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PROJECT REPORT ON PVC PIPES AND FITTINGS

Technology transfer, Strategic alliance, Turn key project consultancy, Technical back up, Equipment up gradation, value added services.

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PVC PIPES AND FITTINGS – GENERAL INFORMATION.

PVC pipes are made up of a plastic resin chemically known as- polyvinyl chloride (PVC), which is the third largest synthetic polymer produced in the world. They are manufactured by the extrusion of a blend of polymer resin (PVC) and various additives. Plasticizers may or may not be added in this mix to impart rigidity or flexibility to the pipe. This blend after heating when forced into a die results in the rigid/flexible PVC pipe coming out. It is then sized, cooled, hauled off and cut in the desired length. PVC pipes are made with the Extrusion process, where as the fittings are generally made with the Injection process.

Compared to concrete pipes, the manufacturing of PVC pipes requires around four times lesser energy and incurs lower losses of the raw material PVC. The complete recyclability of PVC also makes their environmental footprint far smaller than competing piping materials.

PVC pipes are cost-effective, light-weight, easy to install, long-lasting and do not rust, rot or wear over time. The PVC plastic imparts them the ability to withstand extreme movements, bending and rigorous shaking of earth in earthquake prone areas without experiencing any damage. They are continuously replacing conventional metal pipes and currently account for nearly 60% of the total plastic pipes produced worldwide. Their high resistance to chemicals and a high tensile strength to withstand high fluid pressure makes them suitable for water supply schemes. With excellent electrical and heat insulation properties, they are also gaining acceptance in electrification purposes. Globally, their demand is mostly growing in water supply systems, irrigation systems, water sprinkling systems, underground sewage, drainage lines and wiring. According to IMARC Group, the global PVC pipes market has grown at a CAGR of around 5% during 2009 – 2016 with production volumes reaching 20.6 Million Tons in 2016.

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FUTURE GROWTH OF THE SEGMENT IN INDIA.

Future growth of India PVC pipes and fittings Market is expected to be led by the rising construction of much required residential units and inclining demand of PVC pipes and fittings in agricultural sector to bring in more area under cultivation. This will also be bolstered by the government projects for clean environment and housing for all which includes a large focus on the sanitation facilities for the people.

The market leader, Finolex Industries Limited is expected to maintain focus on research and development in its manufacturing plants to develop new products and widen its distribution reach, to stay ahead of its rivals in the market especially in rural segment.

The Indian PVC pipes and fittings industry, which comprises of segments such as RPVC, PVC and CPVC pipes and fittings has grown significantly over the last few years due to the increase in the demand from irrigation sector on account of the burgeoning population and uncertain weather conditions in the country. The PVC pipes and fittings industry in India is highly fragmented. The market revenues have grown at a CAGR of 13.4% from FY'2010-FY'2015. There is a stiff competition in the market with a large number of organized and unorganized players engaged in the manufacturing and distribution of PVC pipes and fittings in the country. Jain Irrigation Limited dominated the market in terms of production capacity in FY'2015.

According to the research report, the India PVC pipes and fittings market will grow at a double digit CAGR over the period FY'2015-FY'2020 and is projected to reach INR 327 billion by FY'2020.

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FUTURE GROWTH OF THE SEGMENT IN INDIA.

The launch of new products, improved penetration of the companies with expanding distribution network and significant role played by the government in the development of irrigation infrastructure and real estate sector in the country will bolster the growth in the industry. Besides, a deficient and uneven rainfall in the country is expected to increase the demand for irrigation systems in the coming years, which will boost the demand for PVC pipes, fittings, tubes and hoses.

“PVC pipes will gradually replace conventional piping systems in the market due to their lower cost and higher durability. CPVC pipes are expected to register fastest growth in terms of the production capacity in the next 5 years from FY’2015-FY’2020.

Rising acceptance of CPVC pipes over galvanized or PVC pipes will lead to the growth in the future. The organized segment of the market is predicted to grow at a faster rate in the coming years with shifting preferences towards branded and quality products being witnessed in the domestic market”.

