

ELECTRICAL CURTAIN OPERATOR

1. INTRODUCTION:

This project profile envisages the production of Automatic Curtain Opener by setting up of a unit in a small scale sector. The Automatic Curtain opener are used for opening and closing of the stage of any good theatre, auditorium conference hall etc. The mechanism should automatically open and close the curtain depending on the situation of the function being performed on the stage. The mechanism consists of single phase induction motor drive a forward-reverse starter and two limit switches. The motor when actuated by the push buttons and contactors may rotate in either direction depending upon the direction of current flowing through its main winding. The motor once started will run for the duration required to open/close the curtain fully then stop. The motor when required to stop requires limit switches. In the Automatic Curtain Opener the motors runs in both the direction for opening and closing hence two numbers of limit switches is required.

2. PRODUCT & ITS APPLICATION:

Curtain Opener and Closer Circuit: This circuit will open and close the curtain of your home and office just by pushing a switch. So with the help of this unique circuit, we do not need to move from one place to open and close the curtain. This circuit is used for household use, particularly for smaller doors and windows. Due to its small size and readily available components, it can be effortlessly fixed with a curtain. You can also provide power supply to the circuit with the help of adapter existing in the market. This circuit is made up of two ICs named CD4013 and ULN2003 with few more easily available components. CD4013 IC contains two self-governing D type flip flop on a single chip which exists in one of two states that is 0 or 1 and can store information. Each module is further capable of group of pin outs assigned as data, set, reset, clock input and a couple complementary outputs Q and .The Intelligent Fashion drapery program consists of three product lines: Tumo, Aura, and Classic.

Tumo: The Tumo drapery line consists of a collection of low-voltage DC motors designed for user-friendly operation and simple installation. With built-in RF technology, Smart Touch sensory control, and heavy duty compatible configurations, the Tumo is ideal for light to mid-weight applications in both residential and hospitality environments.

Classic: Classic drapery systems have been the cornerstone of the drapery program for nearly two decades. Renowned as the most reliable motorized drapery systems in the market, the Classic systems are prized for their ability to handle great widths and heavy treatments. In view of the continued popularity of the Classic system, there are no plans to retire this system any time soon.

Aura: The Aura drapery system is a technologically advanced, super quiet, 24V DC motor. This system features high weight capacity, touch control operation, internal radio control, electronic limits, customizable intermediate stop positions, and more! With options ranging from remote operation to wireless networking control, Aura is a valued addition to our program.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Promoter for this project may have any graduation plus background of electronics or electrical maintenance knowledge or experience.

4. INDUSTRY LOOK OUT AND TRENDS

The Window Coverings Manufacturing industry mainly produces curtains, blinds, shutters and awnings. Much of the industry's output involves bespoke products that are made-to-measure or altered to meet client specifications. The industry's exposure to fierce import competition, particularly from low-cost producers in Asia, has profoundly affected its performance. Domestic demand for window coverings is projected to grow by an annualized 2.8% over the five years through 2016-17, to reach \$1.2 billion. Subdued demand growth from building construction and increasing household discretionary income has supported demand.

However, increasing import penetration has led to imports capturing much of this domestic demand growth. Imports are expected to climb by an annualized 8.6% growth rate.

5. MARKET POTENTIAL AND MARKETING ISSUES:

India is one of the fastest growing markets for home furnishing products in Asia-Pacific. Rising demand for home decor products such as bed linen products, wall hangings, rugs & carpets, etc., along with growing demand for hand-crafted products is boosting the country's home furnishing market. Rising domestic production of home furnishing products along with increasing number of government initiatives such as handicraft schemes, Technology Upgradation Fund Scheme (TUFS), integrated textile parks, etc., coupled with government campaigns such as Make in India aimed at encouraging domestic manufacturing, rising FDI inflow in textile and apparel sectors are anticipated to fuel growth in India home furnishing market through 2020. Growing usage of home furnishing products in residential as well as non-residential sectors is expected to drive demand for home furnishing products in India, during the forecast period. Home furnishing market in the country is projected to grow at a CAGR over 8% during 2015 - 2020. Growing trend of custom designed furniture, growth in housing and real estate sectors, rising adoption of eco-friendly products and increasing demand for wallpapers, blinds, etc., is expected to continue driving home furnishing market in the country. India home furnishing market is a highly fragmented with several leading players across the value chain. Hospitality, healthcare, food services, residential and commercial sectors are the key end-use segments of home furnishing products in the country. With rapid industrialization in urban and semi urban, with more entertainment centers coming up, with more conference/seminar halls coming up in the Government, private sectors the demand of Automatic Curtain Opener is enormous.

