

PILOT ACTION STUBA



INTRODUCTION

This presentation responds to the findings of the poll on the feedback of the second round of pilot actions in Slovakia coordinated by the project partner STUBA. **In the poll on the process and the outcome of the implemented services in Slovakia, we approached three partners, in our case stakeholders in the BIOCOMPACT-CE project, representing the SME, a large company and a research company with the production of innovative products.**



These participants welcomed both activity and time frame of the pilot actions, since discussions on the poll, but also from other deeper negotiations, have taken the basis for resolving the tasks of the State program, which will be supported by the government. In view of the long-term strategic thinking in the field of biodegradable plastics in research in Slovakia and our own expert base, we have not considered expert assistance in Slovakia.



Foundation

- 1959 Chemosvit
- Chemosvit folie separation from in 2005

Size

- big-sized

Key products/ services

- producing flexible films
- flexo-printing
- packaging end use product (food, nonfood)
- bags

Key materials

- LDPE,
- OPP – own production (TRICHEM)
- secondary used products

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PROFILE

Chemosvit folie, a.s. is the biggest of the Chemosvit Group companies. Its line of business involves the **production, converting and sales of packaging material**. It is among the biggest players in flexible packaging films converting in Central Europe.

Almost 50% of total production consists of packaging materials produced by Chemosvit folie, intended, in particular, for the **packaging of food products**. Its **flexible packaging films** are demanded by local, as well as foreign customers. Among them are big multinational producers of confectionery, biscuits and chips, and also hygiene products from the Czech Republic, Hungary, Poland, Germany, Benelux, the Ukraine, Russia, and other European states.

The company is partner cooperating with STUBA on industrially trials in the production of biodegradable films. Biodegradable films produced by company based on the production of PANARA are suitable for use in multicomponent packaging materials with paper (lamination, adhesive lamination).

PRODUCTION SPECIALITIES

The manufacture of packaging films is complex although it is not yet focused on bioplastics. It includes the processing of graphic designs, the production of print forms for flexo-printing or gravure printing, and the printing itself up to 11 colours with downstream operations – adhesive laminating and cutting.

The converting of the films itself has support in the area of self-extruding plastics based on LDPE and often OPP films from the production of Terichem a.s., Svit. CHEMOSVIT FOLIE, s.r.o. provides:

- production of flexible films for the refining of flexible films;
- manufacture of combined packaging materials with or without printing;
- production of blowing packaging films in a clear or colour design,
- with or without printing; manufacture of cast co-extruded films; manufacture of ready-made products (bags, sacks and carrier bags).





SUSTAINABILITY, BIOMATERIALS USING

Ethical - transparent and active approach to enforcement of values and principles, transparent and stable supply-related relationships, ethical and partner stakeholder dialogue, fair relations with institutions and organisations

Environmental - safe environmental protection system, organic production programmes, emission reduction, waste and landfill, recycling and secondary use of waste

Product - customer oriented company, certified quality management and product safety systems, flexibility and innovativeness of products and services. The progressive supplier of technology, materials, products, energy and services these values

Sustainability are consistent with the trend of the introduction of biodegradable packaging into the product portfolio, both in the field of biodegradable films, as well as paper-refining films (laminating, adhesive laminating) for manufacturers of combined packaging with paper.

SUMMARY AND SOLUTION



While the production of biodegradable plastic films is not currently established, **based on the cooperation with the Slovak Technical University and PANARA by some types of biodegradable intermixtures of plastics have been tested on industrial lines (films on basis of PLA and PHB, respectively PLA, PHB and starch. The industrial trials have turned out very successfully.**

These biodegradable films based on the granulate production of PANARA are suitable for use in multicomponent packaging materials with paper (lamination, adhesive lamination). **The Research Institute of Wood and Paper (research on innovations of combined films with paper) showed interest in future films. In this sense, the company participates in the Pilot Action under the BIOCOMPACK-CE project.**

We can mention the new project of Panara and Chemosvit Folie „*Research on Applicability of Biodegradable polymer blends for packaging using multi-layered films*” under the program for projects of a long-term strategic research under the Slovak Research Agency.

