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D E C I S I O N
of 21 May 2001

Case Number: T 0104/96 - 3.3.2

Application Number: 88105409.2

Publication Number: 0286056

IPC: A23K 1/165

Language of the proceedings: EN

Title of invention:

Procedure for treating feed raw material, feed raw material,
and feed mix

Patentee:

FINNFEEDS INTERNATIONAL LTD.

Opponent:

N.V. Vandemoortele International

Headword:

Enzymatically treated feed/FINNFEEDS

Relevant legal provisions:

EPC Art. 54, 56, 84, 113(1), 123
EPC R. 23a, 57a

Keyword:

"Appellant absent from oral proceedings: right to comment
under Article 113(1) safeguarded"
"Novelty: yes, after limitation; invention step: yes, product
exhibits unexpectedly advantageous properties as the result of
the inventive process for its preparation"

Decisions cited:

G 0004/92, T 0898/91

Catchword:

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Case Number: T 0104/96 - 3.3.2

D E C I S I O N
of the Technical Board of Appeal 3.3.2
of 21 May 2001

Appellant: N.V. Vandemoortele International
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Representative: -

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 11 December 1995
rejecting the opposition filed against European
patent No. 0 286 056 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: C. Germinario
Members: G. F. E. Rampold
R. E. Teschemacher

Summary of Facts and Submissions

I. The appellant originally filed notice of opposition to the grant of European patent No. 0 286 056 (European patent application No. 88 105 409.2) and requested that it be revoked in its entirety pursuant to Article 100(a) EPC on the grounds of lack of novelty (Article 52(1); 54 EPC) and inventive step (Article 52(1); 56 EPC). Independent claims 1, 9 and 10 of the patent as granted read as follows:

"1. A process for treating feed raw material which contains natural material containing starch, fibre, protein, and/or oil, characterized in that an enzyme preparation is added to the feed raw material in an amount of 0.001-1% by weight, the feed raw material is subjected to combined hydrothermal and enzymatic treatment in a long-time conditioner at a temperature below 60° C, at a moisture content of 15-60% by weight for 10 min to 1 h and the treated feed raw material is granulated and dried to a moisture content of 5-30% by weight, so that the treated feed raw material can be blended into the feed at a concentration of 5-95% by weight."

Dependent claims 2 to 8 relate to specific embodiments of the process according to claim 1.

"9. A feed raw material which contains natural material containing starch, fibre, protein, and/or oil, for blending into a feed, characterized in that the feed raw material has been treated according to the process of any one of claims 1 to 8.

10. A feed which contains the feed raw material

according to claim 9 at a concentration of 5 to 95% by weight."

Dependent claims 10 to 13 relate to specific embodiments of the feed according to claim 10.

II. The following citations submitted in support of the opposition remain relevant to the present appeal:

(1) Food Technology Review No. 16, "Vegetable Protein Processing"; Noyes Data Corporation, 1974, page 131; "Partial Hydrolysis of Isolates for Cereals Using Mixed Enzymes"; Abstract of US-A-3 753 728

(2) Food Technology Review No. 16, "Vegetable Protein Processing"; Noyes Data Corporation, 1974, page 75; "Proteolytic Enzyme Treatment"; Abstract of US-A-3 687 687

(3) US-A-3 640 723

III. By a decision posted on 11 December 1995 the opposition division rejected the opposition and maintained the patent in the form as granted.

Concerning the opponent's objection to lack of novelty, the decision held that the essential difference between the process for treating the feed raw material according to claim 1 of the patent in suit and the processes for treating various types of soya protein sources referred to in citations (1) and (2) resided in the method used for further processing the diverse materials into solid products subsequent to their combined enzymatic and hydrothermal treatment. While

this was achieved in the patent in suit by subjecting the treated feed raw material to a final granulation procedure, the processes disclosed in (1) and (2) involved the steps of extruding the treated soy protein source into strands and reducing said strands in size to form pellets. The novelty of the claimed process also conferred novelty on the product according to claim 9 of the patent in suit.

As to inventive step, the opposition division held that, compared with the claimed process in the patent in suit, the closest state of the art, namely citation (3), required a higher moisture content during the enzymatic and hydrothermal treatment of the soya meal animal fodder and required moreover the step of subjecting the enzymatically treated material to a short period of boiling prior to its conversion into a dry powder in a spray-drying apparatus.

