Agrotech (Textile Application in Agriculture)

Industrial Manufacturing
Government of Gujarat
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</table>
What are Technical Textiles?

► Technical textiles refer to textile products manufactured primarily for their performance and functional properties.
► Based on the usage Technical Textiles are divided into 12 segments; Agrotech, Meditech, Buildtech, Mobiltech, Clothtech, Oekotech, Geotech, Packtech, Hometech, Protech, Indutech and Sportech.
► Technical Textile markets are usually more application specific and demanding altogether different types of production strategies. Strict adherence to product specifications and quality standards are major requirements in this field.

What is Agro-tech?

► Agrotech: Agrotech textiles is a major segment of Technical Textiles and contributes to more than 21% of the technical textile sector in India. Agrotech technical textile is divided into 4 main segments.
► Agrotech includes textile products used in agriculture, horticulture (including floriculture), fisheries and forestry.
► Applications for technical textiles in agriculture include all activities concerned with the growing and harvesting of crops and animals.
► It includes diverse items such as, ropes, shade fabrics, mulch mats, woven and non-woven covers for crops, bird protection nets, etc.
► These textiles are driving the sector profitably by improving the productivity and reducing the need for chemicals.

Usage of Agrotech Products

► Preventing erosion and paving way for afforestation
► Greenhouse cover and fishing nets
► Layer separation in fields
► Nets for plants, rootless plants & protecting grassy areas
► Sun screens & wind shields
► Packing material and storage
► Shades
► Anti-birds nets
► Fabrics for shifting and separation
► Ground and plant water management

Sources:
http://textilelearner.blogspot.in/2014/04/applications-of-agro-textiles.html
http://www.fibre2fashion.com/industry-article/1579/agro-textiles-a-rising-wave?page=1
http://www.bch.in/agro-textiles.html
Technical Textiles are manufactured from a variety of fibres/filaments based on the desired properties of the end product. Fibres/filaments can be classified into two Natural and Man Made.

The natural fibres predominantly used in technical textiles are, Cotton, Jute, Silk, Coir. Jute is predominantly used in Agrotech. Jute being a key raw material in agrotech also has applications in buildtech, sportech, along with geo textiles & packing sacks as well.

In India, the States of West Bengal, Bihar, Assam, Orissa, and Uttar Pradesh are major producers of Jute. India also imports Jute majorly from Bangladesh.

In 2007-08, the supply scenario of jute was 122 lakh bales including imports of 4 lakh bales.

Manmade Fibres (MMF) and Man Made Filament Yarns (MMFY) account for around 40% share of the total fibre consumption in the textile industry as a whole.

Key manmade fibres/filaments and polymers used as raw material in technical textiles are:

- MMF – viscose, polyester, nylon, acrylic/modacrylic, polypropylene. Polymers – HDPE, LLDPE, LDPE, PVC.
- consumption of various man made fibres/filaments and polymers in agrotech is as follows:

<table>
<thead>
<tr>
<th>Man-made Fibre</th>
<th>Key Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyester</td>
<td>Agrotech, buildtech, geotech, clothtech, packtech, Meditech, Sportech, Hometech, Indutech</td>
</tr>
<tr>
<td>Acrylic/Modacrylic</td>
<td>Buildtech, Geotech, Clothtech, Hometech</td>
</tr>
<tr>
<td>Polypropene</td>
<td>Agrotech, Buildtech, Geotech, Clothtech, Packtech, Mobiltech, Meditech, Sportech, Hometech, Indutech</td>
</tr>
<tr>
<td>HDPE</td>
<td>Agrotech, Packtech, Sportech</td>
</tr>
</tbody>
</table>

Source
http://textilelearner.blogspot.in/2014/04/applications-of-agro-textiles.html
http://www.fibre2fashion.com/industry-article/1579/agro-textiles-a-rising-wave?page=1
http://textilelearner.blogspot.in/2014/04/applications-of-agro-textiles.html
Market Potential

Global market overview

The global technical textile industry is estimated at US$142 billion as of 2015 and is forecasted to reach US$165 billion by 2019.

Global demand is driven by developing countries such as China, India, and Brazil.

Agro textiles with US$8.4 billion market, accounts for 6% of the total technical textiles market globally.

Agro textiles market in India is estimated to reach INR11.9 billion in 2015-16

The total market size of Agro textiles in India is estimated at INR8.3 billion in 2013, of which close to 97% is catered by domestic supply.

The market is driven by domestic consumption with exports market contributing 23% to the total market.