Future growth of India PVC pipes and fittings Market is expected to be led by the rising construction of much required residential units and inclining demand of PVC pipes and fittings in agricultural sector to bring in more area under cultivation. This will also be bolstered by the government projects for clean environment and housing for all which includes a large focus on the sanitation facilities for the people.

Under PMAY, 2 crore houses for the urban poor will be constructed by 2022—at the rate of 30 lakh houses per year. Objective is to construct affordable Pucca Houses with water facility, toilet facility, 24X7 electricity supply and access.

All these, will definitely make a high demand on the PVC pipes and fittings in near future.

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CURRENT LEADING PVC PIPE MANUFACTURERS IN INDIA.

Followings are the leading manufacturer of PVC pipes in India.

1. ASTRAL POLYU TECHNIK - Aims at making drainage and plumbing systems that are tailored for the Indian hose-hold and commercial establishments. They also specializes in manufacturing pressure piping system for agricultural purposes, CPVC pipe and fitting systems for industrial applications, conduit pipes for commercial and residential use.
2. FINOLEX INDUSTRIES – One of the leading Indian PVC processor, known for variety of Pipes. Manufactures variety of PVC pipes and fittings for agricultural purpose, plumbing and sanitation etc. “Finolex” is also second larges producer of PVC resins in India.
3. JAIN IRRIGATION SYSTEMS LIMITED – A well known PVC pipe manufacturer in India. Jain integrated systems limited is an integrated business firm that manufactures world class products in India and other parts of world also. Jain irrigation systems are the leaders in bringing high tech drip irrigation technology to India. They are also well known for food processing, renewable energy solutions, Agro-processed products, tissue culture plants, financial services and other in puts related to agriculture.
4. PRINCE PIPING SYSTEMS – Are well known internationally. They are mainly in the uPVC SWR system, uPVC plumbing systems and uPVC agricultural fittings.
5. KANKAI PIPES & FITTINGS PVT LTD. – Mainly in the manufacturing UPVC pipes, CPVC pipes, brass fittings for home, and pipes for agricultural industry. Kankai pipes is also a well known exporter.

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CURRENT LEADING PVC PIPE MANUFACTURERS IN INDIA.

6. CAPTAIN PIPES LTD. - Based in Gujrat. The company is using state of the art manufacturing equipments, i.e. German extrusion lines and Japanese Injection molding machines. Company offers different types of u PVC pipes and fittings. Company also export its products.

7. SUDHAKAR POLYMER PRODUCTS –Based in Andhra Pradesh, mainly offers PVC pipes and fittings for electrical uses, platinum pipes and fittings, SWr pipes and fittings, and water pipes and fittings.

8. DURTON GROUP – Mainly known for domestic pipes, however they are continuously improvised to provide Pressure pipes, Column pipes, Uu PVC plumbing systems, Fabricated fittings, and molded fittings. In addition to PVC products, Durton also manufactures braided hose, flat hose, and water tanks.

9. SUPREME POLY TUBES PVT LTD. – Manufacture variety pof PVC pipes such as PVC agricultural pipes, Flexible pipes, plumbing pipes, UPVC pipes etc.

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WHO ARE LEADING MANUFACTURER OF PVC FITTINGS IN INDIA.

Leading PVC fitting manufacturer in India are as listed here below –

1. Watertec india Pvt. Ltd.
2. Finolex Industries Limited
3. Sealexcel (India) Pvt. Ltd.
4. Shemco valves Pvt. Ltd.
5. Nilon Valves Pvt Ltd.
6. Captain Pipes Ltd.
7. Kankai pipes & fittings Pvt. Ltd.
8. Sudhakar Marketing Agencies Pvt. Ltd.
9. Durton Plastics Limited
10. Prience pipes & fittings pvt. Ltd.

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GROWTH FACTORS FOR PVC PIPE & FITTINGS IN INDIA.

India has a population of 1.2 Billion

77 million lack the access to safe and clean drinking water.

