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# Lithuanian Textile Science and Industry: A Retrospective on the 70<sup>th</sup> Anniversary of the Department of Textile Technology

*The time of an impressive anniversary is a time of retrospection and keen foresight. Considering the important achievements of the past, as well as the present position, we would like to wish our Lithuanian friends, as well as the heads and all the staff of the department, health and happiness, a successful future, scientific and educational achievements, and above all prosperity for the Lithuanian textile industry.*

*On behalf of the authorities of the journal's publisher  
as well as all editors and associates of our journal  
Bogdan Mac  
Editor-in-Chief of Fibres & Textiles in Eastern Europe*

## ■ Introduction

At the beginning of 1940, after some re-organisation, Kaunas University decided to establish a Department of Textile Technology with a Laboratory of Fibre Technologies as a basis. It was the first department in Lithuania which qualified textile engineers for Lithuanian industry and science. Since then the Department has not changed name and has conducted successful work for 70 years. In all these years the Department has had only 5 Heads – Professors J. Indriūnas (1940-1962), A. Matukonis (1962-1988), V. Milašius (1988-1993), R. Čiukas (1993-2007) and the present one - the author of this article (since 2007). In this period worked more than 50 professors and lecturers who helped the development of Lithuanian textile science and industry, giving a good account of themselves. The professors of the Department have been winners of the annual Lithuanian science award 4 times, and 2 professors have been awarded the Order of the Lithuanian Grand Duke Gediminas by the Lithuanian President - “to honour the citizens of Lithuania for outstanding performance in civil and public offices”. These are only some of the achievements of the academic staff of the Department.

Since 1998, the Department has been a member of AUTEX (Association of Universities for Textiles) and is well known in all Europe. Belgium, France, Germany, Finland, Greece, Slovenia – these are only some of the European countries where students from the Department have studied and are currently studying as part of the ERASMUS exchange programme. Students from other countries also come to Kaunas (France, Sweden, Finland, Turkey and etc.) to study textile engineering under the same programme.

## Abstract

*The article is dedicated to the 70<sup>th</sup> anniversary of the Department of Textile Technology of Kaunas University of Technology (Lithuania). The history, past and present achievements as well as problems of the Department and textile industry of Lithuania are briefly presented. International academic collaboration as well as the situation and peculiarities of textile studies are also presented. The increases in scientific activity, the number of doctoral and master students, the decreases in the number of bachelor students and the reasons for these phenomena are analysed. The situation in the Lithuanian textile industry as well as perspectives on the development of scientific investigations of the Department are also presented and analysed.*

Professors of the Department participate in and give lectures as part of the European Masters Programme for Textile Engineering - E-TEAM, from which students of the European Union and non-European union countries graduate. From the 21-23 of June the Department will have the honour to host the 10<sup>th</sup> World Textile Conference “AUTEX 2010” ([www.autex2010.com](http://www.autex2010.com)).

## ■ Roots and growth

Everything has its roots and the Department is no exception. The Department dates from 1929 – in this year the decision to start qualifying textile engineers at Kaunas University was made. However, it was only in the autumn of 1932 that the first group of 3 students was organised and the first Lithuanian professor of textiles, J. Indriūnas, appointed after a 2 year internship in Stuttgart (led by Prof. O. Johansen) and Dresden, Germany (led by Prof. A. Kreis).

The need for domestic engineers arose when, after the First World War, the independence of the Lithuanian textile industry in Lithuania was restored and started to markedly grow. Especially high growth was achieved in the wool and flax industries. Even before the Second World War Lithuania had become one of the leading (5<sup>th</sup> place) flax fibre manufacturers in the world – with a population of

only 3 million Lithuania produced more than 3.3% of the total world production of flax fibres, which was higher than France (3.0%), and very close to Germany (3.8%) and Poland (5.0%); Lithuania was the world leader per capita. In the 10 years before the Second World War, the number of workers in the textile industry increased more than 4 times, which at that time constituted more than 20% of all industrial workers. It is very important to note that this happened despite the world economic crisis of the 1930's.

The next era of growth for the textile industry started after the Second World War and Soviet occupation. With European technologies, experience and work culture, Lithuania became a very attractive country for the development of the textile industry in the Soviet Union. Large new spinning, weaving and knitting companies, especially in the field of synthetic textiles, were opened. At that time textiles constituted around 20% of all production in Lithuania. Such a high development of the textile industry created a need for new engineers. The number of students in textiles grew year on year and in the 1970's constituted around 200 students per study year, all of whom were at Kaunas University of Technology (as it is named today), the majority at the Department of Textile Technology. Due to the very high popularity of textile studies, the Department was divided into two (“Textile Technology” and “Fi-