6. REQUIREMENTS – Material/Equipment:

The basic materials required are Motors, Controls and automatic devices, Sensors. The basic Components used in this Circuit are IC, IC1 (CD4013), IC2 (ULN2003), Resistor, R1-R4 (5.6k), R6, R5 (1K), C1 (. 1uf), Stepper Motor, Machinery and equipment are heavy duty

type Treadle operated Guillotine Shearing machine manually operated with HCHC blades. Deep drawing press fitted with 2 HP, 440 volts. Motor with all standard accessories, 440 Volt, 350 amps, 3 phase Arc welding machine, 1/2 Inch Bench Drilling machine fitted with 1/2 HP 440 volts motor with drill chuck, Bench Grinder 200 mm. Wheel double ended fitted, with 1 HP, 440 volts Motor, with one fine and other course grinding wheel, Pneumatic Riveting AC Electrical with compressor, Hand Shearing machine, 12 Inch Blade capacity, Heavy Duty Geared Type, HCHC Blade, Edge hand lever, pickling plant, working pressure Air Compressor fitted with 1 HP, 440 volts Motor, single stage, single cylinder with spray painting unit, 3.0 KW heating chamber. Testing Equipments required are Megger 500 volts DC. Hand operated with testing, leads and carrying case, Multimeter, Watt meter 3 Phase 4 Wire, Auto Transformer 0.5 Kva 3 1/2 Digit Digital Clamp Meter Range 0 - 200 Amps., Leakage current Earth Leakage Tester, 2.5 kV High Voltage Tester, Test Bench with fittings Other misc. instruments and meters . Total Cost of the Plant and Machinery including Testing Equipment 3.50 lakhs.

Land & Building:

Total Built up area required will be rented cover shed of floor area of about 300 sq. mtrs. To be taken on rent @ Rs. 500 per sq. Mtrs. Per annum.

MOTIVE POWER: Motive Power required would be 25 HP.

7. MANUFACTURING PROCESS:

The process consists of cutting of CRCA sheets in to proper and required size on shearing machine. The cut sheet is then pressed into deep drawing press for making top and bottom covers. The covers are cleaned, drilled for holes, painted and welding done as required. The bought out components like contactor, overload relays, connectors, HRC fuse holders, terminal block' s etc. are fitted in the bottom cover as per line and circuit diagram . Beading/rubber gaskets are provided between top and bottom cover in order to make it weather proof. Neutral link is provided in the bottom cover. Push button for starting and stopping is provided on the top cover. The Automatic curtain opener is inspected and tested for proper operation as per IS 13947(Part2):1993. Rubber knock-outs are fitted. The circuit

line diagram is pasted inside the top cover. Nameplate is riveted on the outside of the top cover. The instruction and maintenance manual is packed along with the starter.

8. MANPOWER REQUIREMENT:

Sr. No.	Designation of Employees	Salary Per Person	Monthly Salary ₹	Number of employees required				
				Year-1	Year-2	Year-3	Year-4	Year-5
1	Operators	12,000	12000.00	1	1	1	1	1
2	Helpers	10,000	10000.00	1	1	1	1	1
1	Admin Manager	12,000	12000.00	1	1	1	1	1
2	Office Boy	10,000	10000.00	1	1	1	1	1
	Total		44000.00	4	4	4	4	4

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 2 months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	1.00
2	Construction (if applicable)	1.00
3	Procurement & installation of Plant & Machinery	1.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required <i>(some activities shall run concurrently)</i>	2.00

10. COST OF PROJECT:

Sr. No.	Particulars	₹ in Lacs
1	Land	0.00
2	Building	0.00
3	Plant & Machinery	3.50
4	Furniture, Electrical Installations	1.00
5	Other Assets including Preliminary / Pre-operative expenses	0.35
6	Working Capital	10.80
	Total	15.65

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets.

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	3.91
2	Bank Finance	11.74
	Total	15.65

Turnover

Sr	Description	Cost/Unit	Quantity	Sales/month	Revenue/year
1	Electric curtain operator	₹ 15000	30	₹ 450000.00	₹ 54,00,000
Total					₹ 54,00,000

12. WORKING CAPITAL CALCULATION:

The project requires working capital of lakhs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	5.40	0.25	1.35	4.05
2	Receivables	2.70	0.25	0.68	2.03
3	Overheads	2.70	100%	2.70	0.00
4	Creditors	-		0.00	0.00
	Total	10.80		4.73	6.08

13. LIST OF MACHINERY REQUIRED:

Sr. No.	Particulars	UOM	QUANTITY	Rate (₹)	Value (₹ in Lacs)
	Plant & Machinery / equipments				
a)	Main Machinery				
1	Shearing machine	NOS.	1	60000	0.60
2	Deep Drawing press	NOS.	1	65000	0.65
3	Arc welding machine	NOS.	1	25000	0.25
4	Bench Drilling machine And other machineries.	NOS.	1	130000	1.30
5	Testing Equipments	NOS.	1	50000	0.50
6	Installation, Electrification, taxes and transportation.	NOS.	1	120000	0.20
	<i>sub-total Plant & Machinery</i>				3.50
	Furniture / Electrical installations				
Sr. No.	Particulars	UOM	QUANTITY	Rate (₹)	Value
a)	Office furniture	LS	1	50000	0.50
b)	Stores cupboard	LS	1	0	0.00
c)	Computer & Printer	L. S.	1	50000	0.50
	<i>sub total</i>				1.00
	Other Assets				

a)	preliminary and preoperative				0.35
	<i>sub-total Other Assets</i>				0.35
	Total				4.85