The opposition division determined the technical problem as that of economically improving the process disclosed in (3) so as to adapt it for industrial application. It concluded that it was not obvious to the person skilled in the art to solve this problem by reducing the moisture content of the feed raw material during its enzymatic treatment and subjecting the treated feed raw material to a granulation and gentle drying process, without the need for boiling it, so as to preserve its enzymatic activity and to convert it into an easy-to-handle granular product. Citations (1) and (2) could not be taken into account for the assessment of inventive step, because both these citations related to a different technical problem.

IV. The appellant filed an appeal against this decision and

requested oral proceedings. The statement setting out the grounds of appeal was accompanied, *inter alia*, by the following citation:

(5) EP-A-0 257 996

V. On 29 October 1999, oral proceedings took place before the board in the presence of representatives of the proprietor (respondent); the duly summoned appellant had informed the board in advance that he did not wish to attend the hearing.

At the oral proceedings, the discussion concentrated on the substantive matters of the appeal raised by the appellant in its written submissions with regard to the state of the art according to citations (1) to (3) and (5). Moreover, the board expressed its reservations as to the novelty of the claimed subject-matter in the contested patent under the terms of Article 54(3) and (4) EPC in the light of the state of the art according to citation (5) that had come to light only at the appeal stage.

In the course of this discussion the respondent submitted, in addition to its main request that the appeal be dismissed and that the patent be maintained as granted, six amended sets of claims forming the basis for auxiliary requests 1 to 6. This being the case, the board decided to continue the proceedings in writing to avoid loss of the appellant's procedural rights laid down in Article 113(1) EPC by giving it the opportunity to present its comments on the newly filed auxiliary requests.

VI. Together with the minutes of the oral proceedings, the

board issued a communication to the parties under Article 110(2) EPC, inviting the appellant to file its observations to the board's communication and the respondent's requests filed during the oral proceedings. Whereas the appellant failed to reply to the said communication, the respondent maintained with his reply of 7 April 2000 the main request and auxiliary requests 2 to 6 filed during the oral proceedings (see paragraph V above), but replaced the first auxiliary request by a newly filed first auxiliary request and added four further sets of claims forming the newly filed auxiliary requests 7 to 10. These requests were accompanied by a reasoned statement defending their patentability.

VII. With a second communication under Article 110(2) EPC, dated 19 April 2000, the board invited the appellant to present its observations on the modified requests and arguments submitted on behalf of the respondent. No reply to this communication was received either.

VIII. In a further written communication to the parties under Article 110(2) EPC dated 18 January 2001, the board maintained its doubts about the novelty of the main request and expressed, for the stated reasons, its reservations as to the patentability of the first auxiliary request with regard to novelty and the requirements of Articles 84 and 123(2) EPC. On the other hand, the board considered in the said communication the claims of the second auxiliary request to be potentially patentable.

With its reply dated 27 March 2001 to the above communication the respondent transformed the claims of the second auxiliary request, which had already been

filed during the oral proceedings before the board, into the sole remaining request and submitted an adapted description. On the points raised in the board's communication dated 18 January 2001 the appellant again made no comment.

IX. Finally, with a board's letter dated 2 April 2001, a copy of the respondent's reply of 27 March 2001 together with a copy of the claims and the adapted description, forming the respondent's actual request, were communicated to the appellant.

X. Compared to claim 1 as granted (see paragraph I above) claim 1 of the present request was amended so as to replace the range of **0.001-1% by weight** specifying the amount of enzyme preparation added to the feed raw material in claim 1 as granted by the range of **0.001 to less than 1%**.

The remaining claims correspond to those of the patent as granted.