Pulp and Paper Research Institute

Foundation

- 1949

SIZE

- Middle-sized

services /Key products

- Research and development in the technological production of pulp, production of paper and paperboard, use and processing of secondary raw materials, processing and refining of paper, paperboard and manufacture of packaging
- Development of new products and materials
- Performance of state testing wrapping paper
- /SKTC-114/
- Standardization and metrological activity
- Chemical Analysis

Production and sales

- Recycled Office Paper
- Imitation of hand paper
- Paper with watermarks
- Paper with protective elements
- Prestigious leaf paper with envelopes
- Assorted colours



PROFILE

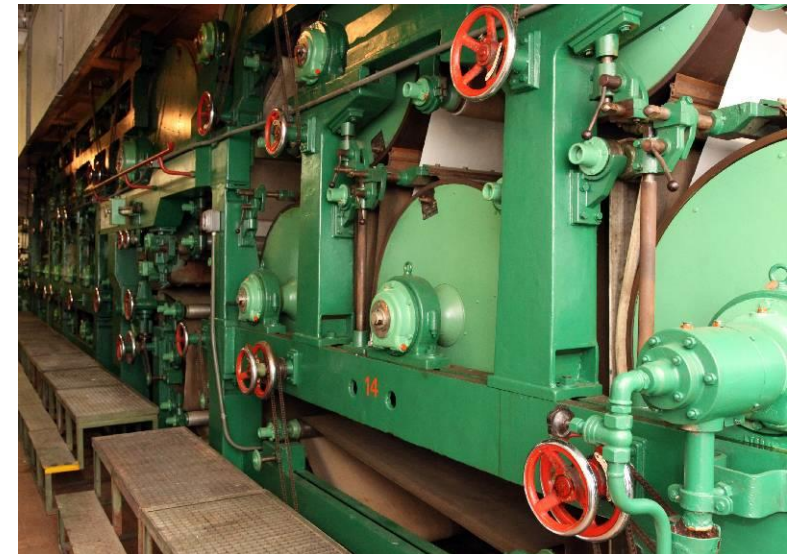
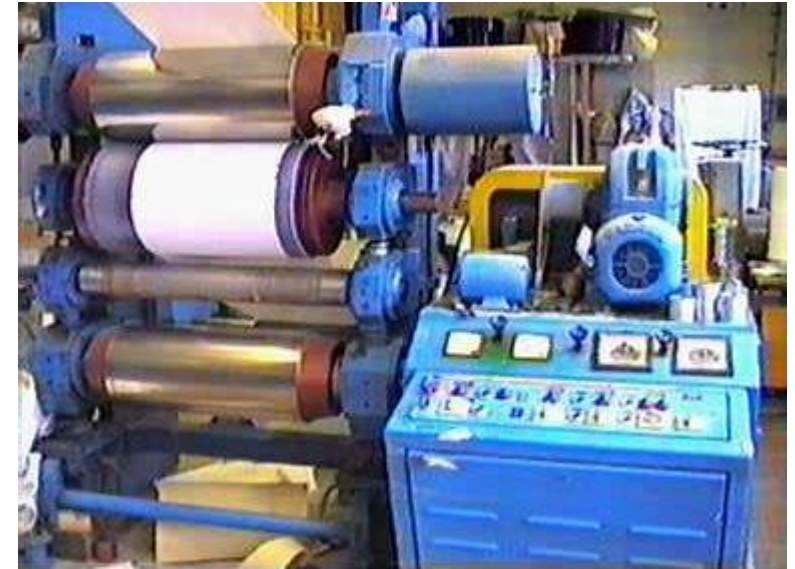
The Pulp and Paper Research Institute, Bratislava was established with the main target to promote the development of the pulp and paper industry. It has **directed towards technological research and development and industrial application**, on technical assistance to pulp and paper mills and converting plants, on enhancing the skill of the papermakers and on retrieval and dissemination of professional and economical information.

