



Slovene textile TECHNOLOGICAL PLATFORM

Strategic research agenda 2007-2013



tekstilna
TEHNOLOŠKA PLATFORMA

Basic data on the Slovene textile technological platform

The Council of the Slovene textile technological platform

Franc Lesjak, the chairperson of the Council, manager of the company Predilnica Litija

The Council members:

Melita Rebič, manager of the company Odeja Škofja Loka,

Matjaž Božič, manager of the company Ibi Kranj,

Roberto Kocman, M. Sc., general manager of the company Beti Metlika,

Franci Sluga, D. Sc., senior lecturer, the superior of the Department of textile at the University of Ljubljana,

Karin Stana Kleinschek, D. Sc., senior lecturer at the Department of textile materials and modelling at the University of Maribor.

Experts of the Slovene textile technological platform

Majda Sfiligoj Smole, D. Sc., senior lecturer at the Department of textile materials and modelling at the University of Maribor,

Petra Forte Tavčer, D. Sc., senior lecturer at the Department of textile at the University of Ljubljana,

Ester Manetti, M. Sc., the Institute of textile, Maribor,

Tatjana Rijavec, D. Sc., assistant professor, the chairperson of the Experts' Court of IRSPIN,

Barbara Simončič, senior lecturer at the Department of textile at the University of Ljubljana,

Bojana Vončina, D. Sc., senior lecturer at the Department of textile materials and modelling at the University of Maribor,

Alenka Majcen Le Marechal, D. Sc., professor at the Department of textile materials and modelling at the University of Maribor,

Peter Janič, M. sc., IRCKON,

Krste Dimitrovski, D. Sc., senior lecturer at the Department of textile at the University of Ljubljana,

Zoran Stepanović, D. Sc., senior lecturer at the Department of textile materials and modelling at the University of Maribor,

Franci Sluga, D. Sc., senior lecturer at the Department of textile at the University of Ljubljana,

Tatjana Kreže, D. Sc., assistant professor at the Department of textile materials and modelling at the University of Maribor

Secretariat of the Slovene textile technological platform

Slovene spinning industry development centre – IRSPIN

Kidričeva 1, 1270 Litija

Manager Verica Žlabravec, univ. grad. econ.

Contact information:

Telephone: 01 89 90 210

Telefax: 01 89 84 213

Contact & information <http://www.irspin.si/>

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0 Summary

This document shows frames of action and research priorities of the Slovene textile technological platform. It is designed for companies and individuals from textile and clothing industry, development&research institutions, possible partners from other industrial sectors competent for preparation of national development&research programmes and all others, who plan their development&research and business opportunities in the field of textile and clothing industry.

The Slovene textile technological platform is a forum of Slovene textile and clothing industry sharers. It was established in November 2005 and associates companies, research and educational institutions whose basic activity is linked to the textile industry. The vision of the Slovene textile and technological platform is a permanent Slovene textile industry competitive position based on knowledge. Among successful textile companies are mostly small and medium enterprises which do not have sufficient critical mass of knowledge. Therefore the aim of such an association of companies with universities and knowledge centres in the framework of the technological platform is to connect potential of knowledge for technological progress of industry and improvement of innovational conditions.

The result of the Slovene textile platform activities is the Strategic research agenda. It originated from cooperation of 22 companies, the University of Maribor, Faculty of Mechanical Engineering, the University of Ljubljana, Faculty of Natural Sciences and Engineering, Department of Textiles, the Institute of Textiles Maribor and technological centres IRSPIN and IRCKON. It exposes research priorities which are of key meaning for existence and development of Slovene textile industry. It considers strategic guidelines of the European technological platform for the future of textile and clothing industry and developmental trends which have a long-term influence over development of textile and clothing industry.

The aims of the research agenda have been set for the period 2007 – 2013. Research will support development of topmost innovative textile products planned upon new materials, intelligent textiles, products made from fibres with special properties, with use of progressive and environmental friendly technologies and development of new standardised and certified methods of testing. Slovene textile industry plans new applications in the field of personal protection, in the field of technical use and protection of buildings. An important part of research is directed into development of value chains, development of new approaches of effective design and development of products, which include a lot of technological knowledge. In the framework of the research agenda a special attention is devoted to standardisation and education. The Strategic research agenda will be realized in the form of developmental & research projects and developmental initiatives of national and European developmental & research programmes; in frames of such programmes, scientists,

researchers, experts from research institutions and companies will link up at the national and international level.