XI. The appellant's arguments put forward in the statement setting out the grounds of appeal focussed on the alleged lack of novelty of the claimed subject-matter in the patent in suit over the disclosure of citations (1) and (2) and can be summarised as follows:

The opposition division's statements in the impugned decision were correct in so far as both citations (1) and (2) described methods for the partial hydrolysis of soya proteins, eg soya flour, in the presence of enzymes in a concentration range of 0.002 to 0.5% in (1) or 0.0025 to 0.25% in (2) respectively, at a temperature of from 27° to 71°C and at a moisture

content of from 50 to 80% in (1) or 58% in (2) respectively. All these values in (1) and (2) fell within the ranges specified in the process according to claim 1 of the patent in suit for the enzyme concentration, the temperature and the moisture content during the combined enzymatic and hydrothermal treatment. The incubation period of 1 to 120 min used in (1) and (2) fell likewise within the range specified for this period in claim 1 of the contested patent and, moreover, in (2) the material was dried to a moisture content of 12% which was likewise in the range given in claim 1.

However, the opposition division was wrong in its conclusion that what was defined in the contested patent as a "granulation" process for converting the treated feed raw material into a solid product was suitable for distinguishing the claimed subject-matter in the contested patent from the state of the art according to (1) and (2). Contrary to the opposition division's view, both technical terms "granulate" [used in the patent], on the one hand, and "pellets" [used in (1) and (2)], on the other, defined the same kind and form of particulate materials and were used interchangeably.

In the appellant's opinion, this was clearly derivable from the disclosure in the present patent specification itself. Thus, on page 2, lines 20 to 25, reference was made to the preparation of a particulate feed material disclosed in Finnish patent application No. 86 33 93 by stating that "the feed was then for instance **pelletized**" (see especially line 25). Notwithstanding this, further down on page 2, lines 55 to 56, the patent specification stated that "according to the

present invention the feed raw material was **granulated**, for instance in accordance with the procedure disclosed in Finnish patent application No. 86 33 93". This Finnish patent application was a patent family member of citation (5), which was assigned to the present respondent, named partly the same inventors and consistently used the terms "pelletizing", "pelletization" "pelletized" and "pellets" (see eg page 2, lines 41, 50, 51, 60).

In view of the foregoing the conclusion had necessarily to be drawn that the respondent itself used the terms "granulate" and "pellets" or "granulating" and "pelletizing" interchangeably for one and the same kind of particulate material or one and the same method of converting the treated material into solid products respectively. Consequently, the distinction made in the impugned decision between what was defined as a "granulate" in the contested patent and as "pellets" in citations (1) and (2) did not form a sound basis for the acknowledgment of novelty.

XII. The respondent's submissions presented in writing and during oral proceedings can be summarised as follows:

The board's opinion expressed during the oral proceedings that the process according to claim 1 of the patent as granted lacked novelty over the prior art of (5) could not be shared. Whereas according to the patent in suit an incubation period of the feed raw material of up to 120 minutes at elevated temperatures was required as a compulsory feature, no such treatment existed in the process disclosed in (5). This was due to the fact that the process of (5) merely aimed at the absorption of the enzymes on the carrier material

rather than at a partial digestion of said carrier material, as was the case in the contested patent. The claimed process in the patent in suit was accordingly clearly novel over the state of the art according to (5) and the novelty of the process also conferred novelty on the products of claims 9 and 10.

The appellant's assertion that the terms "granulate" and "pellets" defined the same kind of particulate materials and, accordingly, "granulation" and "pelletization" defined the same method of material treatment was incorrect and, moreover, contrary to common general knowledge, as represented, for example, by Römpps Chemie-Lexikon, Ninth edition, 1989-1990, pages 1641 and 3252. Thus, a "granulate" consisted of irregularly shaped particles, whereas "pellets" were regularly shaped particles and, in most cases, beads or cylindrically formed particles obtained by cutting or slicing a cylindrical strand.

Further, the above-mentioned definitions were neither in contradiction with the disclosure in the patent in suit nor with that in citation (5). There was indeed a passage at page 2, lines 48 to 50, of the contested patent stating that "after the treatment, the feed raw material may be granulated, for instance in accordance with the procedure disclosed in the Finnish patent application No. 86 33 93" [corresponding to (5)]. However, the reference to Finnish patent application No. 86 33 93 on page 2, lines 20 to 24, of the patent in suit was incompletely quoted by the appellant in that line 24 reads completely and correctly: "The feed was then for instance **pelletized and made crumbly**". It was indeed the subsequent procedure of "crumbling" the pellets, omitted by the appellant in his submission,

which converted these pellets into a granulate.