The instrumental outfit and the **pilot plant equipment of the Institute are of high level**. Together with the skill and ability of the Institute staff they help to satisfy many local and foreign partners with the results of work during decades. The Institute and the staff members were awarded by local and international awards for the most important research results. The membership of the Institute and its staff members in international, nongovernmental associations of the pulp and paper industry (CEPI, EUCEPA, TAPPI, CPPA, FEFECO and others) was helpful in gaining the latest scientific and technical knowledge and enabled to present own results.

SUSTAINABILITY, BIOMATERIALS USING

Packaging materials based on paper need finishing for suitable performance. Sustainability of such processing needs biodegradable plastics. This idea is also the mainspring for the new conception in national research in Slovakia. Intervention logic of the national project: *„to establish a strategic partnership for research organizations, universities and the business sector capable of effectively contributing to the transformation of forest-timber and cellulose-based industries to the higher value-added sector, through the implementation of the results of multidisciplinary research in practice.“*

To support the acute need for a structural transition from a fossil to a low carbon economy based on a more effective assessment of the domestic renewable raw material - forest biomass, using the potential of the scientific and research base of the whole sector and to increase the degree of finalization in the processing of wood raw materials.





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PRODUCTION SPECIALITIES

As described in self-contained section Services/Key Products, research at Pulp and Paper Institute is relatively extensive. **On the present, biocomposite is not produced by the Institute.**

On the other hand, **Institute is prepared immediately work on development new combined materials paper/biodegradable plastics.** Institute offers the suitable equipment for R&D, e.g. the unique universal paper pilot line with three head boxes and on-line glei press, semi-operating cont and hood, semi-operating supercalender (LignoSilva-Gabčíkovo, The Pulp and Paper Research Institute Inc.)

SUMMARY AND SOLUTION

The research strategy for a long-term strategic research project in Slovakia *“High-value wood-based technologies”* is coordinated by Pulp and Paper Research Institute. For the activities of this strategy in biologically degradable packaging based on lignocellulosic and bioplastic materials the Institute offers own technologies. Outputs of the activities will be focused on the research of special biologically degradable paper-based packaging and biodegradable plastics with special barrier properties permitting replacement of plastic packaging, on semi-operating devices under "open Laboratory ", which cannot provide production-oriented combinations with its strong infrastructure.



The replacement of plastic packaging, dangerously accumulated in nature and in the world's oceans, by biologically degradable and compostable packaging based on paper, cardboard and biodegradable plastics is the main benefit of the solution.



Foundation

- Since 2006 with R&D

SIZE

- small-sized

Key products/ services

- producing biodegradable plastics
 - NONOILEN 1st generation
 - NONOILEN 2nd generation
 - Services for plastic items

Producer

- R&D

Key materials

- PLA
- PHB
- Starch
- Additives

PANARA s.r.o

Since 2006 the company started with R&D in bioplastics area with the goal to develop biodegradable- bio based blends for different types of plastic processing. Strong partnership with Slovak university of technology escalated into common excellent and unique centre called CEPOMA (Center for Applied Research of environmentally friendly polymeric materials) which is technological and technical base for research and development activities connected with new biodegradable and bio-based blends.

The main goal is to introduce to the worldwide market a new generation of sustainable bioplastic material based on PHA and PLA polymers that could be utilized for production of final plastics products (such as films for agriculture use, packaging material, 3D prints etc.). The goal is achievable through the application of a newly developed 100% bio-based and biodegradable multi-component material developed by Polymer Institute of the Slovak Academy of Sciences and Slovak University of Technology with collaboration of **PANARA Company - NONOILEN, which has obtained exclusive licence for blend production for European area, Russia, Singapore, China. Nowadays technical solution is patented also in region of Japan and Korea.**

..nonoilen..



PRIATELIA, JE TO OFICIÁLNE!
Švajčiarsky Curaprox vyrobil prvú
sériu zubných keŕiek z materiálu,
ktorý pochádza z dielne profesora
Alexyho.