In agro textiles market, there are about ten different products, most of which are netting products.

Fishing nets have the largest market share among the agro textile products in India, contributing to 79% of the market size.

Shade nets is another product that has shown significant growth over the last few years.

With the focussed efforts by the government to promote use of agro textiles through various schemes of National Horticultural Mission (NHM) and National Horticultural Board (NHB), the demand for shade nets are expected to grow in the coming years.

Global Technical Textiles market

- Mobitech
- Indutech
- Sportech
- Buildtech
- Hometech
- Clothtech
- Meditech
- Agrotech
- Protech
- Packtech
- Geotech
- Oekotech

Global Technical Textiles market

- Mobitech 1%
- Indutech 0%
- Sportech 6%
- Buildtech 6%
- Hometech 7%
- Clothtech 1%
- Meditech 22%
- Agrotech 6%
- Protech 15%
- Packtech 8%
- Geotech 17%
- Oekotech 6%

Total market size of agro textiles in India (INR billion)

- 2012-13: INR8.3 billion
- 2015-16E: INR11.9 billion

CAGR: 13%

Agro textiles products market share in India by value (2012-13)

- Fishing nets: 79%
- Shade nets: 18%
- Mulch mats: 2%
- Anti Hail & Anti Bird nets: 1%
- Crop covers: 0%

Baseline survey of the Technical Textile industry in India

Fishing nets also includes Root Ball Nets, Harvesting Nets, Turf Protection Nets, Fruit Covers, Pallet Nets and Vermi Beds

Total market size is calculated as imports + domestic production

Source
Global Technical Textiles Market 2015-2019, Technavio via EMIS Database
Market Potential - Gujarat

- The market size of aggrotech segment of technical textiles was INR 553 crores in 2007-08. The market size for the same segment in 2012-13 (Provisional) stood at INR 788 crores.
- The market size for aggrotech grew between 2007 and 2012 at a CAGR of 7% over the period.
- Agrotech contributed 1% of the total market size of INR 70,882 crore of technical textile.
- The industry is dominated by homegrown SMEs in terms of contribution to total industry turnover.
- In terms of number of units, 400 of the 860 units are mainly in Surat. A variety of low-end narrow width fabric is manufactured.
- Agrotech products account for a good share of the technical textile in Gujarat.
- A majority of the technical textile production comes from the PP/HDPE woven sacks manufacturing units accounting for 62% of the share.

Major players in India

<table>
<thead>
<tr>
<th>Name</th>
<th>Revenues (2014-15) INR million</th>
<th>Product portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garware Wall Ropes Ltd.</td>
<td>7,896</td>
<td>Textile products for Fisheries, Aquaculture, Shipping &amp; Industrial, Yarn &amp; Thread, Sports, Coated Fabrics, Agriculture, Geosynthetics</td>
</tr>
<tr>
<td>Rishi TechTex Ltd.</td>
<td>487</td>
<td>Agriculture/Horticulture Field, Wind Breakers, Cattle Shed/Poultry Shed, Drying of Grapes, Vermicomposting, Car parking, Scaffolding Net, Fencing for Privacy, Swimming Pool Covers</td>
</tr>
<tr>
<td>Neo Corp Ltd.</td>
<td>7,439</td>
<td>Textile products for industrial and consumer packaging, Agro textiles, Geotextiles, Buildtech, Hometech, End user solutions</td>
</tr>
<tr>
<td>CTM Agro textiles Ltd.</td>
<td>-</td>
<td>Shade net, Mulching film, Green house, Anti-insect net, Vermi bed, Crop covers, Low tunnels</td>
</tr>
<tr>
<td>Fiberweb India Ltd.</td>
<td>685</td>
<td>Jerry cans, caps, lids, gate valves, foot valves, crates, water tanks and vessels, waste-bags and spun-bonded non-woven polypropylene fabrics</td>
</tr>
</tbody>
</table>

Company filings, website

Source:
http://technotex.gov.in/BSTT_Interim%20report%20120314%20(1).pdf
Enabling Framework for Accelerating Growth and Investment in Technical Textiles in India, Ministry of Textiles, 2011
Growth Drivers

► In a globalized world with access to products and markets across the globe – one of the main advantages offered by agro textiles is the improvement of the quality of the products for both import and export purposes.

► Agro-textile products also provide advantages for the manufacturers such as thermal protection textiles which are treated with ultra violet ray stabilizers.

► Shade-netting and thermal screens use can save up to 40% on energy in heating greenhouses which is significant energy saving for manufacturers in India.