769 Million lacks access to improved sanitation,

33% population has the access to traditional sanitation,

59% of the total population lives on less than US Dollar 2 per day.

Government has ambitious plans for irrigation and to increase the agric produce by increasing the area under irrigation.

Government has ambitious plan to construct and handover about 30 lakh houses per month to provide house for every citizen by 2022.

High end residential construction in tier 2 and tier 3 cities is increased considerably.

The old metal pipes in the existing establishment are getting replaced due to old age, scaling etc.

The PVC pipes are getting higher acceptance by consumer due to its low cost, easy handling, and fast plumbing.

The PVC pipes have very high life compared to metal pipes and they can be fully recycled.

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PVC PIPE & FITTING GLOBAL DEMAND

Global demand for water pipe is forecast to increase 7.5 percent per year through 2017 to 10.9 billion meters. China alone will account for one-third of the increase, with other industrializing countries in Asia -- such as India and Indonesia -- and in the Africa/Mideast region also driving demand. Plastic pipe and fittings will be the fastest growing type.

This increase in the global demand is an opportunity to cater the export market of PVC pipes and FITTINGS in general.

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WHY EUROPEAN PROJECT IS SUGGESTED.

The project is being sourced from Europe mainly due to the

The equipment manufacturer is well established and having

long experience of over two decades in the PVC processing.

The company supply a complete project – Injection moulding machine,

controller and the injection moulds.

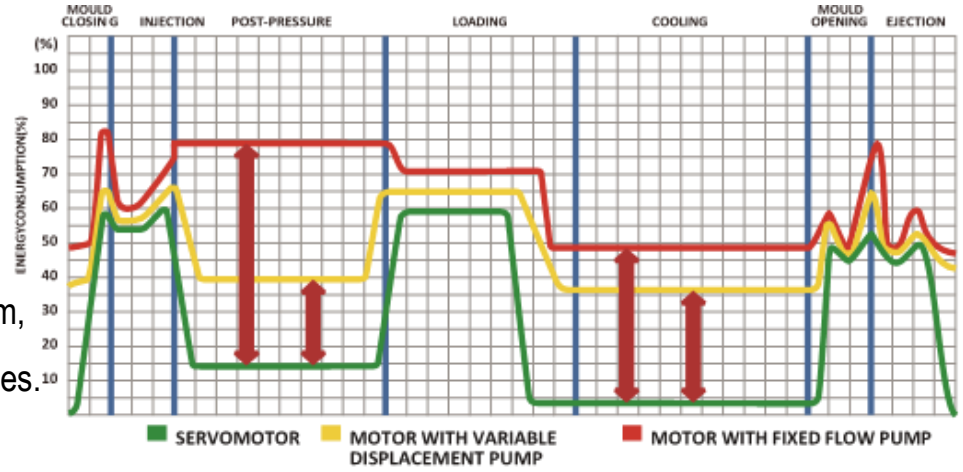
The Injection moulding machines are equipped with servo control system,

and requires almost 80% less energy compared to conventional machines.

The company has developed a patented system for moulding

runner-less products, which do not require post finishing operation.

ALMOST 80% ENERGY SAVINGS ACHIEVED WITH SERVO MOTOR.



Products are with higher strength and finish compared to conventional moulding. Since the product is without runner the material loss in the every cycle for the runner is saved, as well cost associated in recycling the runners is saved. This gives a resin savings between 30 to 50% depending upon the product, no of cavitation and the configuration of tool.

Savings in resin cost and processing cost is direct increase in the profits. Apart from this savings in resin, the productivity is also improved, which further improve the profitability.

European equipment although little costly in initial cost but are proven rouged and having very long life, gives consistent quality and throughput, are proven as a value for money in long run.

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WHICH ITEM DO WE INTENT TO MANUFACTURE.

The PVC pipes and fittings do have a very good business currently as well in near future.

There are many organized players in the PVC pipe business, and few more are coming up in couple of months. Apart from these organized business, the market is also flooded with products from small manufacturers.