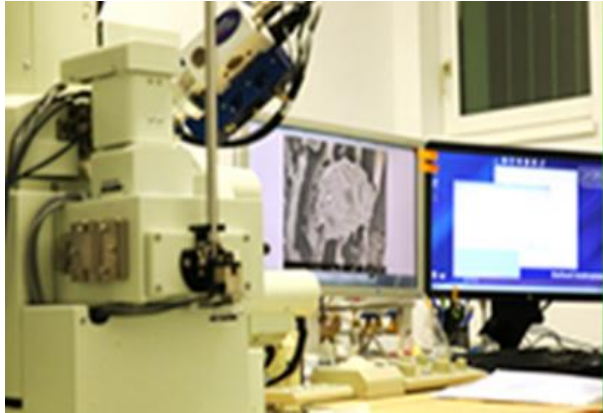
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SUSTAINABILITY, USING OF BIOMATERIALS

Nonoilen material belongs to Bioplastics advanced materials. The uniqueness of newly developed multicomponent biodegradable material dwells in its origin as it comes from 100% renewable (biobased) raw materials and at the same time in its optimal properties for plastics production utilization.

NONOILEN® today is a unique solution in plastics, meeting the strictest ecological criteria, while products have excellent utility quality. It is made from polymers coming from 100% of natural renewable raw materials, is capable to biodegrade in industrial compost, in electric compost bin, in domestic compost and in soil, without the formation of microplastics. The appropriate composition can regulate the properties of the finished products in a wide range for various applications.

PRODUCTION SPECIALITIES



Nonoilen represents a new generation of progressive biodegradable materials based on polymers from renewable sources. It is the only bioplastic in the market, which does not contain synthetic polymers made of crude oil and is sufficiently tenacious, 100% biodegradable. The characteristics are alike conventional plastics, such as PE, PP, polyesters and the like, and long-term stable during storage and use. It is situated only in a biologically active environment and degradation products do not cause a greenhouse effect. This is a new generation of progressive biodegradable materials based on renewable sources. The raw material base is formed by polymers of polylactic acid (PLA), polyhydroxybutyrate (PHB) and other ingredients.

This unique solution called **NONOILEN I. Generation**, is protected by a patent of WO2012141660 A1 in many countries of the world. In order to improve biodegradation, **II. Generation was developed**. Thanks to the addition of thermoplastic starch (TPS) and special production technology, is capable of biodegradation, not only in conditions of industrial and domestic compost, but also in soil (total decomposition time is adjustable, in industrial compost is up to 120 days).

SUMMARY AND SOLUTIONS



The aim of PANARA and STU (center CEPOMA) is to replace as much as possible the maximum amount of single used plastic packaging by biodegradable **NONOILEN-based materials with also the benefits of reuse**. The idea is comprehensively address the lifecycle of products so that the waste generated is assessed as way environmentally friendly. We gradually want to expand the application areas NONOILEN for technical applications, automotive industry, medicine, gastronomy, 3D printing and more.



Another objective are innovations in packaging to make proposals for products based on paper and biodegradable plastics films particularly for food packaging able of composting. We are developing the business sector cooperation with the academic sector. The development continues to move forward, the whole team has the ambition to deliver not only the production of organic plastics, but to offer with them a whole system that can ensure that waste from these plastics is truly evaluated in the most correct way by biodegradation.

CONCLUSION

Discussing **next step in the Pilot action we decided to nominate the company PANARA Ltd.**, which is developing plastic blends based on renewable resources for films and coextrusion. It is expected that company PANARA will start production this year. The other two companies evaluated in the Pilot Action will use biodegradable blends from this production for composite with paper for packaging. Chemosvit fólie is prepared to start with production of biodegradable films for packaging producers and Pulp and Paper Research Institute will develop new composite materials paper/biodegradable plastics for innovations in the field of packaging in cooperation with packaging companies.

After the BIOCOMPACK-CE Workshop organized in Nitra, the main partners in the Pilot Action of the project want to cooperate with PANARA, taking new blends NONOILEN to their portfolio in the future.