Exports for agro textiles (INR billion)

<table>
<thead>
<tr>
<th></th>
<th>FY13</th>
<th>FY18F</th>
</tr>
</thead>
<tbody>
<tr>
<td>55% CAGR</td>
<td>1.83</td>
<td>16.14</td>
</tr>
</tbody>
</table>

Baseline survey of the Technical Textile industry in India

► Government’s support for fishing in sea waters and high value of sea food will drive demand for fish nets in India.

► Farmers are increasingly opting for commercial farming and large plantations, which will boost shade nets market.

► Government’s aggressive promotion for shade nets through NHB and NHM is also expected to fuel the demand.

Demand for fishing nets

Growing shade nets market

► While many farmers purchase mulch mats via NHM, they have recently started to purchase those from open markets.

► Growing awareness of mulch mats and increasing demand for vegetables and fruits are the other key growth drivers.

Increased awareness of mulch mats

Food security

► Food security is a big concern in crop production in India due to the anticipated rise in temperature by 2050-2060.

► This will create an increasing demand for protective nets as farmers will need to safe guard their produces against adverse weather conditions.

Source

"Baseline survey of the Technical Textile industry in India", Office of the Textile Commissioner, 29 March 2016

"Manufacturing Sector – Profile", Vibrant Gujarat website, 7 October 2014

Gujarat - Competitive Advantage

► Gujarat is the hub of technical textiles with many key players located in Ahmedabad and Surat, the two strong holds with over 300 units involved in textiles and technical textiles at each location.

► The state has the distinct advantage of a easy and cheap supply of raw material both cotton as well as manmade fibers, both of which are manufactured in large quantities

► Textile policy of Gujarat offers upto 6% credit linked interest subsidy for promotion of technical textile industry.

► New projects have begun in the state including, Ahlstrom's non-woven plant

► Top Cotton producing state with a production of 12.5 million bales in FY 2015

► Gujarat also has large number of manpower with required skill set attributable to better educational infrastructure and Industrial Training Institutes.

Gujarat governments' initiatives to flourish the textile industry

The Government of Gujarat intends to invest ~US$3.28 billion in the textile industry by 2020. It aims to create 1 million jobs in the industry.

The Government is planning to introduce Technical Textile Mission to attract an investment of ~US$1.6 billion (~INR 100 billion) for establishing at least 2,000 technical textile manufacturing facilities.

Biotech Savli SEZ, spanning 14.73 hectare land, is located in Savli, Baroda, Further two new Technical Textile (TT) zones to be developed in Ahmedabad (110 Km from Baroda) and Surat district (150 km from Baroda).

Source
“Baseline survey of the Technical Textile industry in India”, Office of the Textile Commissioner, 29 March 2016
“Manufacturing Sector – Profile”, Vibrant Gujarat website, 7 October 2014
“Gujarat – Growth and Prosperity for All”, Vibrant Gujarat website, 25 August 2014
Gujarat - Competitive Advantage

High raw material availability

62% of the petrochemical fibres in India are manufactured in Gujarat. The petrochemical fibres include polyesters, poly-olefins, acrylic and polyamide which are widely used in manufacturing of technical textiles.

30% of the cotton produced in India comes from Gujarat. Surendranagar, Jamnagar, Rajkot, Bhavnagar and Amreli are the main cotton producing districts and all are located in close vicinity of Baroda.

The cotton production in Gujarat is also supported by its climatic and geographical conditions as the state has black soil mixed with lime and potash and ~50 cm rainfall that are optimum for cotton cultivation.

Gujarat offers an excellent educational infrastructure for the textile industry

Gujarat has 28 Industrial Training Institutes (ITIs) that offer industrial training courses on Textile and Garment industry with an approximate intake of ~6,000 students per year.

These institutes offers specialized courses in computer-aided dress making and dress design, pattern making and needle work.

Maharaja Sayajirao University, one of the leading textile engineering university in India is located in Baroda.

Also Ahmedabad has many leading textile institutes which includes Ahmedabad Textile Industrial Research Association (ATIRA), Apparel and Leather Technics (ALT) Training College and National Institute of Design (NID).

Science and technology, and R&D activities of ATIRA extend over a wide field including – process optimization for improved process control in turn leading to better quality, cost reduction etc. ATIRA also looks at development of new products, processes and design of new instruments, equipment, and machinery.

Extension activities including consultancy, training for different levels from workers to top management in three categories, namely, General, Tailor-made, and In-house.

