

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 26 May 2023**

Case Number: T 2151/19 - 3.2.05

Application Number: 18158802.1

Publication Number: 3345733

IPC: B29B9/06, B29C71/00, C08J3/18,
C08B37/00, C08B1/00

Language of the proceedings: EN

Title of invention:
Method for pelletizing biomaterial composites

Applicant:
Gala Industries, Inc.

Relevant legal provisions:
EPC Art. 56, 111(1)
RPBA 2020 Art. 11

Keyword:
Inventive step (yes)
Remittal for further prosecution



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 2151/19 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 26 May 2023

Appellant: Gala Industries, Inc.
(Applicant) 181 Pauley Street
Eagle Rock, VA 24085 (US)

Representative: Thoma, Michael
Lorenz Seidler Gossel
Rechtsanwälte Patentanwälte
Partnerschaft mbB
Widenmayerstraße 23
80538 München (DE)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 22 February
2019 refusing European patent application No.
18158802.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman P. Lanz
Members: B. Spitzer
T. Karamanli

Summary of Facts and Submissions

- I. The applicant lodged an appeal against the decision of the examining division to refuse European patent application No. 18 158 802.1 (the application).
- II. In the decision under appeal, the examining division considered in particular the following documents.
- D2 WO 2005/051623 A1;
D6 DE 103 04 097 A1.
- III. The examining division came to the conclusion that the subject-matter of claim 1 of the main request (claim 1 as originally filed) and auxiliary requests I, II and III did not meet the requirements of Article 56 EPC in view of the combination of document D6 with the teaching of document D2. In respect of auxiliary requests I to III, which had been filed on 10 July 2018, the examining division held that claim 1 of each auxiliary request contained subject-matter which extended beyond the content of the application as originally filed and beyond the content of the earlier application (Article 123(2) EPC and Article 76(1) EPC).
- IV. With a letter dated 21 April 2023, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims, description and drawings of the application as originally filed (main request) or, in the alternative, that a patent be granted on the basis of the claims of any of auxiliary requests I, II or III, all filed on 10 July 2018, or any of auxiliary requests Ia, IIa or IIIa as detailed in its statement of grounds of appeal.

- V. Claim 1 of the main request corresponds to claim 1 of the main request in the decision under appeal. It has the following wording.

"A method for processing polymer biomaterial composites into pellets including the steps of extruding strands of a polymer biomaterial composite at an extrusion temperature of less than 220°C through a die plate (18) into an underwater pelletizer (12,102), cutting the composite strands into pellets in said pelletizer, transporting said composite pellets from said pelletizer as a water and pellet slurry through a slurry line to a dryer (32, 108) and drying said composite pellets,

characterized in that

said step of transporting said composite pellets includes injecting high velocity air into said water and pellet slurry to cause said water to aspirate from said pellets and said pellets to retain internal heat, to reduce moisture uptake by said pellets, and to expedite transport and drying of said pellets, the injection of high velocity air contacting the pellet water slurry to generate water vapor by aspiration and disperse the pellets throughout said slurry line effectively separating the pellets from the water in the slurry line, and propagating those pellets at an increased velocity to said dryer (32, 108), and said drying step includes drying said polymer biomaterial composite pellets with latent heat in said pellets and without additional heating to a moisture level in said polymer biomaterial composite pellets of less than 1%."

VI. The appellant's arguments, which were submitted in writing, were substantially as follows.

Main request - inventive step - combination of document D6 with document D2

The decision under appeal was based on a retrospective analysis of the prior art. Document D6 could be considered the closest prior art, since it related to a similar compound material including wooden fibres and addressed a similar problem in terms of reducing the moisture content of the cut compound pellets. It disclosed the features of the preamble. To reduce moisture uptake, document D6 (see paragraphs [0032], [0034], [0013], [0016] and [0017]) taught to significantly increase water temperature, and increase water velocity by reducing the pipe diameter as much as possible. This teaching directed the person skilled in the art away from the present invention, since it already solved the problem of moisture reduction. The skilled person had no incentive to consult any further documents, or to modify the teaching of document D6. Therefore, the subject-matter of claim 1 was not obvious to the skilled person.

The current application did not disclose the temperature of the cooling water or the pipe diameter, since these parameters were not relevant to the invention. In fact, the injection of high-velocity air was a different concept, and the reduced moisture content did not depend on water temperature or pipe diameter. The examining division's reasoning concerning modification of the process of document D6 was based on hindsight.

