No	**Item**	**In RO '000**										
A	**CASH INFLOW**											
1	Equity	12,365	0	0	0	0	0	0	0	0	0	0
2	Profit bef tax & int		-487	2,193	3,009	2,944	2,878	2,810	2,740	2,668	2,593	2,517
3	Depreciation	0	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554
4	Prel exp written off		1,450	0	0	0	0	0	0	0	0	0
5	Increase in Other term loar	0	0	0	0	0	0	0	0	0	0	0
6	Increase in Istitu: Loan	16,536	0	0	0	0	0	0	0	0	0	0
7	Increase in W C loan	2,011	0		0	0	0	0	0	0	0	0
8	Other income	0										
9	Sub Total	30,912	3,518	4,747	5,563	5,498	5,432	5,364	5,294	5,222	5,148	5,072
B	**CASH OUTFLOW**											
1	Capital Project expenditure	26,589	0	0	0	0	225	102	0	0	225	0
2	Other normal cap exp	1,450										
3	Increse in Working Cap:	2,873	881	365	0	0	0	0	0	0	0	0
4	Decrease in Term Loan	0	0	2,067	2,067	2,067	2,067	2,067	2,067	2,067	2,067	0
6	Interest on term loans		992	961	837	713	589	465	341	217	124	0
7	Interest on work cap loan		121	121	121	121	121	121	121	121	121	121
8	Income Tax	0	0	0	0	0	0	334	342	349	352	360
9	Dividend	0	0	0	0	0	0	0	0	0	0	0
10	Sub Total	30,912	1,994	3,513	3,025	2,901	3,002	3,088	2,870	2,754	2,889	480
	OPENING BALANCE	0	0	1,524	2,758	5,296	7,894	10,324	12,600	15,023	17,491	19,750
C	**SURPLUS**	**0**	**1,524**	**1,234**	**2,538**	**2,598**	**2,430**	**2,276**	**2,424**	**2,468**	**2,259**	**4,592**
D	**CLOSING BALANCE**	**0**	**1,524**	**2,758**	**5,296**	**7,894**	**10,324**	**12,600**	**15,023**	**17,491**	**19,750**	**24,341**

ANNEXURE- 5												
FLOAT GLASS PROJECT												
INTERNAL RATE OF RETURN ON TOTAL CAPITAL												
	Year of Operation		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Production		60%	80%	90%	90%	90%	90%	90%	90%	90%	90%
	Nos	000	79	106	119	119	119	119	119	119	119	119
No	**Item**	**In RO '000**										
1	Net Profit bef. Tax		-1,599	1,111	2,051	2,110	2,168	2,224	2,278	2,330	2,349	2,397
2	Depreciation	0	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554
3	Prelim Exp written off		1,450	0	0	0	0	0	0	0	0	0
4	Finance Cost	0	1,113	1,082	958	834	710	586	462	338	245	121
5	Salvage Value	0	0	0	0	0	0	0	0	0	0	28,046
6	Sub Total	0	3,518	4,747	5,563	5,498	5,432	5,364	5,294	5,222	5,148	33,118
B	**CASH OUTFLOW**											
1	Capital Project expenditu	26589	0	0	0	0	225	102	0	0	225	0
2	Other normal cap exp	1450	0	0	0	0	0	0	0	0	0	0
3	Working Capital	2873	881	365	0	0	0	0	0	0	0	0
4	Income Tax		0	0	0	0	0	334	342	349	352	360
5	Sub Total	30912	881	365	0	0	225	436	342	349	577	360
C	**NET CASHFLOW (AT)**	**-30912**	**2,637**	**4,383**	**5,563**	**5,498**	**5,207**	**4,928**	**4,952**	**4,872**	**4,571**	**32,759**
E	**INTERNAL RATE OF RETURN ON TOTAL INVESTMENT**										**14.41%**	