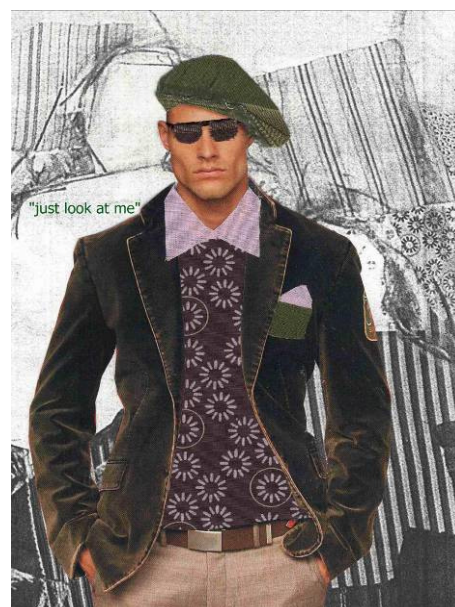
Strategic research agenda is a living document. It is being supplemented in accordance with the realized aims and new cognitions of the Slovene textile technological platform and supplements of strategic research agenda of the European technological platform for the future of textile and clothing industry. The supplements of the programme will be published at the web site of the Slovene textile and technological platform <http://www.irspin.si/>. An updated document will be published every two years.

1 Development and institutional framework SRA

1.1 Development trends and textile and clothing industry markets

Clothes are the »second skin« of people. Clothes protect and offers necessary warmth; they reflect cultural and moral norms of people. Clothes and fashionable products are among the biggest consumptional goods. The global market is assessed to more than a trillion € and it is expected to stay large in the future, as well. The growth will be realised in the regions of fast growing economies (SE Asia, Latin America). In the developed western countries the growth will stagnate, but it will still remain high. But even in the developed economies regions the market will grow for the most quality and innovative products.

The decade of mass production in the developed world has been brought to the end. Design, production and worldwide distribution of clothes have become a complete, fast moving system, linked at the global level. Clothing industry, which is today based on the relation between efficiency of labour and expenditure, moves fast towards satisfaction of individual needs of end-users and enlarges profit by sales premises management and fusion of clothing industry products with services. Systems of perception, processing and enforcement of individual needs of customers have been developed, with, otherwise, »mass«, but yet a product adapted to a customer.



The highest growth rates in the future are to be expected in the field of technical textiles and applications of textile to new fields. Growth of needs for dwellings, water, food, energy, protection, health care, protection of environment and, again and again, new demands regarding functionality are only a few trends which will stimulate the growth of market in this

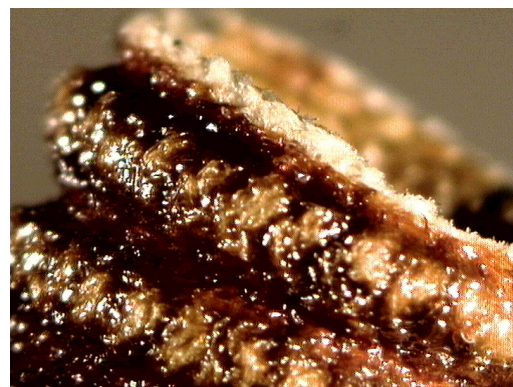
field. A series of new opportunities for the textile industry is shown in the field of agro- and horticulture, fishing, soil drainage, environmental protection, energy, transport, personal protection, sport and spare time, medicine, beauty care, hygiene etc.

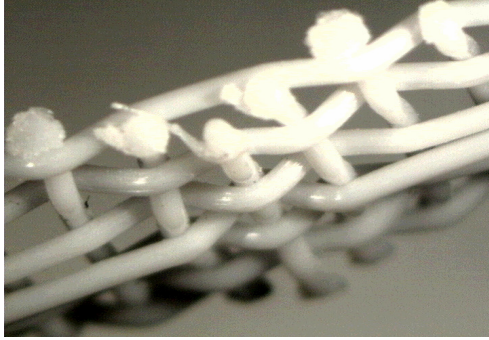


Textiles for interior (curtains, upholstery parts of furniture, carpets, tablecloths, embellish and enlarge comfort of dwellings, offices, hotels, restaurants, cinemas, airports, ships, trains, planes and other public and private places. Protection has become an important function of textile in vehicles (seat belts, airbags), sport and work. Demands for resistance against stains, water, fire, rubbing have a series of applications for decorative textiles and vehicle equipment, in construction and transport. Protecting overalls must, besides protecting function, ensure exchange of energy and matters. Antistatic and antibacterial properties have become key elements of medicine and laboratory furniture and equipment. UV protection functions have acceleratedly been pushed forward for casual clothes and clothes for relaxation, as well as for overalls. It is similar concerning protection

against insects. Absorption of smells is essential element for sports wear, bedclothes, equipment for vehicles, hospitals, homes for the aged etc.

Clothes have become intelligent. They perceive stimulation of environment and / or human body and respond to it suitably. Use of textile in the field of medicine have extended from traditional injury care, nappies, towels, handkerchiefs, bedclothes to the field of implants (joints, veins etc.), acceleration of recovering after operation, improvement of life quality in continual dermatological, allergic patients and older population. Use of textile in transport is being more and more linked to energetically effective systems. Lightness, durability, flexibility, bio degradability of textile enables energy thriftiness and environmental friendly systems.





Textile has become an important new material. It substitutes traditional constructing materials, metallic and plastic materials which are used in car industry, shipbuilding, aviation, construction, electronics. It also represents an alternative for wood, leather and other natural materials which are used for interior equipment, sport and many other fields.