Source:
*Gujarat – Growth and Prosperity for All*, Vibrant Gujarat website, 25 August 2014
*Manufacturing Sector – Profile*, Vibrant Gujarat website, 7 October 2014
*Brief Industrial Profile of Vadodara District*, MSME, “http://dcmsme.gov.in/dips/bip%20vadodara%20100812.doc%20fresh.pdf”
## Agro Textile Products and Their Application

<table>
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<tr>
<th>Product</th>
<th>Applications in Agriculture</th>
<th>Animal Husbandry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crop Produce</td>
<td>Floriculture</td>
</tr>
<tr>
<td>Non Woven Fabrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mulch mat</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cattle Shed Underlay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective Clothing</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Woven Fabric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packing Sacks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunscreens</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Protective Clothing</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Plastic Sheets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground Covers</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Greenhouse Films</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Knitted Nets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shading</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Bird Protection</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wind Shields</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Anti-Hail</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Harvesting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packaging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support nets</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Techniques under Agro-Tech Industry

1. Woven products: Woven products are manufactured using weaving machines especially Sulzer projectile weaving machines. The machines with weaving width of 540 cm to 846 cm are available for production of agro-textiles.

2. Knitting products: Warp knitting is the widely used technique in production of knitting products. Warp knitted protective nets are used in different sectors. Agro nets are produced in various constructions or lapping. The construction or lapping is a way in which individual yarn systems are converted into fabrics.

3. Non-woven products: Spun Bonding and Needle Punching are mainly used for production of non-woven products. Other technique used in non-woven products include Thermal Bonding, Stitch bonding, wet-non-woven and Hydro entangled.

Source:
http://textilelearner.blogspot.in/2014/04/applications-of-agro-textiles.html
http://www.fibre2fashion.com/industry-article/1579/agro-textiles-a-rising-wave?page=1
Savli GIDC in Vadodara district will be an ideal location to establish a plant for Technical Textile for Agri use.

The site is owned and managed by Gujarat Industrial Development Corporation (GIDC).

**Savli GIDC: Key highlights**

<table>
<thead>
<tr>
<th>Total area</th>
<th>814 hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus sectors</td>
<td>Engineering, Food &amp; Agro, Tourism and Textiles &amp; Apparels, Chemicals &amp; Petrochemicals, Bio-technology, Pharmaceuticals</td>
</tr>
</tbody>
</table>
Infrastructure Availability

**Logistics & Connectivity**

Baroda has an extensive outlay of existing infrastructure - rail, road and air - which make it an excellent investment destination.

**Rail**
- Baroda is connected via rail broad gauge to Delhi, Mumbai, Chennai, Bangalore and Ahmedabad.
- In 2016 annual rail budget, the Government of India announced establishing a Railway University in Baroda.

**Road**
- Baroda is well connected to all major locations such as Delhi, and Mumbai through the Delhi-Mumbai Industrial Corridor.
- NH 8 also connects Baroda with the major industrial centers in Gujarat, including Ahmedabad, Rajkot, Ankleshwar and Surat.

**Air**
- Baroda has its own domestic airport at Harni, which is well connected with the major metro cities in India such as Delhi, Mumbai, Chennai, Bangalore and Ahmedabad.

**Port**
- Savli (Baroda) is connected to the following ports:
  - Dahej – 150 Km
  - Kandla – 400 Km
  - Mumbai – 450 Km

**Utility**

**Water**
- Water supply for industrial purposes in the district can be obtained from three main sources, viz. Gujarat Water Supply and Sewerage Board (GWSSB), Irrigation canals and Sardar Sarovar Project.
- Sardar Sarovar envisages supply of water for drinking purposes, irrigation and industrial uses through branch canals.

**Power**
- Electricity is supplied from an existing 132 KVA sub-station operated by Gujarat Energy Transmission Corporation (GETCO) located in the premises.

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**Source**

“Baseline survey of the Technical Textile industry in India”, Office of the Textile Commissioner, 29 March 2016


