



BIOMOTIVE Stakeholder Group #1

28th June 2018. Brussels (Belgium)

Meeting organiser: Ms. Cristina Hernández, UITP (+32-2-788 01 12)

List of participantst

NAME	COMPANY	STATUS ¹
Bein Thilo (TB)	LBF Fraunhofer	A
Burzio Gianfranco (GB)	Independent expert in regulation	A (online)
Gabikaetxebarria Iker (IG)	Maier	A
Gómez-Belinchón Ignasi	Rail-Grup	E
Castillo Cristina (CC)	Rail-Grup substitute	A (online)
Hernández Cristina (CH)	UITP	A
Ißbrücker Constance	European BioPlastic	E
Koźlecki Tomasz (TK)	SELENA	A
Omar Noshin	EARPA	E
Restivo Pénélope (PR)	UITP	A
Storer David Mark (DS)	CRF	A (online)
Tissier Francois	Gerflor	E
Winters Ruud (RW)	VDL Bus and Coaches	A

¹ A = Attended; E = Excused.



Minutes

10:30 – 10:40	Opening of the meeting
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CH (UITP) made the opening remarks and thanked the participants for joining the meeting.

10:40 – 11:00	Stakeholder Group Guidelines
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CH explained the guidelines of the stakeholder group including the expectations about its objectives, the travel reimbursement cost rules and the confidentiality issues.

Please refer to the presentation **BIOMOTIVE 01_Stakeholder Group Guidelines** attached to these meeting minutes.

The following aspects were stressed:

- The need of having the 3 copies of the contract to reimburse their travel cost;
- The need of keeping the original tickets for the reimbursement;
- The need of requesting the approval of the projects partners so to have access to specific information.

11:00 – 11:05	Get to know each other
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A 'tour de table' followed in order for all meeting participants to present themselves, including their expectations related to the project. Main ones were:

- To better understand the performance of the products produced (RW –VDL Bus and Coaches-, TB - LBF Fraunhofer-, DS –CRF-) including:
 - o Mechanical characteristics;
 - o Fire resistance level;
 - o Associated costs/;
- To understand the level of the acceptance of these products for the whole vehicle industry – cars, coaches, trams, trains and others (CH);
- To identify the business opportunities linked to these products for the whole vehicle industry – cars, coaches, trams, trains and others (GB – independent expert).

11:05 – 11:45	BIOMOTIVE: Main goals
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TK (SELENA) introduced the project to the participants, including the chemical activities and halfway products and all the aside aspects related to the project, e.g. the CO₂ emission.



Please refer to the presentation **BIOMOTIVE 02_Main goals** attached to these meeting minutes.

The following aspects were stressed:

- The goal of BIOMOTIVE is triple: the production at industrial scale of bio-based materials consisting of thermoplastic polyurethanes, made of:
 - o **thermoset polyurethanes** (onwards TPU);
 - o **thermoset polyurethanes foams** (onwards TP foams); and
 - o **regenerated fibres;**
- The production of these bio-materials is based on weeds;
- The purity is essential to ensure the quality of the products. Otherwise their degradation and deterioration will be very quick and so their attractiveness will decrease in an exponential way;
- The halfway products of the biomaterials that could create any risk of allergy are produced in less quantity than in the traditional fossil-based counterparts processes;
- Currently the technique allows:
 - o A maximum of 80 % of TPU bio-components in the products targeted by the project. This limit is based on the production of di-isocyanates, that can't be completely reduce to zero. The current status of the project (1 year on-going) is around 70% of bio-components in the products targeted;
 - o A maximum of 30% of regenerated fibres;
- Technology use on each of the steps is considered safe and smell-less;
- Until now the mid-term results confirms that:
 - o Most promising materials are the rigid pre-polymers into the formulation of foams with a renewable based content varying from 60 to 80%;
 - o Less promising materials are the soft pre-polymers;
 - o IG (Maier): their primary focus is the production of fascia;
 - o The production time of polyurethane prepolymer will be reduced from 2 h down to 20 min;
 - o First estimations confirmed that 1.500 tonnes per year could be produced;
 - o Characteristics such as fire resistance are very promising, as these biomaterials could decrease the flame generation and even the smoke;
 - o Mechanical characteristics such as the strength and flexibility are very promising, as they seem to be higher than the traditional fossil-based counterparts;
 - o It was also confirmed that the biomaterials could also offer high inflexibility if necessary;
 - o Hydro-repellent/water repulsion needs to be further analysed.
- Some primary prices were shared involving the raw materials:
 - o **1.550-1.750 €/ton of regenerated fibres;**
 - o **2.500-2.750 €/ton of bio-based PU foams;**
 - o **3.000 €/ton of bio-based TPUs.**