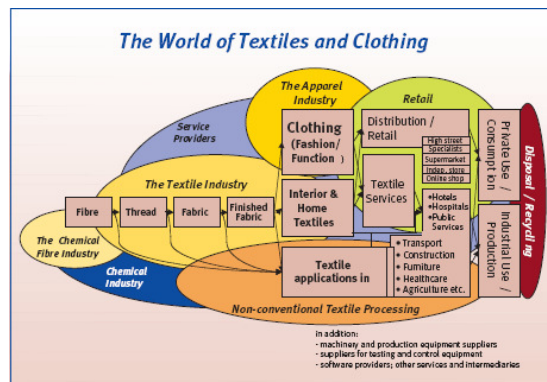
Technical textiles and new applications markets are highly specialized, they demand smaller quantities and high quality and characteristics that suit to highly pretentious standards and specifications. They are subject to total and long lasting acreditive procedures. Product innovations demand development and linking of knowledge with the fields of new materials, informational technology, microelectronics, biotechnology, nanotechnology and, at the same time, understanding of customers' demands and possible scenarios of use. Success demands high investments into research and development, investments into new technologies and development of cadres. A series of challenges, opportunities and dangers – this is a reality of textile and clothing industry.

1.2 The role and the meaning of textile and clothing industry in Europe

European textile and clothing industry has a tradition and leading position in the field of innovations, fashion and creativity and, despite of intensifying of global competition, remains between leading European sectors. Industry is placed among key actors of world trade; in the field of export of textiles it is at the first place, while in the field of export of clothes it is at the third place in the world. It is a worldwide leader in the field of textile industry machinery production, it dominates in the fashion field, and in the field of technical textile its pioneer's role is recognized.

Preservation of the leading position at the global level places a series of challenges in front of the textile and clothing industry: control of labour expenses, trade impediments at individual import and export markets, legislation in the field of environmental protection, protection of intellectual property, lack of educated experts, fragmentary research capacities. Textile industry links textile and clothing producers, chemical industry, mechanical engineering industry, IT services, testing of machine and other equipment and products, recycling services and waste management (figure 1). A whole web of necessities along the whole chain of values in the past has already represents a lever of innovativeness, while product and procedure innovations in the field of technical textile, transport, road construction, soil drainage, dwellings construction, sports equipment, protective clothes, surgical and medicinal equipment will be the main source of value creation in the future. Connection and cooperation with other sectors: tourism, health care, construction, car, furniture and food industry will be key lever of innovativeness and. at the same time, competitiveness in the future.

Figure: Structure of textile and clothing industry



European textile and clothing industry has responded challenges and connected in the framework of the European platform for the future of textile and clothing industry. The platform connects all interested actors: textile and clothing industry, associated industries and service tenderers, research and educational sphere and public sphere at all levels. The European technological platform supports development of the European net of experts from the fields of industry, science, public administration and financial institutions that associate interests in the field of research, development and innovations. In 2006, the Strategic research agenda of the European textile platform was defined with participation of more than 400 experts. Defined research priorities are of the key meaning for sustainable development of textile and clothing industry at the global level. An important accent is given to horizontal activities in the field of improvement of environment for research, development and innovations. Provision of sources, education and overcoming of regulatory obstacles have come to the front.

1.3 Vision and challenges of Slovene textile industry

In 2005, 512 companies with more than 18,000 employees operated in Slovene textile and clothing industry. The industry made 229 milliard incomes from sales, from this amount textile producers made 72.2 % income by export, while clothing producers made 52 % incomes. Average share of export in entire processing industry was 60.6 %, what shows that companies in textile industry are export oriented above average. Strategic direction of Slovene textile and clothing industry is in development of topmost innovative textile products and services which demand high technologies and which are mastered by highly educated experts. Successful getting on in the new geographic and product markets is planned in research which will lead to development of textiles with new or essentially improved properties, to development of textiles with planned functionality for special fields of use and to development of systems which will enable cost effectiveness, higher level of personalisation, grater functionality and differentiation.

Getting on at new markets will be supported by a research potential of Slovene textile and clothing industry. More than 60 doctors and masters of science work in the field of textile and

clothing in Slovenia. They work in the framework of the University of Ljubljana, the Faculty of Natural Sciences and Engineering, the Department of Textiles, the University of Maribor, the Institute of Textiles, the Faculty of Mechanical Engineering and the Textiles Institute Maribor¹. The research potential in the fields of technical textiles, medical textiles, intelligent textiles, in the fields of modelling textiles with use of new, computer supported technologies of planning and visualisation. Research competences have strengthened in international research groups and in cooperation with numerous universities and research institutions abroad. Numerous projects, where laboratories and centres participate in the role of holders or partners of research consortiums, are evidence of good international cooperation. Slovene experts from development&research institutions are active in working groups at the European technological platform level, what additionally strengthens conviction in excellence of Slovene scientific and research potential. Experts have actively participated in preparation of the strategic research agenda of the Slovene textile technological platform (STTP) and, in this way, they have shown an interest and readiness to support Slovene industry in identification of research priorities, i.e. research fields, which are essential for development of Slovene textile and clothing industry.