Citation (5) referred to exactly the same method used for processing the treated feed raw material into a solid product, as did the method summarised in the patent in suit. Thus, the material according to (5), prepared as outlined on page 3, lines 21 to 31 of (5), was fed to a suitable pelletising device, for example an Amandus Kahl type 35-780 pelletiser. The particles resulting from said treatment were pellets with a length of 15 mm and a diameter of about 5 to 8 mm (see line 34). These particles were dried (see line 37) and cooled (see line 38 to 39). Finally it was clearly said in (5) that "the dry, cool pellets "can be melted or crushed" (see line 39). The same procedure was disclosed on page 2, lines 60 to 61, of citation (5) by saying that "the dried pellets can be crushed or milled before mixing with the final feed mixture". It was indeed the last step of crushing which converted the pellets into a granulate.

The appellant was therefore incorrect in arguing that the technical terms "granulate" and "pellets" defined the same kind of particulate materials and that no distinction between these two terms was discernible in the respondent's patent publications. Consequently, the claimed subject-matter in the patent in suit was clearly novel over the prior art of (1) and (2).

The novelty of the process disclosed in citation (3), relating the combined enzymatic and hydrothermal treatment of soya meal, over the cited state of the art had never been contested. Citation (3) was concerned with a process for preparing an enzymatically modified soya meal animal fodder of improved tolerability and an

animal feed comprising said enzymatically modified soya meal and was thus rightly considered in the impugned decision to represent the closest state of the art. Said process involved the step of boiling the treated suspension and thereby deactivating the enzymes in the enzymatically modified soya meal product. The disclosure of (3) thus did not point to the advantage of preventing the enzymes present in the treated feed raw material of the invention from destruction to enable their later reactivation in the completed animal feed blend for further improving its digestibility and tolerability.

Moreover, the considerably shorter incubation period of 10 to 60 minutes used in the claimed process in the contested patent, as compared to 5 hours in the process of (3), was associated with a further unexpected advantage from an economical and technical point of view as well. Similarly, the method of carrying out the enzymatic treatment of the raw material in an aqueous suspension was less advantageous than the steam treatment used in the process of the invention to achieve a certain moisture content of the feed raw material to be treated, because removing the water content from an aqueous suspension required a greater amount of energy and special technical equipment. The acknowledgment of an inventive step over the closest state of the art according to (3) was accordingly justified.

XIII. The appellant requested that the decision under appeal be set aside and the patent be revoked.

The respondent requested that the patent be maintained in amended form on the basis of claims 1 to 13 filed on

27 March 2001, pages 2 and 3 of the description filed on 27 March 2001 and pages 4 to 8 of the patent as granted.

Reasons for the Decision

1. The appeal is admissible.

Right to be heard; Article 113(1) EPC

2. In decision G 4/92 (OJ EPO 1994, 149), the Enlarged Board of Appeal held that, in view of the right to be heard and to present comments under Article 113(1) EPC, a decision against a party, who had been duly summoned but who failed to appear at oral proceedings, may not be based on facts put forward for the first time during those oral proceedings.

- 2.1 In agreement with the ruling of decision G 4/92 (*loc. cit.*) the board issued to the parties, following the oral proceedings, three communications under Article 110(2) EPC inviting the appellant to file its comments and observations on the board's communications and on the arguments and requests submitted subsequently by the respondent (see paragraphs V to VIII above).

- 2.2 Notwithstanding this, the appellant decided not to reply to any of these communications. Thus, the appellant was repeatedly given an appropriate opportunity to present its comments to the arguments, submissions and requests put forward by the respondent concerning the allowability of the claims in the entire

course of these appeal proceedings. Consequently, in this respect the appellant's procedural rights to comment enshrined in Article 113(1) EPC have been safeguarded.

- 2.3 Concerning the adapted description submitted with the respondent's letter dated 27 March 2001, this was sent to the appellant with the board's communication dated 2 April 2001 (see paragraph IX above). The composition of the board deciding on this case will change with effect of 1 June 2001 in consequence of the resignation of the chairman. In order to avoid a possible repetition of the oral proceedings, the board has taken this decision in its present composition. Because of the short time available, it was, however, not possible to give the appellant sufficient opportunity (ie a period of at least two month) to comment on the adaption of the description, before this decision was made. The decision on the adaption of the description is therefore reserved to the opposition division.