Although the demand is very high, the new entrant would require a lot of efforts to gain the market acceptance, specially in the area of PVC pipes.

Majority of the PVC pipe manufacturer concentrate on the core business of pipe extrusion and the moulding and fabrication of fittings and valves is sub-contracted to reliable vendors.

The local manufacturing of fittings and valves is not sufficient to meet the requirements and as such a major quantity is imported to bridge the demand gap. Most of imports are from China, which are at a substantial low price however the quality is also low. The product from China has a limited life of 6 months to 1 year only.

As such the good quality and reliable fittings and valves are imported from Europe and other parts of developed nations. No doubt they cost little more, but they give long life and are proved to be value for money.

There are various fittings and a range of valves required for construction, and agricultural industry. To start with we shall concentrate on the fast moving items like –

1) PVC Ball valves – fast moving sizes ¾", 1", 1.5" and 2"
2) PVC Bend 90 degree
3) PVC "T"
4) PVC Pipe coupler
5) PVC union etc.

Technology transfer, Strategic alliance, Turn key project consultancy, Technical back up, Equipment up gradation, value added services.

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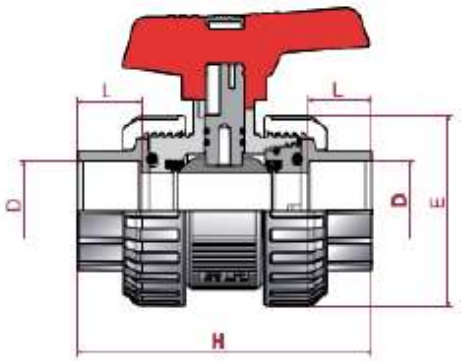
PHOTO GRAH OF THE HIGH QUALITY PVC BALL VALVE SUGGESTED.



FEATURES

- "Antiblock" system that avoids ball blockage.
- 100% factory tested.
- Minimal pressure drop.
- Low operating torque.
- Resistance to many inorganic chemicals.
- Excellent flow characteristics.
- Threaded seal-carrier for upstream maintenance without emptying the system. Handle built-in tool for easy adjustment of the threaded seal-carrier (and ball torque).
- Sizes from D16 to D125 (⅜"-4").
- Available standards: Metric, ASTM, British Standard, JIS.
- Threaded versions: BSP and NPT.
- O-Rings available in food grade EPDM or Viton®.
- Ball seat available in HDPE or PTFE.

TECHNICAL CHARACTERISTICS

Working pressure at 20°C (73°F) water temperature:

- D16-D63 (⅜"-2"): PN16 (240 psi)
- D75-D125 (2½"-4"): PN 10(150 psi)

Technology transfer, Strategic alliance, Turn key project consultancy, Technical back up, Equipment up gradation, value added services.

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REQUIREMENT FOR PVC FITTING & VALVE PROJECT

Land and Building – 20,000 sq feet

Power connection – 3 phase, 415 V, 4 wire, 1000 KVA

Injection moulding machines ranging from 130 to 400 Tons clamping - 8 no.

Injection moulds for individual product, ball valve shall require 8 moulds.

I gate system for runner-less moulding – 8 no.

Compressed air – rated at 8 bar

Chilled water – at 10 degree C temperature,

Cooling tower - To supply process water.

Water pump – To supply process water.

Material storage for in put raw materials.

Conveyor and assembly line for valves.

Conveyor for the fittings.

Material handling system – Fork lift, Stacker, hand palette etc.

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FINANCIAL FEASIBILITY – OPTION 1 MANUAL ASSEMBLY.

CONNECTED LOAD

S.no.	Description	AV LOAD KW.	Quantity	Total load KW
1	Injection machine	50	8	400
2	Injection molds for valve 3/4"	30	8	240
3	Injection mold for 90 bend 20 mm	30	1	30
4	Injection mold for T 20 mm	30	1	30
5	Injection mold for coupler 20 mm	30	1	30
6	I gate system	1	8	8
7	Material loading, dosing etc	2	8	16
8	Scrap grinder	10	1	10
9	Chiller 50 T	20	1	20
10	Cooling tower	5	1	5
11	Fork lift/stacker		1	0
12	Hand pallette		6	0
13	Electrification	20	1	20
14	Assembly line, conveyor etc	2	8	16
				825

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FINANCIAL FEASIBILITY – OPTION 1 MANUAL ASSEMBLY.