In contrast to document D6, document D2 focused on the

production of pure PET and its crystallization. This had nothing in common with a compound material including biofibres. The crystallization of pure PET pellets was performed in order to avoid agglomeration when they were treated with hot/warm air at a later stage, e.g. in the production of bottles. Crystallization was not a relevant treatment for compound materials containing biomaterial. Biomaterial was added to achieve a strong, inexpensive material with a wood-like, relief-like surface. Such compound materials were not subject to hot-air treatment before producing the article and consequently, crystallization was not desired.

It was not relevant whether document D2 and the current application mentioned a PET material. The important issue was whether there was a link between documents D6 and D2. Document D6 related to processing a polyester/polypropylene compound reinforced with wood fibres, whereas document D2 related to the processing of PET material. Document D6 related to the reduction of moisture content, whereas document D2 was about self-crystallization.

Picking single features (air injection) out of document D2 was an approach based on hindsight that disregarded the other features of document D2. The injection of pressurized air was inextricably linked with a sufficiently high pelletization temperature and increased melt temperatures (at least 260°C, see document D2, page 11, lines 19 to 21, page 17, lines 13 to 15, and page 19, lines 20 to 22). By contrast, the extrusion temperature in the current application was less than 220°C. A person skilled in the art would not seriously have considered a teaching which suggested

melt temperatures that would cause degradation of the biomaterial compound, such as document D2.

Reasons for the Decision

1. *Main request - inventive step - combination of document D6 with document D2*

1.1 In the decision under appeal, the examining division argued that the subject-matter of claim 1 as originally filed was rendered obvious by a combination of the teachings of documents D6 and D2. Thus, the subject-matter of claim 1 did not involve an inventive step (see decision under appeal, Reasons, points 8.1 and 8.2).

1.2 *Suitable starting point*

In the decision under appeal, the inventive step assessment of the subject-matter of claim 1 started from document D6. This is not disputed by the appellant, and also corresponds to the board's assessment of the case. Document D6 discloses a method for processing polymer biomaterial composites (see paragraph [0001]) and originates from the same technical field as the subject-matter claimed. Thus, it can be considered a suitable starting point for assessing the inventive merits of the subject-matter of claim 1.

1.3 *Disclosure of document D6*

Document D6 discloses a method for processing polymer biomaterial composites into pellets including the steps of extruding strands of a polymer biomaterial composite

at an extrusion temperature of less than 220°C (see paragraph [0033]) through a die plate into an underwater pelletizer, cutting the composite strands into pellets in said pelletizer (see paragraph [0001]), and transporting said composite pellets from said pelletizer as a water and pellet slurry through a slurry line (see paragraph [0015]) to a dryer (see paragraph [0033]).

In the decision under appeal (see Reasons, section 8.1), it was argued that the feature "and said drying step includes drying said polymer biomaterial composite pellets with latent heat in said pellets and without additional heating to a moisture level in said polymer biomaterial composite pellets of less than 1%" was disclosed in document D6 (see paragraphs [0013] and [0033]). This is not contested by the appellant.

The board concurs with the finding of the examining division that paragraph [0033] of document D6 discloses the drying step according to claim 1 of the application as filed. It reads: "*Gleichzeitig kann sich etwaige Restfeuchte aufgrund der Temperatur des Granulats relativ schnell verflüchtigen.*" This means that the humidity remaining in the pellets is vaporised due to their temperature. Document D6 does not explicitly indicate a moisture level of 1%, but since the remaining humidity is evaporated, a moisture content of less than 1% seems to be implicit. For drying the pellets, a centrifugal separator (Zentrifugalabscheider 22, see paragraph [0031]) is used in document D6. Additional heating is not disclosed.

The appellant convincingly argued that document D6 already gives a solution to the problem of providing biomaterial composites processed by underwater

pelletizing and of achieving a low moisture content. To this end, a high water temperature in combination with a high water velocity is suggested in document D6 (see paragraphs [0013], [0016], [0017], [0032] and [0034]). Due to the high water velocity, the pellets are transported to the centrifugal separator within a short time. Because of the small difference in temperature between the water and the pellets, less water penetrates into the pellets. These two factors result in reduced moisture uptake.

1.4 *Distinguishing features*

The subject-matter of claim 1 therefore differs from the method known from document D6 in the following features:

- said step of transporting said composite pellets includes injecting high velocity air into said water and pellet slurry to cause said water to aspirate from said pellets and said pellets to retain internal heat, to reduce moisture uptake by said pellets, and to expedite transport and drying of said pellets,
- the injection of high velocity air contacting the pellet water slurry to generate water vapor by aspiration and disperse the pellets throughout said slurry line effectively separating the pellets from the water in the slurry line, and
- propagating those pellets at an increased velocity to said dryer (32, 108).