Admissibility of the respondent's sole request

3. The claims of the respondent's current sole request correspond to those of the second auxiliary request filed during the oral proceedings before the board (see paragraph X above). By excluding 1% by weight as the upper limit of the amount of the enzyme preparation added to the feed raw material in the process of present claim 1 and limiting the amount to a range of 0.001 to less than 1% by weight, the respondent sought to overcome the board's objections raised in the oral proceedings to the novelty of claims 1 and 10 in the light of the disclosure in citation (5), which was introduced into the proceedings for the first time at the appeal stage.

The proposed amendment can thus fairly be said to be occasioned by a ground for opposition specified in Article 100(a) EPC and is therefore admissible under the terms of Rule 57(a) EPC. Consequently, the appellant's current request was admitted into the present proceedings for consideration.

Allowability of the respondent's request, Articles 84, 123(2) and (3) EPC

4. By the limitation of the upper limit of the range specified in claim 1 to "less than 1%" the overlap with the state of the art according to citation (5) has been disclaimed (for more detailed reasons see point 5 below). The disclaimer was introduced for the purpose to re-establish the novelty of the present claims over the teaching of (5), without introducing new subject-matter, and finds its precise basis in the disclosure on page 3, lines 15 to 16 of (5), indicating that the

enzyme or enzymes comprise 1% to 60% by weight of the premix disclosed in (5). The requirements of Articles 84 and 123(2) EPC are accordingly satisfied (see in this respect decision T 898/91 of 18 July 1997 cited in "Case Law of the Boards of Appeal of the EPO", 3rd edition, 1998, III. A. 1.6.3).

Moreover, the disclaimer narrows the scope of protection conferred as compared to the claims as granted, so that no objection under Article 123(3) EPC arises either.

Novelty; Articles 52(1); 54(1), (2), (3) and (4) EPC

5. The patent in suit is entitled to the priority of an earlier application filed on 6 April 1987. Citation (5) was published on 2 March 1988, has the filing date 21 August 1987 and correctly claims the priority date of 22 August 1986. In the case of the patent in suit the same Contracting States have been designated as in (5) and the designation fees under Article 79(2) EPC have been validly paid for the co-pending application (Rule 23a EPC). The content of (5) is accordingly comprised in the state of the art under Article 54(3) EPC in respect of all Contracting States designated in the patent in suit.

- 5.1 Citation (5) discloses a feed premix which may contain any physiologically acceptable feed ingredient as the carrier, for example, starch containing flours such as wheat, barley or other grain flour (see page 3, lines 7; 11 to 12), and an enzyme or enzyme combinations which improve the quality of the feed mixture, for example starch hydrolysing enzymes or amylases, cellulose hydrolysing enzymes, cellulases and

hemicellulases, glucanases, lipases or proteases (see the paragraph bridging pages 2 and 3).

The process disclosed in (5) for preparing said feed premix comprises the steps of

- (i) adding to the feed raw material in a mixer or a similar device the enzyme or enzymes in an amount of from 1% to 60% by weight (see page 3, especially lines 15-16, 25-28);
- (ii) supplying steam to the mixer, if necessary, to increase the moisture content of the mix (page 3, lines 27 to 28);
- (iii) maintaining the enzyme-feed material mixture in a reaction tank equipped with an agitator for 10 to 60 minutes to absorb the enzymes into the feed material at a temperature below 60°C and a moisture content of 18% to 19% (see page 3, lines 25 to 35: "The mixture remains in the absorption tank for 10-60 minutes, typically for approximately 30 minutes. Thereafter the mixture is fed to a suitable pelletizing device <.....>. The moisture of the mass when arriving [from the absorption tank] into the pelletizing machine is generally between 18% and about 19% and the temperature is kept below about 60°C <.....>.");
- (iv) pressing the treated feed raw material through a matrix, cutting the formed stripes into suitable pellets, cooling the product to a final moisture content of 8% by weight and optionally crushing the dry cool pellets in a crusher (see page 3,

lines 32 to 39) to obtain a granulate.