brous Materials”), which merged again in 1997. More than 2200 students of textile engineering graduated from both departments in this period. At that time the Department qualified students not only for Lithuanian industry but also for Latvian and, for around 15 years, (till the end of 1980’s) for the Estonian textile industry – around 250 engineers from Estonia were qualified. During this period, scientific investigations were developed. Until Lithuania independence in 1990, around 80 researchers attained the Ph.D. degree, as well as 6 researchers – the D.Sc. degree. The high appreciation of Lithuanian textile scientists justifies the conferment to Kaunas University of the possibility of granting DSc degrees (only 3 universities in all the former Soviet Union had such a conferment – in Moscow, St. Petersburg and in Kaunas). The scientific works of Lithuanian scientists were very well known in all the Soviet Union. Unfortunately, the majority of works published in Russian or Lithuanian are no longer widely known, which is especially the case with investigations in the field of textile relaxation (for example, the inverse relaxation of fibres or cloth fell displacement during the standstill of a weaving loom). After 20 or more years the similar results of other authors are published, but due to the language barrier, their results are not analysed nor compared with those published much earlier by Lithuanian authors.

### Present situation and problems

The last 20 years of the Department have been coherent not only with the Lithuanian textile industry but also with the European textile industry. Professors and students of the Department are very active in international cooperation, especially in AUTEK – each year more than 10 presentations alone are given at AUTEK conferences, and more than 10 papers are published in various foreign journals. More than 15 students have graduated in E-TEAM studies in recent years. Since 2008 the Department has participated in the publishing of the journal “Fibres & Textiles in Eastern Europe”. Despite the scientific activity of students and academic staff not having decreased, the number of articles and presentations at various international conferences has increased around four times in the last 10 years. Doctoral studies have also become popular – 2-3 new PhD students start studying textiles each

year. In the last 10 years around 15 new doctors have defended PhD thesis. There has been a very high increase in doctoral studies, and the situation is close to that of the 1970’s and 80’s when doctoral studies were very popular. Once more, the interest of some industrial workers (sometimes even the heads of departments and technical directors) in doctoral studies has also been noted. More and more engineers and managers want to combine their job with studies for the highest qualifications. This phenomenon is clearly visible at the master studies level – many master students start working but do not suspend their studies.

However, the situation regarding bachelor studies is not so promising. The number of bachelor students in textiles decreases each year. At the beginning of the century, approximately 40 students studied on a bachelor programme each academic year, while the number of students in the last year has been 30, only 11 of whom were first year students. A bit better situation is in master studies, where in the last year the number of students has increased – in the first year there are 18 students, while in the previous year it was around 12. It is necessary to note that at the present time around 1000 engineers and managers work in the Lithuanian textile industry, the majority of whom have qualifications in textile engineering. Hence, the average amount of textile engineers needed to keep the textile industry at the same level as now is no fewer than 20 graduates each year (people work in the industry around 35 years on average, and if the number of engineers is divided by 35, we achieve the requirement for graduates each year).

Some positive aspects of the textile industry were shown last year - the crisis year. The decrease in the textile industry in Lithuania was not as high as in other branches of Lithuanian industry, furthermore the decrease was smaller from month to month. The level of textile production in the first part of 2009 constituted around 68% of the same period of the previous year, while in the 3rd and 4th quarters of 2009 it increased constituting 86% and 97% of the amount for the same period in the previous year respectively. A similar situation is in the clothing industry. Of course, these results do not mean the revival of the textile industry in Lithuania, but positive movements can be noted. Therefore, as in the time

of the economic crisis of the 1930’s, the Lithuanian textile industry will not die. At this time around 18000 people work in the Lithuanian textile industry and around 30000 people in the clothing industry. Furthermore, it is very important to state that the majority of Lithuanian textiles are exported to other EU countries. In 2007 Lithuania exported textiles worth more than 400 million EUR, more than 270 million of which to EU countries (a similar situation was also in the clothing industry – 530 and 440 million, respectively). Thus, the overall situation in the Lithuanian textile industry depends on the economic situation in the largest countries of the EU.

At present 17 professors and lecturers work and 12 doctoral students study at the Department. The main trend in the last 10 years of scientific work of the department has been to move into the field of technical textiles: Textile filters, protective textiles, medical textiles, textiles for sport and leisure and especially electrospun nanofibres and the technology of their manufacture, being the new activities of the staff of the Department. Of course, traditional themes of investigations such as classical textile properties and technologies of their manufacture, Lithuanian national patterns etc. are still important and still carried out at the Department. At present the integration of various fields of textiles is the main sphere of activity of the Department of Textile Technology. Such wide and varied scientific interests of the Department is related to the situation in Lithuania as well as to the situation in the world. Technical, smart, and multifunctional textiles are the future of textile development, and Department staff have great interest in this field. Investigations of classical textiles as well as the influences of various technological and structure parameters on properties and quality, which are fields where some Lithuanian textile companies have shown interest, are a part of the total goal of the Department as part of the state university. Lithuanian national textiles and their patterns is a field where ethnologists and historians are needed as textile researchers and, hence, is also a mission of the Department. All of this means that the fields of interests of the Department will not decrease, and I believe that in the next 70 years the Department will still be important for the textile industry and science.

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