Concerning investments into development and research textile and clothing industry lags behind the leading ones in this field. Insufficient scope of investments is a result of limited cooperation and transfer of development&research potentials into the business praxis, limited transfer of information concerning developmental needs from companies to the knowledge centres and also reduced scope of inquiry for development&research services of the knowledge centres and attractiveness of higher education in the textile field. The challenge is how to strengthen cooperation in the framework of the existing structure and how to intensify cooperation between all sharers in textile, at the Slovene level, as well as at the European level, also with engagement of new supporting institutions or structures, respectively, through systematic stimulation of exchange of information, developmental stimulations and contacts, to take care of the progress in this field. Another challenge in the

¹ Source: List of Slovene development&research potentials; ITEO, October 2005

field of necessary knowledge for success at the distinctly competitive and dynamic global market is linked to establishment of an effective system of acquiring information concerning market perspectiveness of development of individual kinds of products (market movements, competitive development) and to establishment of a system of acquiring information on novelties in the field of development&research from the knowledge centres in Slovenia and in the world. Development of a net of links with the knowledge centres home and abroad can additionally enlarge response and creation of competent development teams. Confrontation with a challenge of development a horizontal net with complementary activities is a key lever for innovations in new fields of use of textile (inclusion of the knowledge centres from the fields of chemistry, mechanical engineering, pharmacy, biotechnology and companies that operate in these fields).

1.4 Slovene textile technological platform (STTP)

Changes at the market are fast and industry must adapt fast because in the exceptional competitive conditions only the companies, which follow the advanced technologies and are directed into development, will remain. To support achievement of their aims, 22 companies and development&research and educational institutions in November 2005 established the Slovene textile technological platform (STTP).

The STTP is a forum of Slovene textile and clothing industry sharers. It connects companies, research and educational institutions, whose basic activity is linked to textile industry. The strategic direction of companies, which are associated in the framework of the STTP, is development of the topmost innovative textile products and services. Direction of research and educational institutions is to support activities, which will enlarge competitive abilities of companies.

The vision of the STTP is a permanent Slovene textile industry competitive position based on knowledge. It is planned on the basis of the developmental potential of Slovene textile industry, dynamic, innovative business and development&research nets, which are based on multidiscipline knowledge, flexibility and direction towards customers. Among successful textile companies are mostly small and medium enterprises, which do not have sufficient critical mass of knowledge. Therefore the aim of such an association of companies with universities and knowledge centres in the framework of the technological platform is to connect potential of knowledge for technological progress of industry and improvement of innovational conditions. The STTP has set the following aims:

- Preparation and implementation of strategic research agenda;
- Association of companies, technological centres and institutions of knowledge into an effective system, which will perform research activities for the needs of industry;
- Preparation and implementation of activities in the field of education and standardization;

- Developmental projects of new products and products for new fields of use.

Realization of ambitious aims demands orientation of action of technological platform organisation. Working groups in three fields (columns of development) have been established:

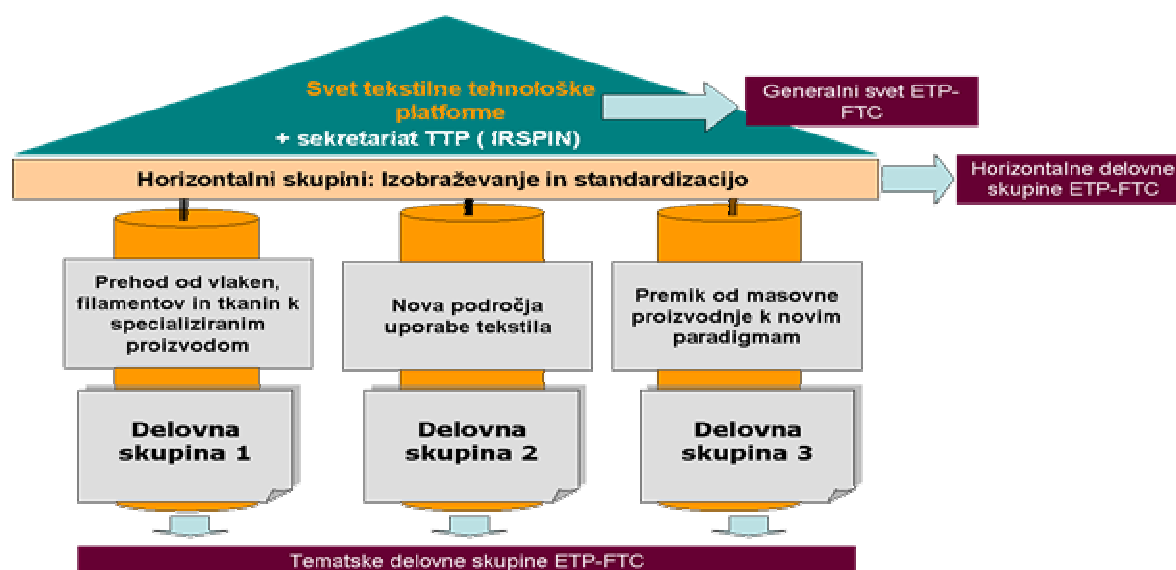
- passage from fibres, filaments and textiles to specialized products;
- new fields of textile use;
- movement from mass production to new paradigms.