All the machines and equipment are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

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1. Bhavya Machine Tools

A-601, 6th Floor, Sapath-4, Opp. Karnavati Club,
S.G. Highway Road, Satellite, Ahmedabad-380051, Gujarat, India.
Phone No: +91- 79 - 4024 2800, +91- 79- 4024 2880

2. Hifine Machine

5, New India Estate, Inside Relief Hotel,
Sanand Char Rasta, Sarkhej, Ahmedabad-382210, Gujarat
Phone: 079 26891274, 079 26890274

3. Heena Machine Product

No. 1, Samrat Industrial Area,
Near Ban Labs, Rajkot - 360004, Gujarat, India

4. Sagar Engineering Works

A-129, Road No. 9 D,

V. K. I. Area, Jaipur - 302013,
Rajasthan, India
Phone: +91-9829024358, +91-141-4064876

5. Uday Enterprises

Khasra No. 1108, Village Makanpur, Behind Indian Child School
Opposite Janta Flat No. 433, Nyay Khand 1,
Indirapuram, Ghaziabad - 201010, Uttar Pradesh, India
Phone: +91-9212320224.

14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	32.40	37.80	43.20	48.60	54.00
3	Raw Materials & Other direct inputs	₹. In Lacs	26.93	31.42	35.91	40.40	44.89
4	Gross Margin	₹. In Lacs	5.47	6.38	7.29	8.20	9.11
5	Overheads except interest	₹. In Lacs	2.31	2.46	2.75	2.83	2.89
6	Interest	₹. In Lacs	1.17	1.17	0.78	0.59	0.47
7	Depreciation	₹. In Lacs	2.45	1.75	1.23	0.88	0.79
8	Net Profit before tax	₹. In Lacs	-0.47	1.00	2.53	3.90	4.96

The basis of profitability calculation:

The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study; it can be increased according to the selling strategy.)

Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per liter.
The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. **BREAKEVEN ANALYSIS:**

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	54.00
2	Variable costs	₹. In Lacs	44.89
3	Fixed costs incl. interest	₹. In Lacs	3.36
4	$BEP = FC/(SR-VC) \times 100$	% of capacity	36.88%

16. **STATUTORY / GOVERNMENT APPROVALS**

As per the allocation of business rules under the Constitution, labour is in the concurrent list of subjects. It is dealt with by the MOLE at the Central and Departments of Labour under State Governments in respective States / UTs. The MOLE has enacted workplace safety and health statutes concerning workers in the manufacturing sector, mines, ports and docks and in construction sectors.

Further, other Ministries of the Government of India have also enacted certain statutes relating to safety aspects of substances, equipment, operations etc. Some of the statutes applicable in the manufacturing sector are discussed below:

The Manufacture, Storage and Import of Hazardous Electronic Rules (MSIHC), 1989

These MSIHC Rules are notified under the Environment (Protection) Act, 1986. These rules are aimed at regulating and handling of certain specified hazardous chemicals. The rules stipulate requirements regarding notification of site, identification of major hazards, taking necessary steps to control major accident, notification of major accident, preparation of safety report and on-site emergency plan; prevention and control of major accident, dissemination of information etc. These rules are notified by the Ministry of Environment and Forests (MOEF) but enforced by the Inspectorates of Factories of respective States / UTs in

the manufacturing sector. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATIONS

Both forward and backward integration for any Electrical Industry are strategies to gain better control over the supply chain, reduce dependency on the suppliers and increase their competitiveness. The two strategies can help companies reduce their dependency on suppliers and increase their influence over the customers. The benefits of these strategies can be big. Both impact the bottom line directly. Integration happens if a company moves upward or downward in its supply chain. Starting from the suppliers from whom the raw materials are obtained, the chain moves downstream towards the distributors and the retailers. If the suppliers' power is very high, it can create financial burdens for the company. Suppose the number of suppliers of a company is low, then the control in their hands would be low. The burden in that case will fall upon company's shoulders. Its expenditure on raw materials will be high.

18. TRAINING CENTERS AND COURSES

There is no such training required to start this business but, basic Electrical or IC bachelor's degree is plus point for enterpriser. Promoter may train their employees in such specialized institutions to grow up the business. There are few specialized Institutes provide degree certification in chemical Technology, few most famous and authenticate Institutions are as follows:

1. Department of Electrical LD College of engineering
No.120, Circular Road, University Area, Navrangpura,
Opposite Gujarat University, Ahmedabad, Gujarat 380015
2. MIT College of Engineering, Pune
Gate.No.140, Raj Baugh Educational Complex,

Pune Solapur Highway,
LoniKalbhor, Pune – 412201
Maharashtra, India

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.