Smart Fabrics Industry in Israel Overview

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The Traditional Textile Sector in Israel

There is a solid core of traditional textile industries in Israel, functioning in an inherently small market, with fierce international competition, and which have gone through multiple economic crises along the years. These industries characterized by being:

- Diverse in areas of expertise within the textile manufacturing fields, including: fiber and yarn manufacturing, nonwoven, apparel manufacturing – knitting, weaving, coating and fabric treatment, and technical textiles – such as weft knitting
Traditional Textile Sector – characteristics

- Multiple manufacturing facilities distributed globally
- Innovation and R&D centers located in Israel
- Emphasis on export and collaboration with prominent global players (MNE’s)
- Generally with a readiness to distinguish themselves based on advanced technology, materials or design
Some Facts and Figures about the Israeli Textile Industry:

• Total yearly sales 1.9 Billion $
• Total exports in 2014 of textile garment and accessories: 800 million $
• ~100 manufacturers are members in the Fashion & Textile Association

*Data provided by the Manufacturers Association of Israel, Fashion & Textile Industries Association (2014)*
Exports of apparel merchandise, Rate of Change, quarter-on-quarter 2008-2013 (seasonally adjusted, US$ terms)

When examined more closely:

- Exports of apparel merchandise accounts for only 15% of the industry’s revenue (2011); The majority of apparel manufacturing is for the domestic market
- 65% of revenues from the industry are derived from 42 factories classified as export-intensive industries (exports account for more than 50% of revenues or exports exceed NIS 10m and account for at least 25% of revenue)
- This proportion indicates the particular difficulty that the industry is facing in competing with overseas production

Nonwoven industry

The largest sub-sector, with large volume manufacturing facilitates in Israel is the Nonwoven industry:

• Estimated direct sales of 500 Million $
• 70% is manufactured for export
• Collaborating with GME’s such as:

Kimberly-Clark
Johnson & Johnson
Procter & Gamble
To distinguish themselves traditional textile companies put an emphasis on innovation, and focus on developing premium products and services.
Local factors contributing to innovation

• Government support for R&D through the Israel Innovation Authority (formerly Office of Chief Scientist)
• Israeli Ministry of Defence
Local ecosystem contributing to innovation

- Israel’s start-up ecosystem – looking for implementation and application fields, sometimes find it in textiles
- Advanced scientific activity in areas of medical sciences, material sciences, Nano technology which sometimes overlaps with textiles
- Strong local industries such as: plastics, printing, agriculture and Nano technology & composite materials
“Start-Up Nation” Some Facts and Figures about Israeli High-Tech Sector:

- 11.1% of the Israeli total business sector GDP (≈ US$19.25 billion) is accounted for the high-tech sector
- 1.6 billion US$ of capital raised in 2013 by ICT companies
- 4.25 billion US$ spent on R&D in ICT in 2013
- 16.4% of total goods and services exports is of the ICT Sector
- ≈ 15.5 billion US$ export in 2013

Foreign Direct Investment

50% of the world leading companies, Global Multinational Enterprises (MNEs) have R&D centers in Israel (such as: IBM, Intel, Apple, Cisco, Motorola and Microsoft)

Figure 2.3 Foreign Direct Investment in Israel, 2003–2014 (in US$ millions)

Segmentation of the high-tech market into categories

Out of about 180 incubated companies:
~ 40% are medical device companies
~ 10% are biotechnology and pharmaceutical companies
~ 15% are clean technology firms
~ 30% are ICT companies
~ 5% are in other areas such as machinery and materials

The intersections between the textiles industry and high-tech

Some potential intersections begin to emerge, which would not necessarily be categorized under “smart fabrics” such as:

- Software for fabric/garment simulation
- AR/VR technologies
- Material innovation – especially Nano technology and composites
Recent Developments in R&D Funding

The Israel Innovation Authority recent awarded the nonwoven industry 9.8 Million $ for a “Magnet” consortium. Additionally they are working on a new program specifically geared towards supporting new collaborations between high-tech companies and traditional industries (textile included)
4 Examples of Smart Fabrics companies – in conclusion

A few examples that represent the potential diversity of the field, and which show a combination between a traditional and advanced approach to textile innovation as shown in this overview.

Tortech [http://tortechnano.com/tortech-nano-fibers](http://tortechnano.com/tortech-nano-fibers)
Carbon Nanotubes Nonwoven Mats made purely of ultra-long CNT’s
Development and manufacturing of graphene quantum dots from coal sources, recently awarded a 0.9M$ grant by the BIRD foundation.
Twine [http://twine-s.com/](http://twine-s.com/)
Digital selective thread dyeing systems and digital dye to match color algorithms. Winner of the World Textile international Network (WTiN), TexProcess award for Best Process - Sustainable Textiles
3D Inkjet printer for multilayer & 3D electronics. The DragonFly 2020 printer and inks, all developed in-house, are suitable for printing circuitry on textiles
Create self-assembly nanostructures, utilizing genetically engineered proteins to with Carbon NanoTubes (CNTs) bound to structural fabrics.