Main comments addressed the following points:

- The economic figures are interesting, but the specific prices of the bio-based products (e.g. the dash board and, in the main, the bio-based products to be sold to the product maker and the vehicle assembler) would be welcomed;
- There were some comments about the final quality of the products. The participants convey that more information would be appreciated;
- TB requested about the convenience of having these materials in other markets, e.g. the shipping building market. None of the partners in the meeting room (CH, TK and IG) confirmed any kind of professional relation with the shipping building industry.

11:45 – 12:30	Maier case study: Bio-Materials in the automotive industry
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IG introduced the experience of Maier as a manufacturer of the automotive industry and a case study based on Maier's latest activities. It was confirmed that Maier's interest on the biomaterials are based on a company strategy that includes both a less petrol-dependence industry and the development of a greener company's image;

Please refer to the presentation **BIOMOTIVE 03_Maier_Case study** attached to these meeting minutes.

Main comments addressed the following points:

- TB: It is important to consider the geographic area involved in the case study: e.g. soy-foam is highly linked to the EEUU. The bio-materials targeted in BIOMOTIVE are based on wood pulp, cardoon roots and vegetable oils. These sources are easily found in Europe;
- TB: The automotive industry, thanks to the appearance of new EU Directives pushing for more degradable materials, is becoming more and more focused on recycling activities. Biomaterials are expected to be easier recyclables. This characteristic should be included in the analysis;
- TB and RW: A "cradle to grave" approach (whole cycle approach) should be considered when discussing about the recyclability of the materials;
- RW: The processes to product the bio-base parts for private cars and coaches may differ. When facilitating the analysis of the bio-materials, it should be considered;
- TB: It could be interesting to check if the processing of building the different biomaterials (e.g. TPUs and fibres) is suitable for any technology;
- TK: As the chemistry process is a tailored based solution, it is necessary to get the final products to do this checking;
- TB: It would be convenient to compare the final products in a broader context. The inclusion of the materials in free and paid data bases such as "[Mat Match](#)" could be convenient for the entrance into the market;
- RW stressed that, even if these data based are consulted, a final comparison will be undertaken by the vehicle assembler;



- TK confirmed that the general inertia of any market is “not trusting any new materials”, so any efforts to get them entering in the market are necessary.

13:30 – 14:30	Main challenges and expectations
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CH introduced the main challenges and expectations discussion based on the partners’ input during the preparation of the meeting, and some desk research.

Please refer to the presentation **BIOMOTIVE 04_Main challenges and expectations** attached to these meeting minutes.

During the discussion, Faurecia was pointed out as a company to follow in the bio-based materials exercise. Other EU projects were named. TB has facilitated an article where more information could be found. Please refer to the presentation **BIOMOTIVE 05_Deloitte Japan CNF composites** attached to these meeting minutes.

Main comments addressed the following points:

- TB confirmed that doors and dashboards are the easier areas to implement the bio-based materials, so it should be normal to find other bio-based materials proposed for the same parts of the vehicle;
- All agreed that a joint session with other bio-materials focused EU projects could be of interest, including a 20 minutes presentation about the outcomes of each project. Considering the nature of the activities normally developed in these projects (involving laboratory activities), this joint-session could be welcomed at the end of the project.

When discussing about the drivers (please check the presentation BIOMOTIVE 04_Main challenges and expectations, slide 6) it was agreed that:

- RW: Bio-based products’ weight should not highly differ from the weight of the traditional part. It is not a driver;
- RW: There is no good information about the energy consumed in the project, but it could be interesting to know it. TB agreed with this opinion: it is very difficult to get any trustful information about the energy consumption/Life Cycle Analysis (onwards LCA) due to all the confidentiality issues and assumptions (hypothesis) done during the analysis. CH confirmed there will be a meeting session (the 2nd meeting) where this topic will be addressed, as it is part of the projects’ results;
- TB: Suggested to add acoustic and noise vibration features;
- IG: Confirmed that the points presented in the drivers are in line with the manufacturer’s view;
- RW: Main concern is to confirm if all the drivers proposed could be trusted;
- TK: Regarding BIOMOTIVE’s developments, some feedback could be provided about:
 - o Regulatory drivers:
 - **Recyclability – To check;**



- Economic drivers:
 - Cost-competitive (or price-neutral) – To check at the end of the project;
- Company-policy related drivers (« soft drivers »):
 - Sustainability policies – To check within the WP6 activities (Cartif)
 - Total carbon footprint reduced – To check;
 - Total transport cost reduced if produced « locally » - Not necessary, even if the products are not produced in other continent, such as America, there are transport cost associated;
 - Less energy consumed during the manufacturing processes – To check “from the cradle to the grave” (LCA);
- Product specific benefits drivers:
 - Light weighting – To check.