Representatives of industry, science and education are associated in working groups. The purpose of working groups operation is development and realization of specific parts of strategic research agenda. While thematic working groups act in the developmental & research fields, the activities of the horizontal groups are directed into improvement of research conditions and innovativeness of industry.

The STTP is led by the Textile technological platform council for Slovenia. In the Council, there are representatives of industry and universities. The Council represents STTP in public and at national and European policy level in the field of the platform activities. The Council directs the strategy of research programmes confirms working groups in the fields of the platform activities and verifies Slovene experts at the European platform level. A permanent secretariat of the STTP, which is organized in the framework of the technological centre IRSPIN, is established for support of the operation of the Council and the Technological platform.

The STTP is an active member of the European technological platform for the future of the textile and clothing industry. With its participation in the European technological platform for the future of textile and clothing industry, the STTP contributes in forming of an effective network of experts at the European level, contributes to an effective performance of strategic research programme of the European technological platform, contributes to development of structures for improvement of conditions for research, development and innovations in the sector, and, not the last, the contribution enables to Slovene textile and clothing industry to become an important partner in research, which will take place at the level of European consortiums.

Figure: Structure of textile technological platform



2 Research priorities 2007 – 2013

2.1 Approach to the definition of the research priorities of the STTP

Definition of strategic research agenda took place during two phases. In the first phase a record of the research potential was elaborated, a vision, aims, development trends and wider selection of research priorities of the STTP were defined. In continuation the wider selection of priorities was evaluated, the European textile platform directions were checked, the research priorities, important for the future of Slovene textile and clothing industry and previously formed common projects of research&development were identified. The contents and key activities in the field of horizontal groups for education and standardization were defined. Strategic orientations of the STTP, including horizontal ones, were confirmed by the Council of the textile technological platform in July 2006.

Research priorities of the STTP are focused to the research area, which has long-term influence over development of textile and clothing industry, as follows:

- Passage from ordinary to specialized products based on the high technology procedures along the entire chain of values fibres-textiles-clothes;
- Enforcement and expansion of textile into numerous industrial sectors and new fields of textile use;

- Movement from mass production to customisation and personalisation of products, together with intelligent production, logistics, distribution and new concepts of services.

Figure: Research priorities of the STTP



In the field of specialised products and high technological procedures, three research priorities have been identified:

- New technologies of manufacturing and processing of functionalized textile materials;
- Development of textiles from renewable sources;
- Biotechnology in production and processing of textiles.

Regarding to the purpose of use of new innovative textile materials or products, three the most important fields have been exposed:

- New textile materials for personal protection (medicine, protection, sport...);
- New textile materials for technical use (transport, construction, geotextiles...);
- Intelligent textiles and clothes.

In the field of movement from mass production to customisation the key fields of research are defined as follows:

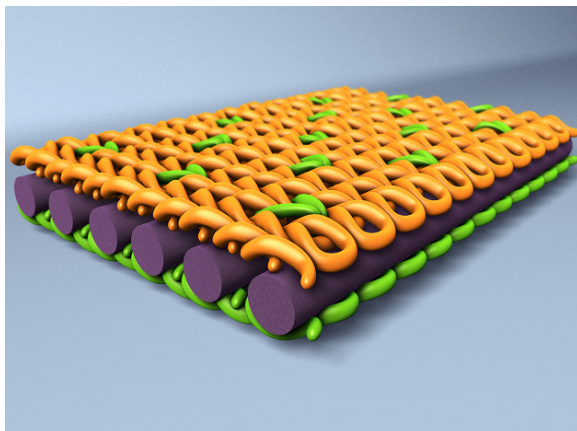
- Customisation to measure;
- New designs and concepts of development of products and technologies.

Performance of the proposed research will demonstrate in innovations at the market, if the fields associate in various common projects, which will link knowledge from the field of materials, technologies, market approaches, association and cooperation in the value chain. Interested partners will participate in various development projects and initiatives. Real innovations will be the result of combination and integration of various researches, which can lead to various products and services.

