



How NaturePlast uses DiMAT suites for Advanced Material Development in Bioplastic Sector

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NaturePlast: Using DiMAT Digital Tools for the Development of New Bioplastics

NaturePlast is a French company specialized in the commercialization and optimization of bioplastics. Working with bio-based and/or biodegradable plastics, it stands out for its ability to modify these materials to meet customer requirements. By optimizing parameters such as mechanical properties, fluidity, and thermal resistance, NaturePlast actively contributes to the integration of bioplastic solutions across various industrial sectors.

As part of the DiMAT project, NaturePlast is developing bioplastic formulations intended for the production of filaments used in technical nets (fishing, building sector, etc.). These developments rely on innovative digital tools designed by the project's developers. The goal is to demonstrate, through a concrete application, the benefits brought by these new technologies. Currently, the DiMAT digital tools are in the optimization phase, and NaturePlast is actively participating in their improvement by testing their different functionalities.

The strategic interest of NaturePlast for Digitalization

The use of digital tools represents a strategic opportunity for NaturePlast. These technologies enable improved performance and efficiency in bioplastic formulation and industrial production.

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In a context where time-to-market is becoming shorter, modeling and calculation tools help to optimize development phases. This leads to savings in time, raw materials, and energy, resulting in reduced development and production costs. For the innovative net application studied within the DiMAT project, filament production requires materials with precise characteristics: fluidity, heat resistance, stretchability, and cooling rate.

However, the biopolymers currently available on the market do not always meet these requirements. NaturePlast is therefore working on formulations combining different polymers and additives to improve the processability of these materials. This work, often lengthy and costly due to the many test iterations required, could be significantly optimized through DiMAT's digital tools.

Challenges and Opportunities

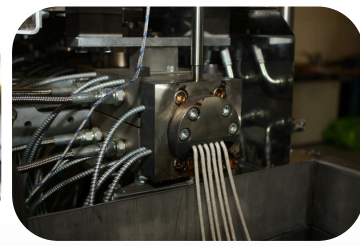
While adopting digital tools promises significant gains, it also comes with challenges. Modeling the behavior of material mixtures remains a complex task due to the multitude of parameters influencing the transformation process. Numerous physical and chemical interactions occur during plastic material extrusion, and production equipments (extruders) have dozens of settings that affect the quality of the mixture.

The challenge is to improve digital tools so that they can model these phenomena accurately. Once optimized, these tools will help determine the most efficient formulations (selection of components and their proportions) as well as the ideal parameters for extruders. The expected outcome: reduced time, material, and energy consumption, benefiting both the company and the environment.

In summary, the integration of digital tools within NaturePlast represents a true revolution in the field of bioplastics. By facilitating and accelerating development processes, these technologies will enable the company to strengthen its competitiveness while aligning with a more sustainable and efficient approach.

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