Man power required

S.no.	Decription	No per shift		Total	Expected salery	Total salery
		No.	shift		PM.	
1	Manager	1	1	1	1,00,000	100000
2	Engineer	1	1	1	50,000	50000
3	Mold setter	1	2	2	30,000	60000
4	Machine attendant	8	3	24	15000	360000
5	Material loader	2	3	6	10,000	60000
6	Packer	8	3	24	10000	240000
7	Assembler	10	3	30	10000	300000
8	Stores in charge	1	1	1	20000	20000
9	Electrician	1	1	1	15000	15000
10	Maintenance fitter	1	3	3	20000	60000
11	Security	2	3	6	15000	90000
12	Quality assurance	1	3	3	15000	45000
13	House keeping	2	3	6	8000	48000
						1448000

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FINANCISAL FEASIBILITY - OPTION 1 MANUAL ASSEMBLY.

MACHINE AND EQUIPMENT 77

S.no.	Description	Quantity	Av. Price	Value Euro	Value RS
1	Injection machine	8	70,000	560000	43120000
2	Injection molds for valve 3/4"	8	37500	300000	23100000
3	Injection mold for 90 bend 20 mm	1	37500	37500	2887500
4	Injection mold for T 20 mm	1	37500	37500	2887500
5	Injection mold for coupler 20 mm	1	25000	25000	1925000
6	I gate system	8	20,000	160000	12320000
7	Material loading, dosing etc	8	5000	40000	3080000
8	Scrap grinder	1	10,000	10000	770000
9	Chiller 50 T	1	15,000	15000	1155000
10	Cooling tower	1	1000	1000	77000
11	Fork lift/stacker	1	25000	25000	1925000
12	Hand pallette	6	2000	12000	924000
				1223000	94171000

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FINANCIAL FEASIBILITY – OPTION 1 MANUAL ASSEMBLY

S.no.	Description	RS.
1	Cost of machinery and equipment	9,41,71,000
2	Electrification, plumbing etc	50,00,000
3	Fire & safety	10,00,000
4	Vehicles	20,00,000
5	Freight and insurance	13,86,000
6	Duty and clearing	3,34,44,950
		13,70,01,950
	Manufacturing cost for 100,00 valve assemblies	
	Resin and additives value	92,00,000
	Salery and wages	14,48,000
	Cost of Electricity	23,76,000
	Cost of Finance @ 15% interest	17,12,524
	Shed rent	1,00,000
		1,48,36,524
	Sales value for 100,000 valves	2,25,40,000
	Value addition per month	77,03,476
	Pay back period in months	18

Assumptions made --

8	Electicity cost per KW
300	Resin price per Kg
300	weight of 20 mm valve in gm
90	Resin cost for valve assembly 20 mm
2	Additives cost per valve
92	Total material cost for 20 mm valve
1,00,000	No of valves produced per month
225.4	Av. Sales price for valve 20 mm

Leaverages available -
100% investment considered as borrowed.
Interest rate considerd on higher side at 15% per annum.
Cost of the sales considered on very low side.
(The proposed valve is sold in retail market at RS. 644 plus taxes.)
Cost of the machines and molds can be negotiated.
Few machine may have spare capacity to produce fittings - which is not considered in sales value.

Technology transfer, Strategic alliance, Turn key project consultancy, Technical back up, Equipment up gradation, value added services.

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FINANCIAL FEASIBILITY – OPTION 2, ASSEMBLY AUTOMATION.

