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Datasheet for the decision of 18 October 2023

Case Number: T 1356/22 - 3.3.05

Application Number: 12804223.1

Publication Number: 2726418

IPC: C02F11/00, C02F3/00

Language of the proceedings: EN

Title of invention:
PRE-TREATMENT OF SLUDGE

Applicant:
The University Of Queensland

Headword:
PRE-TREATMENT OF SLUDGE/University of Queensland

Relevant legal provisions:
EPC Art. 123(2), 84, 54, 56

Keyword:

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Catchword:

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Case Number: T 1356/22 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 18 October 2023

Appellant: (Applicant)	The University Of Queensland St.Lucia, Queensland 4072 (AU)
Representative:	Stork Bamberger Patentanwälte PartmbB Meiendorfer Strasse 89 22145 Hamburg (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 4 January 2022 refusing European patent application No. 12804223.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Glod
Members:	J. Roider
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. The appeal lies from the decision of the examining division to refuse European patent application No. 12 804 223.1. The then-main request and auxiliary requests 1 to 5 were found not to meet the requirements of Article 54 EPC.

II. In the communication under Article 15(1) RPBA 2020 and in the oral proceedings, the board raised new objections under Articles 84 and 123(2) EPC.

III. The appellant filed a new main request in the oral proceedings before the board on 18 October 2023.

IV. The following documents are relevant to the case and had already been cited by the examining division:

D1	YAN ZHOU ET AL, WATER RESEARCH, vol. 45, no. 15, 21 June 2011, pages 4672-4682, DOI: 10.1016/j.watres.2011.06.025
D2	GUANGMING JIANG ET AL, WATER RESEARCH, vol. 45, no. 12, 1 June 2011, pages 3735-3743, DOI: 10.1016/j.watres.2011.04.026
D3	WO 2011/134010 A1
D4	WO 2011/134011 A1
D5	WO 2013/006890 A1
D6/D6a	JP 2010 005554 A and its English machine translation
D7	US 5,705,072 A
D8	US 4,537,682 A
D9	US 2009/282882 A1

V. Claim 1 of the main request reads:

"1. A method of treating a secondary sludge to be fed to an anaerobic or an aerobic sludge digester, the method comprising:
(a) contacting the secondary sludge with free nitrous acid by contacting the secondary sludge with a liquid stream containing free nitrous acid, wherein the mixture of secondary sludge and free nitrous acid has a free nitrous acid content of at least 0.5 ppm; and
(b) feeding the mixture of secondary sludge and free nitrous acid from (a) to an anaerobic or aerobic sludge digester,
wherein the treatment time is between six hours and two days."

Dependent claims 2-10 relate to particular embodiments of the invention.

VI. The appellant requested that the decision under appeal be set aside and that a patent be granted based on the sole request (labelled new main request) filed during the oral proceedings of 18 October 2023.

Reasons for the Decision

1. Consideration and admission of the main request

The consideration of the main request is to be assessed under Article 13(2) RPBA 2020.

The board had raised new objections of its own motion. The new main request is a direct reaction to said objections and overcomes them. Therefore there are exceptional circumstances which justify the new main request being taken into consideration.

2. Amendments, Article 123(2) EPC

The subject-matter of claim 1 is directly and unambiguously derivable from claims 1, 4 and 6 and paragraphs [0014] and [0031] as originally filed. Claims 2 to 10 originate from claims 3 to 5, 7 and 8 as originally filed, some alternatives in the original dependent claims having been drafted as separate dependent claims.

The requirements of Article 123(2) EPC are met.

3. Novelty, Article 54(1) and (2) EPC

The examining division considered that D1, D2 and D6 anticipated novelty of claim 1 of the then-main request.

D1 is a scientific article relating to the shortcut nitrogen removal (page 4674, left-hand column, first full paragraph). It does not disclose adding a stream containing free nitrous acid (FNA) to secondary sludge.

D2 is directed to the biocidal effect of FNA on anaerobic sewer films. It at least does not disclose adding an FNA-containing stream to secondary sludge.

In view of the amendments made during the appeal proceedings, D4 is a document under Article 54(2) EPC because the treatment time contained in the subject-matter of claim 1 is not contained in the priority document, so the priority claim is invalid. D4 discloses producing FNA and using this stream in other parts of the wastewater treatment plant to increase the FNA concentration (paragraph bridging the 8th and 9th pages of the description). It neither discloses adding

the FNA-containing stream to secondary sludge nor that the resulting mixture should have a content of at least 0.5 ppm FNA.

D6 is a patent disclosing the production of FNA in a reactor receiving a wastewater stream (D6a, paragraphs [0012], [0015] and [0020]). It does not disclose adding an FNA-containing stream to secondary sludge.

Nor do any of the other cited documents disclose contacting the secondary sludge with FNA by contacting it with a liquid stream containing free nitrous acid such that the mixture has a free nitrous acid content of at least 0.5 ppm.

The subject-matter of claim 1 and claims 2 to 10 depending therefrom is therefore novel for at least these reasons.

4. Inventive step, Article 56 EPC

4.1 The present invention is directed to the treatment of sludge prior to it being fed to an anaerobic digester or an aerobic digester.

D1 discloses the biocidal effect of FNA in wastewater treatment plants.
D2 and D3 are directed to a method for treating or disrupting a biofilm using FNA.
D4 discloses a method for producing a liquid containing FNA. A liquid stream containing FNA can be used to increase the amount of FNA in another stream in other parts of the wastewater treatment plant (3rd page, last paragraph; 9th page, last paragraph).
D5 discloses a method for treating membranes used in wastewater treatment plants.

D6, D7, D8 and D9 disclose water treatment processes where FNA is formed in a reactor. However, the FNA-containing sludge is not used to increase the FNA content of another stream to a desired level.

4.2 Since D4 discloses using a liquid stream containing FNA in order to increase the FNA content of another stream, it is considered to be the closest prior art.

4.3 D4 does not disclose the specific implementation of the process of claim 1 of the present request, i.e. the necessary FNA concentration of at least 0.5 ppm, the process step to mix the FNA-containing liquid stream with secondary sludge or the treatment time of 6 hours to 2 days.

4.4 The technical problem relating thereto is to enhance the biodegradability of the sludge (paragraph [0023] of the description as originally filed).

4.5 In view of the examples in paragraphs [0061] and [0062] of the description as originally filed, it is accepted that said technical problem is solved successfully.

4.6 As indicated above, none of the cited documents teaches the addition of FNA to secondary sludge. Therefore no document points to the solution proposed by the subject-matter of claim 1.

4.7 Consequently the subject-matter of claim 1 and claims 2 to 10 dependent therefrom involves an inventive step (Article 56 EPC).

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 with the order to grant a patent with claims 1 to 10 according to the new main request filed during the oral proceedings of 18 October 2023 and a description to be adapted thereto.

The Registrar: The Chairman:

C. Vodz G. Glod

Decision electronically authenticated