- 5.2 The respondent has failed to persuade the board with the argument that, in contrast to the method disclosed in (5), the claimed process in the patent in suit required an incubation period of up to 120 minutes at elevated temperatures (see the respondent's letter dated 7 April 2000, page 12, point 4.1.1.4). According to claim 1 of the contested patent the feed raw material is subjected to combined hydrothermal and enzymatic treatment at a temperature below 60°C, at a moisture content of 15-60% by weight for 10 min to 1 hr maximum. This means that the feed raw material is subjected during the combined hydrothermal and enzymatic treatment to conditions which exactly correspond to those already used in (5).
- 5.3 Similarly, a difference of the claimed process over the prior art of (5) cannot be seen in the reference on page 3, line 28, of (5) to the "enzymes being absorbed in the reaction tank into the carrier material". It is clearly stated on page 3, lines 56 to 58, of the patent in suit : "In the conditioner, water and enzyme can exert their effect on the feed raw material. The feed raw material has therefore been suitably crushed and ground so that there will be absorption of enzymes and water."
- 5.4 Moreover, the respondent has explained to the satisfaction of the board in points 2.3 to 2.3.4 of his letter dated 23 December 1996 and during the oral proceedings before the board that the method of processing the treated feed raw material into a solid product disclosed in (5) and referred to under point 5.1 (iv) above corresponds exactly to what is defined

by the feature "the treated feed raw material is granulated and dried to a moisture content of 5-30% by weight" in claim 1 of the patent in suit (see also paragraph XI above).

5.5 Consequently, from a comparison of the features of present claim 1 with the technical teaching of (5) it is evident that the process steps (i) to (iv) outlined above relate to a combined hydrothermal (steam) and enzymatic treatment of feed raw material which is identical with that of claim 1 of the patent in suit, with the sole exception that the amount of the enzyme or enzymes in step (i) of claim 1 as amended has now been limited to **less than 1% by weight**. This limitation confers novelty within the meaning of Article 54(1) EPC on the claimed subject-matter of the patent in suit over the disclosure of citation (5).

5.6 The process disclosed in (1) and (2) for preparing a protein enriched cold cereal product comprises the steps of

(i) adding papain and at least one other proteolytic enzyme in a total amount of 0.002 to 0.5% (see (1), page 132, 2nd paragraph, lines 1 to 2) or in an amount of 0.0025 to 0.25% (see (2), page 78, third paragraph, lines 1 to 2) to a source of soya protein;

(ii) subjecting the mixture to combined hydrothermal and enzymatic treatment at a temperature of 27°C (80°F) to 71°C (160°F), at a moisture (water) content of from 50 to 80%, preferably 55 to 60%, based on the total weight of the mixture, for a period of 1 to 120 minutes (see (1), page 132,

paragraphs 2 and 3; see (2), page 78,
paragraphs 4 and 5);

- (iii) passing the resultant mixture through an extruder to form strands at a temperature of 93.3°C (200°F) (see (1), paragraph 4, lines 3 to 4) or at a temperature of 76.7°C (170°F) (see (2), paragraph 6, line 4).
- (iv) cutting the strands into pellets of a uniform shape and size (see (1), page 132, paragraph 4, lines 5-6; (2), page 76, end of paragraph 6).

5.7 From a comparison of the features of present claim 1 with the technical teaching of (1) or (2) it can be seen that in step (iii) the mixture obtained from the combined hydrothermal and enzymatic treatment is exposed to elevated temperatures in the range of from 77°C (see 2) to 93°C (see 1) during its extrusion into strands, whereas in the claimed process in the patent in suit the temperature during the entire granulation process is kept at a temperature below 60°C maximum and thus does not exceed the temperature used in the preceding combined hydrothermal and enzymatic treatment.

Moreover, in the process according to claim 1 of the contested patent the feed raw material is obtained as a granulate, whereas the product is recovered in the processes of (1) and (2) in the form of pellets. In contrast to a granulate, which consists of particles of irregular shape and size, the term "pellets" defines particles having a regular shape and size (see eg Römmps Chemie-Lexikon, Ninth edition, 1989-1990, pages 1641 and 3252). Thus, the board cannot share the

appellant's view that the terms "granulate" and "pellets" refer to the same kind and form of particulate materials that they are used interchangeably in the state of the art (see also point 5.4 and paragraph XI above).