# Key players and suppliers

## Key Agro textiles players in Gujarat

<table>
<thead>
<tr>
<th>Products</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop Nets</td>
<td>Shree Ambica Non Woven (India); KT Exports (India) Pvt. Ltd.; Ultra Nonwoven (India)</td>
</tr>
<tr>
<td>Mulch mats / Ground Covers</td>
<td>Rishi FIBC Solutions Pvt. Ltd. (India); Tuflex India (Netlon India); Nihal Industries Pvt. Ltd.</td>
</tr>
<tr>
<td>Anti Hail nets</td>
<td>Tuflex India (Netlon India); Green Net Marketing; Sea Fabrics Pvt. Ltd. (India)</td>
</tr>
<tr>
<td>Bird Protection nets</td>
<td>Nihal Industries Pvt Ltd; Tuflex India (Netlon India); Rishi Packers Ltd.</td>
</tr>
<tr>
<td>Shade nets</td>
<td>Tuflex India (Netlon India); Nihal Industries Pvt. Ltd; Shri Ambica Polymer Pvt. Ltd.</td>
</tr>
<tr>
<td>Insect Screens</td>
<td>Tuflex India (Netlon India); CTM Technical Ltd. (India); Shri Ambica Polymer Pvt. Ltd.</td>
</tr>
</tbody>
</table>

## Machinery suppliers

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Manufacturers of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oerlikon Textile India Pvt Ltd.</td>
<td>Mumbai</td>
<td>Non Woven Lines, Staple Fibre Lines, BCF Yarn Plants</td>
</tr>
<tr>
<td>Fleissner, A.T.E. Marketing Private Limited</td>
<td>Mumbai</td>
<td>Non Woven line</td>
</tr>
<tr>
<td>Dornier machinery India private limited.</td>
<td>Mumbai</td>
<td>Rapier weaving machine, Air-jet weaving machine</td>
</tr>
<tr>
<td>Karl Mayer Textilmaschinenfabrik GmbH</td>
<td>Mumbai</td>
<td>Warp Knitting Machine</td>
</tr>
<tr>
<td>Itema Weaving (India) Private Limited</td>
<td>Mumbai</td>
<td>Projectile weaving machine, Rapier weaving machine, Air-Jet Weaving Machines, Multi-phase weaving machine, Custom-built weaving machines</td>
</tr>
<tr>
<td>Tsudakoma Corp</td>
<td>Mumbai</td>
<td>Airjet, Waterjet Weaving machines and Sizing machines for Technical Textiles / Industrial fabrics</td>
</tr>
<tr>
<td>Slack &amp; Parr Ltd.</td>
<td>Mumbai</td>
<td>Booster, oligomer, pumps for Industrial yarn spinning, non-woven fabrics making, carbon fibre spinning, aramid fibre pumps, spandex pumps</td>
</tr>
</tbody>
</table>

## Potential collaboration opportunities

- Opportunity to collaborate with global technical textile players or work as contract manufacturers
- Players can partner with associations like The Centre of Excellence for Agrotextiles (COE-Agrotech), The Man-made Textiles Research Association (MANTRA), Surat Navsari Agriculture University (NAU), Dept. of Textile Technology, Indian Institute of Technology (IIT), Delhi.

Source:
Key considerations

Raw material availability
► Over 75% of the fibers used in the production of technical textiles are man-made or synthetic fibers. The raw materials used in the manufacture of such fibers are dependent on fossil fuels, and, hence, their cost is high.
► The scarcity of these raw materials has also led to an increase in the price of synthetic and inorganic fibers, spun and filament yarns, and polymers.
► Major companies producing synthetic fibers in India include:
  ► Reliance Industries Limited
  ► Raymond synthetics
  ► Indo Rama synthetics
  ► JCT
  ► Shree synthetics
  ► Modipon
  ► Sanghi polyester

Lack of environmental and safety regulations
► Another major challenge faced by the Technical Textile market in India is the absence of environmental and safety regulations. No significant attempts have been made by the government to boost the market development of technical textiles.
► For example, there are no legislations for the mandatory use of fire retardant fabrics in high-rise buildings, and in public places such as exhibitions and cinema halls.

Low investment in R&D and product innovation
Research and development, product innovation, quality management, testing, and evaluation hold the key to the success of capturing a substantial share of the competitive global market for technical textiles.
► High-quality testing facilities for accurate and relevant evaluation of technical textiles must be made available in India to satisfy the stringent and critical requirements of performance-related product parameters in the global market.

Source
Global Technical Textiles Market 2015-2019, Technavio via EMIS Database
## Project Financials

**Cost of setting-up a Agro Textiles facility manufacturing Shade nets in Savli, Baroda**

Agro Shade net is one of the most popular products in India. Agro Shade nets are used in Horticulture, Floriculture, Green/house/Poly House, forestry, and farming sectors to protect plantation from the sun in order to ensure healthy plant growth and good harvest. Agro shade net is a knitted fabric structure manufactured from polyethylene, polypropylene polymer that is either tape or monofilament forms etc.