2.2 Review of research priorities

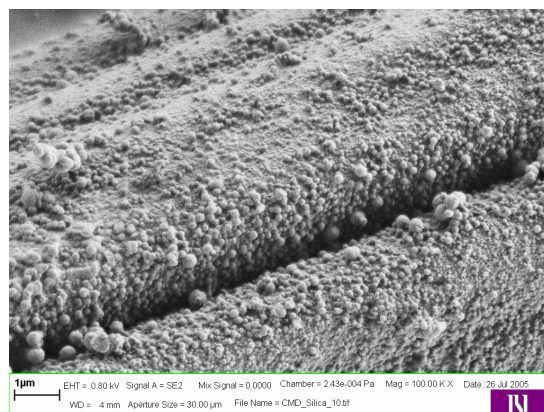
2.2.1 New technologies of manufacturing and processing of functionalised textile materials

Functionalization of textile materials is an essential element in processing of textiles, which enables use of textile product in the field of new applications as, for example, in sport, protective clothes, construction, and medicine. Functionalization has an important role in the field of interior. Fields of new technologies in improvement of technological procedures are essential for the entire textile and clothing industry because new applications and new processes are based on them.

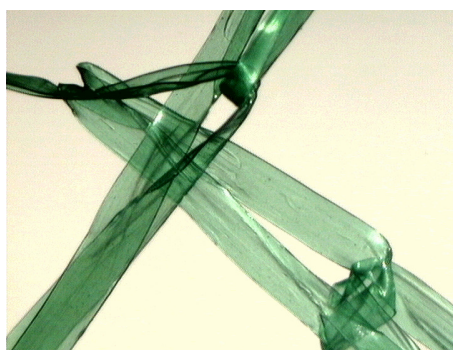


For development of innovative textile products from fibres with special properties (IR invisible fibres, scented fibres, self-cleaning fibres, incombustibility, antimicrobial, bioactivity, thermoregulation, hydrophilic / hydrophobia, water repulsiveness, oil repulsiveness, products with easy maintenance, with triteness appearance, with low contracting, energy management, biodegradable fibres etc.) and based on use of advanced technological

procedures, the research priority of having a good command of new technologies of manufacturing and processing of functionalised textile materials is one of the key ones for position of the Slovene textile industry into the worldwide textile space. Basic and applicative knowledge from fields of advanced technologies of spinning, manufacturing of flat textiles, finishing and forming of the final textile product, will enable to the Slovene textile industry a creation of technologically highly demanding textile technical products.



2.2.2 Development of textiles from renewable sources and recycling



Sustainability of manufacturing processes is as important as quality and productiveness. Experts of Slovene textile industry confirm development of textiles from renewable sources and recycling as a strategic priority. Economic effects, as well as environment protective demands, make repeated use of various textile waste a condition. In the framework of this priority, Slovene textile industry will develop various textile-technical

products as, for example, insulating materials, fillers, agro textiles etc. from waste textiles. In the first row, there will be use of waste textile materials and polyurethane foam for manufacturing elements of antisound protection in construction.

2.2.3 Biotechnology in manufacturing and processing of textiles

Due to greater ecological effectiveness biotechnology replaces a series of chemical processes. For Slovene textile space the use of biotechnologies in manufacturing, pre-processing and processing of textiles represents an important research priority, especially for development of biotechnological procedures, pre-processing and processing of textiles. Development and inclusion of biotechnological, especially enzyme processes, will contribute to the preservation of the environment, beside it biocatalytic processes of processing will become a base for creation of new properties of textiles.

2.2.4 New textile materials for personal protection

In research of textile materials for personal protection the accent is given on development of polyfunctional flat textiles and clothes with fireproof, antibacterial protection, oil and water reflectance. Textiles that serve for health maintenance and well being will be developed on the base of flat formations with active substances, which act benevolently and protect against insects, mechanical injuries,

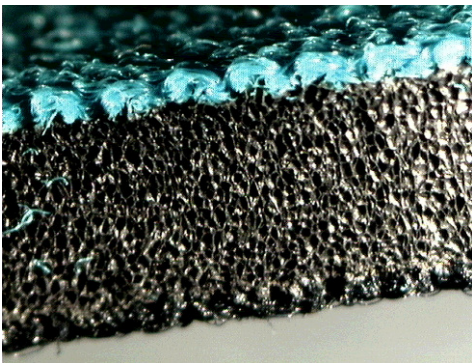
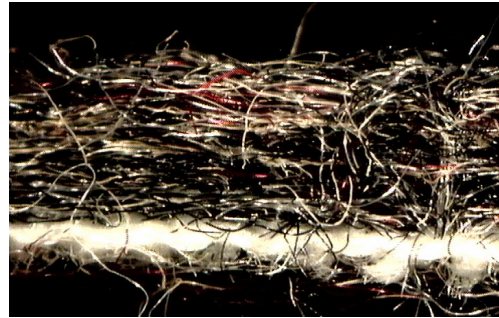


radiation, mites and dust. Development will also be directed in research of multilayer laminates for children and aged people needs. In the field of medical protection the research theme Monitoring of health and life functions has been exposed, where an interdisciplinary developmental cooperation is of exceptional meaning. In the framework of the research priority of regulation of warmth and moisture, research themes are directed into development of knitwear for sport and spare time and for equipment of beds and furniture for home and public buildings.