Finally, neither of the citations (1) and (2) discloses the moisture content to which the pellets obtained in step 5.6 (iv) are dried.

In view of the above-mentioned objective differences the novelty of the present claims over the prior art of (1) and (2) can be acknowledged.

- 5.8 The process for enzymatically treating a soya meal animal fodder disclosed in (3) basically differs from the claimed subject-matter of the contested patent in that the treatment time is considerably extended to 5 hours (see column 2, line 5, Examples 1 to 4) and the aqueous suspension containing the enzymatically modified soya meal is converted into a solid powdered product involving a short period of boiling the suspension followed by spray-drying or drum-drying (see column 2, lines 12 to 14, Examples 1 to 4).

Consequently, as regards novelty of the claimed subject-matter over document (3), the board has no reason to differ from the reasoning and the conclusion of the opposition division and does not consider further discussion of this issue to be appropriate, since in any case novelty of the claimed subject-matter in the patent in suit over the disclosure of (3) has never been disputed by the appellant.

Inventive step, Articles 52(1); 56 EPC

6. As can be derived from the introductory part of the contested patent, young non-human mammals, for instance piglets, lack in their digestive tract part of the food-decomposing enzymes and are therefore unable to fully digest and utilise nutritionally various feed components normally contained in animal fodder.

The patent in suit relates to a process for enzymatically treating feed raw material which is subsequently to be blended into animal feed and contains starch, fibre, protein and/or oil, and to a feed raw material thus treated. Complete animal feed, which is prepared from the enzymatically modified feed raw material according to the invention and which contains this material in an amount of 5-95% by weight, exhibits as the result of the enzymatic treatment an improved digestibility and a higher nutritive value and is therefore particularly suitable for feeding to young animals, especially young piglets and calves (see patent specification, especially page 3, lines 36 to 45).

- 6.1 According to the established jurisprudence of the Boards of Appeal (see "Case Law of the Boards of Appeal of the European Patent Office", 3rd edition 1998, I. D. 3.1, pages 111 ff), the closest prior art for the purpose of objectively assessing inventive step is generally that which corresponds to the same or a similar use as the claimed invention and, at the same time, requires the minimum of structural and functional modifications to arrive at the claimed subject-matter.

Whilst both citations (1) and (2) disclose enzymatic processes to make soya protein more palatable and

tender for use in protein-enriched cold breakfast cereals, citation (3) relates to a process of enzymatically treating a dry soya meal animal fodder and to an animal feed, which comprises said enzymatically modified soya meal. Moreover, the prior art of (3) is already concerned with the problem of improving the digestibility and nutrition value of raw soya meal animal fodder (see especially column 1, lines 28 to 61). Animal feed containing the enzymatically treated soya meal according to (3) in amounts of 5 to 25 per cent in combination with 75 to 95 per cent by weight of powdered milk is said in (3) to be particularly suitable for use in feeding young calves and pigs (see especially column 2, lines 31 to 34), as is the intended use of the animal feed described in the patent in suit.

Citation (3) is therefore considered to represent the closest state of the art under Article 54(2) EPC available in the present proceedings.

- 6.2 As can be derived from the disclosure of citation (3), the enzymatically modified soya meal is explicitly used in the prior art for the sole purpose of replacing 5 to 25% of the powdered milk on which young animals are raised (see column 1, lines 37 to 39, Example 1, claim 6), but is not intended to exert any further effect in the completed animal fodder. Contrary to this, the enzymatically treated feed raw material according to the present invention is intended and suitable for blending into various kinds of untreated feed raw materials known in the art, such as untreated soya meal, shelled oats, matured oatmeal, to provide a complete animal feed (see patent specification, especially page 3, lines 1 to 5, Examples 2 and 4).

6.3 Thus starting from (3) as the closest state of the art, the problem the invention sets out to solve may be seen as that of providing an improved process for preparing an enzymatically modified feed raw material which, when blended into various kinds of animal feed raw materials known in the art, is suitable to provide a complete animal feed for feeding young animals.