1.5 *Technical effect and objective technical problem*

The features identified above have the technical effect of providing an alternative method for reducing

moisture uptake in an underwater pelletizing process. Thus, the objective technical problem to be solved is regarded as providing an alternative method for processing polymer biomaterial composites by underwater pelletizing to achieve a low moisture content.

1.6 *Obviousness of the solution*

The skilled person who sought a solution to the objective technical problem would not have taken into account the teachings of document D2. Although document D2 relates to a method for underwater pelletizing and subsequent drying (see document D2, page 1, lines 8 to 10), there are two important aspects to consider. First, it does not deal with polymer biomaterial composites but with pure PET. Second, it is not concerned with the reduction of moisture content but with the self-initiation of the crystallization process (see document D2, page 1, lines 8 to 16). For the latter, the temperature of the pellets is an important factor (see document D2, page 2, lines 21 to 22, page 3, line 15, page 11, line 21, and page 13, line 6). To retain sufficient heat inside the pellets, air is introduced at high velocity. This enhances the transport of the PET pellets in the slurry line. Thus, the air velocity is related to the temperature of the PET polymer pellets (see document D2, page 13, lines 4 to 11) for the purpose of initiating their crystallization. However, it is not related to their moisture content. For these reasons, the person skilled in the art would not have considered document D2 when looking for an alternative method for processing polymer biomaterial composites by underwater pelletizing to achieve a low moisture content.

1.7 The examining division argued that the application as filed did not exclude the solution disclosed in document D6, i.e. the variation of flow rates and pipe diameters (see document D6, paragraphs [0013] and [0017]), and the application as filed, page 26, lines 17 to 19: "*To those skilled in the art, flow rates and pipe diameters will vary according to the throughput volume, level of moisture desired, and the size of the pellets*".)

While it is true that the application as filed does not exclude the possibility that the pipe diameters can be varied, this does not alter the fact that document D6 does not disclose the solution according to claim 1 of the present application.

1.8 The examining division further pointed out that the higher melt temperature in document D2 (265°C in document D2, compared with 220°C in the application) would not have directed the person skilled in the art away from considering said document, since they would have selected the melt temperature with regard to the materials used, for example to avoid degradation (see decision under appeal, Reasons, point 8.2, page 7).

The board agrees that the selection of a proper melt temperature for a certain material lies within the common general knowledge of the person skilled in the art. However, starting from document D6 and looking for a solution to the above-mentioned objective technical problem, the person skilled in the art would have had no reason to consider document D2, since it is concerned neither with biomaterial composites nor with the reduction of moisture content.

1.9 In addition, the examining division stated that document D2 offered some general principles of how to improve drying of polymer pellets by reducing input of moisture into the pellets (see decision under appeal, Reasons, point 8.2, page 7). Reference was made to document D2, page 22, lines 19 to 24, which reads: *"While the present invention is particularly applicable to the underwater pelletization of PET polymers, it is believed that other polymers which crystallize at elevated temperatures and which retain heat when subjected to high temperatures may also be appropriate for the present invention. Such polymers include certain grades of thermoplastic polyurethane (TPU), PET copolymers and/or PET blends."* Since the application discloses PET as a possible polymer matrix for embedding the biomaterial (see application, page 16, line 23), the examining division concluded that this was an incentive for the person skilled in the art to consider the teachings of document D2.

However, the board points out that the crucial question for the assessment of inventive step is whether the person skilled in the art would have considered document D2 in order to find a solution to the above-mentioned objective technical problem when starting from document D6 and not when starting from the application. Since document D6 focuses on polyethylene and polypropylene and does not disclose TPU, PET, PET copolymers or PET blends, the above-cited passage of document D2 does not constitute a possible link between these two documents.

1.10 Conclusion

The subject-matter of claim 1 as originally filed (main request) is not rendered obvious by a combination of

documents D6 and D2. In respect of these documents, it thus involves an inventive step within the meaning of Article 56 EPC. Since the only reason in the decision under appeal for refusing the appellant's main request is unconvincing, the decision under appeal has to be set aside.

2. Remittal

The question of whether the claims and, in particular, the description comply with the other requirements of the EPC has not yet been examined. For these reasons, the board remits the case to the examining division for further prosecution in accordance with Article 111(1), second sentence, EPC and Article 11 RPBA 2020.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.

The Registrar:

The Chairman:



T. Buschek

P. Lanz

Decision electronically authenticated