Above all, fireproof, antibacterial, oil- and water reflective flat textiles, technologies for new multifunctional products for personal protection and technologies for depositing active substances and use of new advanced materials for supporting substrates will develop. Products for all generations with ability of intensive regulation of warmth and moisture, products for sport, residential and public interior will be the key direction.

2.2.5 New textile materials for technical use

In the field of new textile materials for technical use, the experts of STTP determined the following priority fields: surfaces, covering, transport and interior. Development of innovative agro textiles with seed and soil design, development of fireproof textiles for interior equipment of transport vehicles and prefabricated rooms, development of



multifunctional laminates for means of transport and interior and development of textiles with energetic management were proposed. In the elaboration, the fields, where non-textile materials can be replaced with textiles will be identified, experts basis for use of industrial waste and possibility of use of waste for development of laminate in means of transport will be prepared as a base for seed design and as a constructional product.

2.2.6 Intelligent textiles for protection of buildings

In the framework of development in the field of intelligent textile and clothes, development of products for protection of public buildings was exposed; development of sensors and triggers also belong to the field of intelligent textiles (for detection of hazardous substances, fire) and development of products for monitoring of mechanical, chemical and electromagnetic impacts (change of temperature, pH, radiance, chemical agents etc.).

The accent will be on linking of domestic knowledge of various professions, establishment of interdisciplinary development of electronic textiles and on mastery of knowledge for development of electronic textiles at all levels of technology, i.e. from fibres to flat textiles and final, useful product; market niches for such products will be identified. Development of sensors and triggers on the textile substrate based on intelligent colours and electro conducting polymers is planned.

2.2.7 Customisation to measure

Customisation to measure is one of the key directions in clothing industry. The fact that clothing industry is a partner in textile-clothing chain of added value and has close relations with textile industry, with partners in delivery chain, including logistics services and that it also has close relations with trade and its final customers, cannot be overlooked. Innovations in the field of customisation to measure will appear, especially in the field of new business models and technologies in the clothing and fashion field, alongside the entire value chain. Research in the field of customisation to measure are therefore directed mostly towards getting rid of technological and organisational deadlocks and introduction of new business concepts.

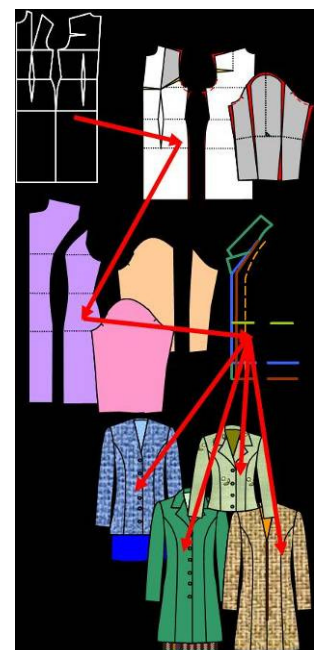
Research will be directed towards development of concepts and technologies for support of new models of cooperation in the value added chain and development of tools and concepts of innovative trade. Great accent will be given to development of models of inclusion of customers in creation of products (co-design) on basis of visualisation and development and enforcement of models of business association alongside the value chain (suppliers, manufacturers, customers) and with complementary sectors. Development of tolls for efficient network operation can essentially support efforts in this direction.

Research in the field of development of new products and innovating will be directed into use of tools for realistic visualisation and simulation of textile materials and their properties. Improvement and introduction of new functions CAD/CAM systems is planned, as well as use of new computer technologies for visualisation in order to reduce costs and use of tools for forecasting of material behaviour in its life cycle. Software tools designed for simulation of materials and clothes, accessible to all actors in the value chain, can additionally stimulate innovativeness of all associated actors in the value chain.

Research in the field of production management is planned in direction of simulation, optimisation, flexibilisation and virtualisation of manufacturing procedures in the sense of development of fast response models.

2.2.8 New designs and concepts of development of products and technologies

Design and capacities of development of new products are probably primary competitive advantage for industry, which operates in rapidly changing environment and which cannot rely on cheap manpower, cheap access to raw materials and/or other perceptive sources. Here, creative and scientific technical elements, which are based on human knowledge, abilities and talents are combined. But their success strongly depends on ability of use of concepts,



methods and technologies, which are necessary for change of ideas into industrially useful results. Human creativity and talent cannot be enlarged by RR, but we can make concepts, methodologies and technologies for more productive and efficient design and process of products development. Research will therefore be directed into development of concepts and technologies for support of new models of cooperation in the added value chain, which is closely fastened to and supplement the previous item.

3 Performance of strategic research programme 2007 – 2013

The STTP is a neutral mechanism. It operates on principles of openness, transparency, in accordance with operating guidelines of the European technological platform for the future of textile and clothing industry and in accordance with the aims and needs of Slovene textile and clothing industry. The STTP do not choose projects, but it gives strategic framework of research and creates conditions for their forming and effective realization at the national and international level.