6.4 The solution to the problem is the process according to claim 1. As is explained on page 3, lines 18 to 22, and page 4, lines 14 to 16, of the patent in suit, the improvement of the claimed process lies in the treatment of the feed raw material under specific conditions suitable for ensuring that the own enzymes of the feed raw material treated by the procedure of the invention and the enzymes added during said treatment are preserved in intact form, without destruction, during the hydrothermal treatment, granulation of the feed raw material and its admixing to the other feed raw materials. The enzymes also tolerate well storage and transport in the completed, granular feed.

In the absence of any evidence to the contrary, the board has no reason to call into question the unexpectedly advantageous properties associated with the feed raw material treated by the process of claim 1, as referred to by the respondent in the patent specification (see especially page 3, lines 18 to 22) and in its submissions during the opposition and subsequent appeal proceedings. More specifically, the enzymes can be reactivated at a later stage, eg by suspending either the dry feed raw material, or complete feed prepared therefrom, in warm water in connection with feeding, whereby the enzymes

advantageously regain their capability of rendering the feed even more digestible and even more suitable for feeding young animals. In the board's judgment, these properties have adequately been demonstrated by the test results provided in Example 2 and corresponding Tables 1 to 4 of the patent in suit. In view of the foregoing observations and in the absence of any evidence to the contrary, the board is satisfied that the technical problem is plausibly solved. Since this was not contested by the appellant, it is not necessary to go into further detail on this point.

6.5 It has still to be examined whether the claimed solution was obvious to a person skilled in the art having regard to the state of the art under Article 54(2) EPC available in the present proceedings.

6.6 According to all Examples 1 to 5 in citation (3), the enzymatically treated aqueous suspension is subjected to a boiling step prior to spray-drying. This teaching clearly leads away from the invention, because the boiling step suggests to a person skilled in the art that the enzymes in the enzymatically treated soya meal should be destroyed rather than preserved before preparing the completed feed.

Consequently, the prior art of (3) provided no good reason or even an incentive for those skilled in the art to solve the stated problem by the provision of a process preserving intact the enzymes in the treated feed raw material with the effect that they can be reactivated at a later stage, for example, after admixing the treated material to the other feed raw materials, for further improving the tolerability and digestibility of the completed feed.

Moreover, the disclosure of citation (3) did not suggest to a person skilled in the art the provision of an enzymatically treated feed raw material which could be blended into a broad variety of other untreated feed raw materials known in the art such as, for example, untreated soya meal, shelled oats, matured oatmeal, in order to obtain a complete animal feed suitable for feeding young animals, for instance piglets. What the skilled person would actually derive from the teaching of (3) is the mere possibility of replacing 25% maximum of the powdered milk, on which young animals are raised, by an enzymatically modified soya meal.

6.7 Similarly, neither of the citations (1) and (2) provided any useful suggestion or hint whatsoever leading those skilled in the art in the direction of the claimed invention. As is already mentioned in points 5.6(iii) and 5.7 above, the soya protein material obtained from the combined hydrothermal and enzymatic treatment is in the processes of (1) and (2) subsequently exposed during extrusion to elevated temperatures in the range of from 77°C (see 2) to 93°C (see 1). The skilled person would readily realise that during this heat treatment any enzymes remaining in the digested material are destroyed. Thus, the teaching of (1) and (2) taken individually or in combination with that of (3), similarly provides no suggestion or incentive to provide a process for preparing an enzymatically treated feed material containing its own enzymes and the enzymes, which have been added during incubation, in intact form with the possibility of their later reactivation, but leads likewise away from the claimed invention.

6.8 In view of the foregoing observations, the board

concludes that the process for enzymatically treating feed raw material according to claims 1 to 8 involves an inventive step within the meaning of Article 56 EPC. Similarly, the cited state of the art did not provide any suggestion or hint whatsoever to provide an enzymatically modified feed raw material, which exhibits, as the result of the inventive process for its preparation, the unexpectedly advantageous properties mentioned above. The acknowledgment of an inventive step for the feed raw material of claim 9, treated by the claimed process, is therefore also justified. The non-obviousness of the claimed feed raw material according to claim 9 also imparts an inventive step to the animal feed according to claims 10 to 13 containing this material.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent with the claims in the respondent's request filed on 27 March 2001 and any adaption of the description considered necessary by the opposition division.

The Registrar:

The Chairman

A. Townend

C. Germinario