ANNEXURE- 6												
FLOAT GLASS PROJECT												
INTERNAL RATE OF RETURN ON EQUITY CAPITAL (AFTER TAX)												
	Year of Operation	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Production		60%	80%	90%	90%	90%	90%	90%	90%	90%	90%
	Nos	000	79	106	119	119	119	119	119	119	119	119
No	**Item**	**In RO '000**										
A	**CASH INFLOW**											
1	Net Profit before T	0	-1,599	1,111	2,051	2,110	2,168	2,224	2,278	2,330	2,349	2,397
2	Depreciation	0	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554	2,554
3	Prelim Exp writter	0	1,450	0	0	0	0	0	0	0	0	0
4	Salvage Value	0	0	0	0	0	0	0	0	0	0	28,046
5	Sub Total	0	2,405	3,665	4,605	4,665	4,722	4,778	4,832	4,884	4,903	32,997
B	**CASH OUTFLOW**											
1	Equity	12,365	0	0	0	0	0	0	0	0	0	0
2	Fixed Assets	0	0	0	0	0	225	102	0	0	225	0
3	Working Capital	0	881	365	0	0	0	0	0	0	0	0
4	Loan Instalment	0	0	2,067	2,067	2,067	2,067	2,067	2,067	2,067	2,067	0
5	Income Tax	0	0	0	0	0	0	334	342	349	352	360
6	Sub Total	12,365	881	2,432	2,067	2,067	2,292	2,503	2,409	2,416	2,644	360
C	**NET CASHFLOW**	**-12,365**	**1,524**	**1,234**	**2,538**	**2,598**	**2,430**	**2,276**	**2,424**	**2,468**	**2,259**	**32,638**
			-10841	-9607	-7069	-4471	-2041	235	2659	5126	7385	40023
D	**INTERNAL RATE OF RETURN ON EQUITY INVESTMENT**								**21.72%**			

ANNEXURE- 7												
FLOAT GLASS PROJECT												
PROJECTED BALANCE SHEET												
	Year of Operation		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Production		60%	80%	90%	90%	90%	90%	90%	90%	90%	90%
	Nos	000	79	106	119	119	119	119	119	119	119	119
No	**Item**	**In RO '000**										
A	**ASSETS EMPLOYED**											
1	Fixed Assets											
a	Gross Fixed Assets	26,589	26,589	26,589	26,589	26,589	26,814	26,916	26,916	26,916	27,141	27,141
b	Preliminary expens	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450
c	Acc. Depreciation	0	4,004	6,559	9,113	11,667	14,222	16,776	19,330	21,885	24,439	26,994
d	Net Fixed Assets	28,039	24,035	21,480	18,926	16,372	14,042	11,590	9,036	6,481	4,152	1,598
2	Current Assets											
a	Cash	0	1,524	2,758	5,296	7,894	10,324	12,600	15,023	17,491	19,750	24,341
b	Other Cur. Assets	2,873	3,754	4,118	4,118	4,118	4,118	4,118	4,118	4,118	4,118	4,118
c	Total Cur. Assets	2,873	5,278	6,876	9,415	12,012	14,443	16,718	19,142	21,610	23,868	28,460
3	Less: Cur. Liabilitie	0	0	0	0	0	0	0	0	0	0	0
		30,912	**29,313**	**28,357**	**28,341**	**28,384**	**28,485**	**28,308**	**28,177**	**28,091**	**28,020**	**30,057**
B	**FINANCED BY**											
1	Equity	12,365	12,365	12,365	12,365	12,365	12,365	12,365	12,365	12,365	12,365	12,365
2	Statutory reserve		0	111	316	527	744	933	1,127	1,325	1,524	1,728
3	General reserves	0	-1,599	-599	1,246	3,146	5,097	6,798	8,541	10,323	12,120	13,953
4	Other term loan	0	0	0	0	0	0	0	0	0	0	0
5	Institutional Financ	16,536	16,536	14,469	12,402	10,335	8,268	6,201	4,134	2,067	0	0
6	Bank Borrowings	2,011	2,011	2,011	2,011	2,011	2,011	2,011	2,011	2,011	2,011	2,011
		30,912	**29,313**	**28,357**	**28,341**	**28,384**	**28,485**	**28,308**	**28,177**	**28,091**	**28,020**	**30,057**