<table>
<thead>
<tr>
<th>Project components &amp; specifications</th>
<th>Cost (INR crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land</strong> (Area: 1000 sq. m.)</td>
<td>0.14</td>
</tr>
<tr>
<td>Rate: (INR1,400 per sq. mtr. as of May 2016)¹</td>
<td></td>
</tr>
<tr>
<td><strong>Buildings</strong> (plant area, office, godown, lab, service area etc.)²³</td>
<td>0.58</td>
</tr>
<tr>
<td>Built-up area: 500 sq. mtrs.</td>
<td></td>
</tr>
<tr>
<td>Average rate: INR11,600 per sq. mtr.</td>
<td></td>
</tr>
<tr>
<td>Process Plant &amp; Equipment</td>
<td>2.02</td>
</tr>
<tr>
<td>Utility &amp; Other Equipment (5%)</td>
<td>0.10</td>
</tr>
<tr>
<td>(Power, Water, Compressor, Humidity Control, Fire Fighting, Material Handling etc.)</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous Fixed Assets</td>
<td>0.15</td>
</tr>
<tr>
<td>Project Engineering &amp; Consultancy charge (2.5%)</td>
<td>0.05</td>
</tr>
<tr>
<td>Preliminary &amp; Pre-operative Expenses</td>
<td>0.24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3.28</td>
</tr>
<tr>
<td><strong>Margin Money for Working Capital</strong></td>
<td>0.10</td>
</tr>
<tr>
<td><strong>Total Project cost</strong></td>
<td>3.34</td>
</tr>
</tbody>
</table>

Source

“Brief Industrial Profile of Vadodara District”, MSME, [http://dcmsme.gov.in/dips/bip%20vadodara%20100812.doc%20fresh.pdf](http://dcmsme.gov.in/dips/bip%20vadodara%20100812.doc%20fresh.pdf)

# Project Financials

## List of equipment and machinery

<table>
<thead>
<tr>
<th>Number/Machinery</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Warp Knitting Machine</td>
<td>Structure Production</td>
</tr>
<tr>
<td>1 Warping Machine</td>
<td>Preparation of Suitable Yarn</td>
</tr>
</tbody>
</table>

## Manpower requirement

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Manager</td>
<td>1</td>
</tr>
<tr>
<td>Machine Operator</td>
<td>6</td>
</tr>
<tr>
<td>Machine Helper (semi skilled)</td>
<td>3</td>
</tr>
<tr>
<td>R&amp;D, Testing</td>
<td>1</td>
</tr>
<tr>
<td>Marketing &amp; Sales</td>
<td>3</td>
</tr>
<tr>
<td>Clerical Staff</td>
<td>3</td>
</tr>
<tr>
<td>Other Staff</td>
<td>2</td>
</tr>
<tr>
<td>Maintenance (Mech. &amp; Tech)</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>
Approvals & Incentives

Project structure

Project is likely to be a private investment by either of:

- an existing electrical equipment company in pursuit of forward/backward integration
- a new entrant in the industry
- a foreign investor looking to enter Indian technical textiles industry.

Approvals

For approvals, the project report should be submitted to respective District Industries Centres (DICs). DIC will forward the proposal to Industries Commissioner who will submit the report to State Level Approver Committee (SLAC) for final approval.

Incentives from Government of Gujarat

5% interest subsidy on bank loans for five years for those who establish new plants for value addition chain like ginning, processing, weaving, knitting and machine carpeting.

7% interest subsidy on new plant and machinery for five years for cotton spinning, garment manufacturing and technology upgradation.

Refund of value added tax (VAT) on expansion of new units in spinning and power tariff concession to cotton spinning and weaving units.

Financial assistance for skill development centres, for technology acquisition and also for supporting energy and water conservation as well as for environmental compliance.

Incentives from Government of India

5% credit linked interest subsidy under TUFS (Technology Upgradation Fund Scheme) scheme on purchase of Technical textile machinery approved by government.

Scheme for Integrated Textile Parks (SITP) : 40% capital subsidy to a maximum of INR40 crore on total project cost on projects approved by government. Also, 100% FDI allowed for textile sector.

The basic custom duty on imported technical textile machinery has been reduced from 10% to 5% and support to start-ups.

Source

“Manufacturing Sector – Profile”, Vibrant Gujarat website, 7 October 2014
This project profile is based on preliminary study to facilitate prospective entrepreneurs to assess a prima facie scope. It is, however, advisable to get a detailed feasibility study prepared before taking a final investment decision.