Performance of strategic research agenda is foreseen for 2007 – 2013 in form of development&research projects. The STTP partners will associate on projects. Resources for research and development&research activities performance will be provided by project partners. Special attention will be directed towards acquisition of funds in the framework of national development&research programmes, 7th frame programme of the European Commission, Eureka, and many other state and regional programme schemes. The STTP will mediate information on priorities and the Textile technological platform plans to actors of public sphere, which decide on development&research programmes and, in this way, try to enable equal conditions for innovations in textile and clothing industry, as other industrial sectors do. Through participation in the network of the technological platform for textile, interested partners will, regarding interests and compatibility of aims, include in other development&research consortiums at Slovene and European level.

The STTP will, during the phase of implementation of the research agenda, create suitable conditions for modelling of projects. Activities will include organisation of meetings, encouraging communication at the national and international level, collection and mediation of information on European and national programmes, following progress of projects and information of interested public on results of research. International summer STTP conferences, seminars, workshops etc. are provided. Important role of the STTP is strengthening of consciousness about developmental abilities of textile and clothing industry because only self-confident managers, owners, researchers, scientists, opened into the future can gain developmental breakthrough. Therefore, a great accent will be given to a positive communication and the role of innovativeness in sustainable development of textile and clothing industry.

Strategic research agenda is a living document. It is being supplemented in accordance with the realized aims and new cognitions of the Slovene textile technological platform and supplements of strategic research agenda of the European technological platform for the future of textile and clothing industry. The supplements of the programme will be published at the web site of the Slovene textile and technological platform <http://www.irspin.si/>. An updated document will be published every two years.

4 Horizontal fields

4.1 Innovations and standardisation

Standardisation of textile products, processes, organisational and business models in textile and clothing industry is indispensable for achievement and preservation of quality and accordance with other professions. Use of standards enables improvement of suitability and reduction of obstacles in trading. Standards support technical cooperation and contribute to reduction of costs. They enable easier understanding, development and production of new products, which are based on new technologies and are helpful in development of new markets. Standards, specifications, testing methods, measuring, evaluations and terminology are basic instruments within an innovative life cycle of product.

Development of new products and processes in textile and clothing industry is connected to new specific properties, which have to be qualitative and quantitative evaluated.

Standardisation has a decisive role in this process (measurable quality, prescribed / standardised value parameters, measuring methods). Needs for new standards in the field of textile and clothing industry on the basis of ascertained needs indicate in the following fields:

- fibres and textile materials and surface properties,
- comfort and physiological interaction of textiles with human body,
- technical textiles,
- intelligent textiles and textiles with special properties,
- quality and durability of property.

Interdisciplinary development of new products demands development of new standards or revision of existing standards from the field of textile, respectively, thus they will be able to include new properties of innovative materials.

Priority activities of horizontal group for standardisation are defined in accordance with the needs of Slovene textile and clothing industry and guidelines of European horizontal group for standardisation:

- active participation of the group members in the horizontal group for standardisation of the European textile technological platform in the field of development of new standards for innovative products, technologies, testing methods, especially in the field of technical textiles, standards from the environmental protection and health care field...;
- use of existing knowledge and experience with use of international, national and internal standards in Slovene companies, institutions, universities (establishment of the data base of standards in use of Slovene companies and institutions);
- education in the field of standards for new products, processes, fields of use.

4.2 Education and training

Realization of vision and aims of the STTP depends on qualification and creativity of cadres, who will be confronted with challenges. The STTP builds its activities on the vision that the system of education and training will provide to industry cadres needed for successful operation.

During the initial period, the group in the education and training field identified problem fields, formed proposals of directions, ways of organisation and action plan from the temporary narrow group for education and training. In the framework of the STTP activities a wider discussion and confirmation of problem fields, directions, and ways of organisation and action plan will be performed. Results of the discussion will be a base for elaboration of detailed performance plan in the education and training field, which will be realized in the period 2007 – 2013.

Identified problem fields and proposals of action directions are:

1.) Knowledge of what kind of cadres we actually need;

- identification of necessary knowledge,
- role of technological platform as a contact point between industry, educational organisations and state, regarding needs for establishment of new or omission of old contents and forms of knowledge acquisition.

2.) Identification of (new) approaches to acquisition of desirous cadres;

- enlargement of »market« way of faculty operation,

3.) Role of the state – modelling of messages for the state from the technological platform;

- strengthening education for the secondary school technical professions.

4.) Rise of the respectability of the branch;

- strengthening of various forms of promotion (establishment of coordination between school system, industry and state for promotional purposes, promotion for the secondary school pupils' parents, announcements of research and developmental themes for promotion of good praxis – good companies),
- encouraging of granting scholarships.

5.) Solving problems due to expected lack of cadres with IV and V level of education;

- strengthening of internal trainings in the branch framework as, for example, IRSPIN school),
- establishment of verified programmes at the faculty for qualification and performance of qualifications in production under the leadership of the faculty cadres.

6.) Establishment of really efficient connection between companies and educational organisations;

- coordination of needs of companies at the national level regarding actual needs for cadre profiles and provision of effective feedback.