ANNEXURE- 8

FLOAT GLASS PROJECT

RATIO ANALYSIS

	Years of Operation	0	1	2	3	4	5	6	7	8	9	10
A	**COST RATIOS**											
1	Raw Material / Total Sales		31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%
2	Packing Materials/Sales		5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%
3	Utilities / Total Sales		13.1%	13.3%	13.5%	13.8%	14.0%	14.3%	14.5%	14.8%	15.0%	15.3%
5	Factory wages / Total Sales		6.0%	4.6%	4.2%	4.3%	4.4%	4.5%	4.6%	4.8%	4.9%	5.0%
6	Prime Cost / Total Sales		56.0%	54.8%	54.7%	55.0%	55.3%	55.7%	56.1%	56.4%	56.8%	57.2%
7	Factory exp. / Total Sales		4.8%	7.2%	6.5%	6.5%	6.5%	6.6%	6.6%	6.6%	6.6%	6.6%
8	Factory Cost / Total Sales		60.9%	62.1%	61.2%	61.5%	61.9%	62.2%	62.6%	63.0%	63.4%	63.8%
9	Admine exp. / Total Sales		5.6%	4.2%	3.8%	3.8%	3.9%	3.9%	4.0%	4.0%	4.1%	4.1%
10	Selling exp. / Total Sales		1.0%	0.8%	0.7%	0.7%	0.7%	0.7%	0.8%	0.8%	0.8%	0.8%
11	Finanance Cost / Total Sales		10.3%	7.5%	5.9%	5.1%	4.4%	3.6%	2.8%	2.1%	1.5%	0.7%
12	Non-Cash exp. /Total Sales		37.1%	17.7%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%
13	Total Cost / Sales		104.5%	84.8%	81.4%	81.8%	82.2%	82.7%	83.1%	83.5%	84.0%	84.5%

ANNEXURE- 9					
FLOAT GLASS PROJECT					
BREAK EVEN ANALYSIS					
S.No.	**Item**		**Year 1**	**Year 6**	**Remarks**
			In RO '000		
A	**FIXED COST**				
1	Production Wages		649	735	Refer Annexure - 2
2	Factory Overhads		395	864	Refer Annexure - 2
3	Misc. Factory Exp.		129	198	Refer Annexure - 2
4	Admin. Expenses		602	635	Refer Annexure - 2
5	Sales Expenses		110	120	Refer Annexure - 2
6	Depreciation		2554	2554	Refer Annexure - 2
7	Prelim. Expenses written off		1450	0	Refer Annexure - 2
8	Financing Cost		1113	586	Refer Annexure - 2
9	Income Tax		0	334	Refer Annexure - 2
10	Sub Total		7002	6026	
B	**VARIABLE COST**				
1	Raw materials		3400	5100	Refer Annexure - 2
2	Utilities		1415	2312	Refer Annexure - 2
3	Misc. Expenses		0	0	
4	Sub Total		4815	7411	
C	**SALES**		10806	16209	Refer Annexure - 3
D	**CONTRIBUTION**		5991	8798	Difference C - B
E	**BREAK EVEN POINT**		116.9	68.5	As % of Production
			70.1	61.6	As % of Plant Capacity
F	**CASH BEP**		50.0	39.5	As % of Production
			30.0	35.5	As % of Plant Capacity

ANNEXURE- 10						
FLOAT GLASS PROJECT						
SENSITIVITY ANALYSIS (IRR FOR 10 YEARS)						
			Change in One			
S.No.	Item	No Change	Variable at a Time			Combined
D	I R R - PESSIMISTIC PROJECTION					
1	I R R on Investment	14.41	11.8%	12.9%	9.5%	5.9%
2	I R R on Equity	21.72	16.8	18.9	12.9	7
E	I R R - OPTIMISTIC PROJECTION					
1	I R R on Investment	14.4	17%	16%	19%	24%
2	I R R on Equity	21.7	26.8	24.6	31.0	40.5

ANNEXURE- 11

FLOAT GLASS PROJECT

DEBT SERVICE COVERAGE RATIO

	Years of Operation	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Production in (%)		60%	80%	90%	90%	90%	90%	90%	90%	90%	90%
	Nos	000	79	106	119	119	119	119	119	119	119	119
No	**Item**	**In RO '000**										
1	Profit after tax		-1599	1111	2051	2110	2168	1890	1936	1980	1996	2037
2	Depreciation		2554	2554	2554	2554	2554	2554	2554	2554	2554	2554
3	Prelimnery exp. Written off		1450	0	0	0	0	0	0	0	0	0
4	Interest		1113	1082	958	834	710	586	462	338	245	121
5	Total		3518	4747	5563	5498	5432	5030	4952	4872	4796	4712
1	Annual repayment		0	2067	2067	2067	2067	2067	2067	2067	2067	0
2	Interest		1113	1082	958	834	710	586	462	338	245	121
3	Total		1113	3149	3025	2901	2777	2653	2529	2405	2312	121
	D.S.C.R		3.16	1.51	1.84	1.90	1.96	1.90	1.96	2.03	2.07	39.05
	WT. AVERAGE D.S.C.	1.94										