Man power required

S.no.	Decription	No per shift		Total	Expected salery	Total salery
		No.	shift		PM.	
1	Manager	1	1	1	1,00,000	100000
2	Engineer	1	1	1	50,000	50000
3	Mold setter	1	2	2	30,000	60000
4	Machine attendant	8	3	24	15000	360000
5	Material loader	2	3	6	10,000	60000
6	Packer	4	3	12	10000	120000
8	Stores in charge	1	1	1	20000	20000
9	Electrician	1	1	1	15000	15000
10	Maintenance fitter	1	3	3	20000	60000
11	Security	2	3	6	15000	90000
12	Quality assurance	1	3	3	15000	45000
13	House keeping	2	3	6	8000	48000
						1028000

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FINANCIAL FEASIBILITY – OPTION 2, ASSEMBLY AUTOMATION.

MACHINE AND EQUIPMENT *77*

S.no.	Description	Quantity	Av. Price	Value Euro	*Value RS*
1	Injection machine	8	70,000	5,60,000	*4,31,20,000*
2	Injection molds for valve 3/4"	8	37,500	3,00,000	*2,31,00,000*
3	Injection mold for 90 bend 20 mm	1	37,500	37,500	*28,87,500*
4	Injection mold for T 20 mm	1	37,500	37,500	*28,87,500*
5	Injection mold for coupler 20 mm	1	25,000	25,000	*19,25,000*
6	I gate system	8	20,000	1,60,000	*1,23,20,000*
7	Material loading, dosing etc	8	5,000	40,000	*30,80,000*
8	Scrap grinder	1	10,000	10,000	*7,70,000*
9	Chiller 50 T	1	15,000	15,000	*11,55,000*
10	Cooling tower	1	1,000	1,000	*77,000*
11	Fork lift/stacker	1	25,000	25,000	*19,25,000*
12	Hand pallette	6	2,000	12,000	*9,24,000*
13	Material feeding automation - 3 material	8	10,000	80,000	*61,60,000*
14	Assembly automation	1	2,50,000	2,50,000	*1,92,50,000*
				15,53,000	*11,95,81,000*

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FINANCIAL FEASIBILTY – OPTION 2, ASSEMBLY AUTOMATION.

S.no.	Description	RS.
1	Cost of machinery and equipment	11,95,81,000
2	Electrification, plumbing etc	50,00,000
3	Fire & safety	10,00,000
4	Vehicles	20,00,000
5	Freight and insurance	13,86,000
6	Duty and clearing	4,23,38,450
		17,13,05,450
	Manufacturing cost for 100,00 valve assemblies	
	Resin and additives value	92,00,000
	Salery and wages	10,28,000
	Cost of Electricity	24,04,800
	Cost of Finance @ 15% interest	21,41,318
	Shed rent	1,00,000
		1,48,74,118
	Sales value for 100,000 valves	2,25,40,000
	Value addition per month	76,65,882
	Pay back period in months	22

Assumptions made --

8	Electicity cost per KW
300	Resin price per Kg
300	weight of 20 mm valve in gm
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92	Total material cost for 20 mm valve
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CONCLUSION

Since the pay back period is less than 24 months in both the cases, manual assembly as well In automated assembly options the project financially viable.

Since the technology deployed is from Europe and proven technology, the product is already made in Europe for considerable time, the project is Technically feasible.

The input materials required for processing is available locally.

The finished goods has very high requirement in India, as well it has a export potential.

Since the project Technically and financially feasible, it is recommended to start this project.

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CONSULTANTS PROFILE.

We are basically a Mechanical engineer, backed up with post graduation in marketing and production management.
Having wide experience of about 40 years in Industry, (includes 20 years overseas exposure) locally as well in International market.

Mr. Nandkishor Sarolkar was a nominated member of Kenya Bureau of standards.

Last assignment in India – Managing Director cum CEO of M/S Bericap India Pvt Ltd. A group company of MNC, having head quarter at Germany, involved in the business of Plastic caps & closures .

We have successfully implemented over 24 projects on turn key basis in India, Kenya, Tanzania, South Africa, Kuwait etc.

Mr. Sarolkar is owner of 8 no. Design registration (intellectual property).

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Pl. feel free to contact us should you require any additional information.

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