When discussing about the blockers (please check the presentation BIOMOTIVE 04_Main challenges and expectations, slide 8) it was agreed that:

- RW could agree with the suppliers trap concern;
- TK discussed some of the contras detected, based on the mid-term projects' outcomes:
 - It is considered to improve the moisture resistance of the bio-based products, to make them “moisture insensitive”
 - They could be considered already “heat insensitive” and “flame-retardant” (the previously presented feature of “reducing of the flame and the smoke generation” are in line with this conclusion). The University of Vester could be further involved in this activity if more test are necessary;
- IG added that Maier normally tests the resistance of the bio-based materials to the regular manipulation of the materials, e.g. hand cream, human manipulation, etc...
- TB agreed with the odour-less necessity. However it is not a particular concern of the bio-based materials, so it could be removed from the blockers list;
- RW included the aesthetic performance of the bio-materials in the blockers' list.

In addition, it was agreed that:

- The higher thermal efficiency of the bio-based materials in seat, in particular during winter period, should be demonstrated (please check the presentation BIOMOTIVE 04_Main challenges and expectations, slide 13);
- The list of technical features proposed by a participant (please check the presentation BIOMOTIVE 04_Main challenges and expectations, slide 14) is very specific and correspond to a company's test. These tests are performed once an official interest/contract is concluded. If necessary, the following features could be demonstrated:
 - Heat: Already covered by the flame/smoke test;
 - Temperature cycling and effects at damp heat: Both could be considered in further steps;
 - Flammability: Already covered by the flame/smoke test;



- Accelerated weathering: Could be covered with a basic test, not the specific one proposed: a irradiation test;
- Resistance to chemicals: Could be covered in further steps by Maier with a generic test.

It was commented that the test proposed depends on the country where the assembler is based, so they will be exactly covered when a potential client shows its interest in the bio-based products. However when possible, generic test will be performed/shared so to ensure the good features of the bio-based materials.

14:30 – 14:45	Next steps
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It was agreed that the next meeting will take place in Berlin (Germany) during [InnoTrans](#) (18-21 September 2018). A doodle will circulate to select the final date.

Main conclusions:

- Prices should be presented by product unit;
- The market has a great inertia against new materials. The materials performance needs to be demonstrated in order to attract the interest of the market on them;
- A list of the materials features could be added in different materials data bases, such as Mat Match, so to facilitate the entrance into the market;
- The BIOMOTIVE target profiles should be the products manufactures such as Maier and the vehicles assemblers, as the sectors normally works as follow:
 - The assemblers detect the materials features in the free/paid data bases;
 - If interesting, the assemblers perform their own test in the selected materials;
 - If passing the test, the assemblers ask the manufacturers to check the convenience of producing a product based on this new material;
 - The manufacturers performs their own test to the biomaterials.

Action points:

ACTION		RESPONSIBLE	DEADLINE
1	Sending the 3 signed contract + Travel cost to the UITP	Stakeholders	ASAP
2	Demonstrating the performance of the bio-based materials	SELENA	First feedback to be presented during the 2 nd SG meeting
3	Ensure an interesting LFA approach	UITP + Cartif	First approach to be presented during the 2 nd SG meeting



ACTION		RESPONSIBLE	DEADLINE
4	Checking the convenience of uploading the data in the Mat-Match data base, as well as others	UITP + SELENA	First feedback to be presented during the 2 nd SG meeting
5	Adding acoustic and noise vibration features in the performance test/analysis	MAIER + SELENA	First feedback to be presented during the 2 nd SG meeting
6	Improving BIOMOTIVE dissemination activities/plan based on the targeted profiles identified	UITP + GREENOVENTION	First feedback to be presented during the 2 nd SG meeting
7	Studding the possibility of a bio-based joint event	UITP + SELENA	First feedback to be presented during the 2 nd SG meeting

--- End of Minutes --