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**Datasheet for the decision
of 27 May 2026**

Case Number: T 0529/24 - 3.2.04

Application Number: 12728734.0

Publication Number: 2712411

IPC: F04D7/04, F04D15/00

Language of the proceedings: EN

Title of invention:
CONTROL DEVICE AND PUMP APPARATUS

Patent Proprietor:
Clearwater Controls Limited

Opponent:
KSB SE & Co. KGaA

Headword:

Relevant legal provisions:
EPC Art. 100(a), 56

Keyword:
Grounds for opposition - lack of patentability (yes)
Inventive step - (no)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0529/24 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 27 May 2026

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted/
electronically transmitted on 15 February 2024
concerning maintenance of the European Patent
No. 2712411 in amended fo rm.**

Composition of the Board:

Chairman	A. Pieracci
Members:	G. Martin Gonzalez
	C. Heath

Summary of Facts and Submissions

- I. The proprietor and the opponent appealed the interlocutory decision of the opposition division to maintain the patent in amended form.

The opponent withdrew the appeal during the oral proceedings before the Board.

- II. The opposition division held inter-alia that claim 1 as granted and according to auxiliary request 1 did not involve an inventive step.

- III. In preparation for oral proceedings the Board issued a communication setting out its provisional opinion on the relevant issues.

Oral proceedings before the Board were held by videoconference on 26 May 2026.

- IV. The appellant proprietor requests that the decision under appeal be set aside and that the patent be maintained as granted (main request), or in the alternative on the basis of one of the auxiliary requests 1, 2, 3, 5 before the opposition division, whereby auxiliary request 2 (as upheld) corresponds to the dismissal of the opponent's appeal, or auxiliary request 6, filed with the grounds of appeal on 14 June 2024.

Following the withdrawal of their appeal, the respondent proprietor's remaining request is to dismiss the opponent's appeal.

V. Independent claim 1 of the requests relevant to this appeal reads as follows:

(a) Main request (as granted)

"A pump apparatus comprising a wastewater pump and a control device (30) for a pump, the pump being a mechanically switched pump and capable of being operated in a forward (8) and a reverse (6) direction, the control device (30) comprising:

a monitoring mechanism to monitor the torque of the pump by measuring the current at which the pump is operating,

a control mechanism to control the direction of the pump and being capable of selectively directing the pump to (i) stop (5) (ii) operate in a reverse direction (6) and (iii) operate in a forward direction (8);

wherein the control mechanism is adapted to control the pump to (a) stop (5) and (b) operate in a reverse direction (6) and direct the pump into a series of reverse and forward cycles of the pump (5,6,7,8) when the monitoring mechanism detects the torque of the pump (4) is above a pre-determined value,

and wherein, whilst the number of pump cycles (5,6,7,8) is less than or equal to a pre-defined maximum number of pump cycles (5,6,7,8), the control mechanism is further adapted to direct the pump into the series of reverse and forward cycles of the pump (5,6,7,8) until the torque detected by the monitoring mechanism is below a further pre-determined value."

(b) Auxiliary request 1

Claim 1 as in the main request with the following amendments (emphasis by the Board to indicate added or deleted text):

"...wherein the control mechanism is adapted to control the pump to (a) stop (5), by stopping power to the pump and allowing it to coast to a rest and (b) operate in a reverse direction (6) (c) stop (7) by stopping power to the pump and allowing it to coast to a rest, (d) operate in a forward direction (8), and direct the pump into a series of said stop (5), said reverse (6), said stop (7) and said forward (8) cycles of the pump ~~(5,6,7,8)~~, when the monitoring mechanism detects the torque of the pump(4) is above a pre-determined value,..."

VI. In the present decision, reference is made to the following documents:

(D6) JP 08294641 A
(D6a) Translation of D6
(D8) EP 2 025 943 A2

VII. The parties' arguments relevant to the decision are discussed in detail in the Reasons for the Decision.

Reasons for the Decision

1. Background

The invention concerns a mechanically switched wastewater pump apparatus equipped with a control device that monitors the pump's torque by measuring current (see specification paragraphs [0001], [0011]-[0012]). When the torque exceeds a pre-determined

value, indicative of blockages or overloading, the control device initiates a series of reverse and forward cycles to clear debris (paragraphs [0022]-[0023]).

2. Main request - Inventive step

- 2.1 The appellant proprietor contests the opposition division's conclusion that granted claim 1 lacks an inventive step starting from D6 in combination with the common general knowledge of the skilled person (see appealed decision, section 17).

The appellant proprietor's arguments have not convinced the Board.

- 2.2 It is common ground that D6 represents a suitable starting point for the assessment of inventive step. D6 discloses a submersible wastewater pump in which a motor is controlled by a microcomputer so as to alternate between forward and reverse rotation on the basis of motor current, thereby releasing clogging caused by solid matter (see abstract). The motor current is monitored and, when it reaches a predetermined value indicating clogging, the motor is caused to rotate in the reverse direction, after which forward and reverse rotations are repeated a predetermined number of times (see D6a, paragraphs [0010] and [0011]).

- 2.3 Whether D6 discloses feature 1.4 of granted claim 1 is in dispute. Feature 1.4 of granted claim 1 reads:

"...wherein the control mechanism is adapted to control the pump to
(a) stop and

(b) operate in a reverse direction and
(c) direct the pump into a series of reverse and forward cycles of the pump when the monitoring mechanism detects the torque of the pump is above a predetermined value,..."

The Board interprets this feature, in favour of the appellant proprietor and contrary to the opposition division's interpretation, as requiring that the complete sequence of steps (a)→(b)→(c), including the stop step (a), is carried out once the predetermined torque threshold has been exceeded, rather than merely step (c).

- 2.4 The relevant question then became whether D6 discloses a stop step in the sense of the contested patent and claim.

In this respect, paragraph [0020] of the patent specification expressly states that the stopping period may be as short as 0 seconds ("stopping period of 0-30 s"). D6 discloses repeated reverse and forward rotation operations of the motor (paragraph [0019]), which necessarily implies at least a momentary zero-velocity condition between reversals and thus a stop step in the broad sense of the contested term.

- 2.5 During the oral proceedings, the appellant proprietor argued that the skilled person would not understand the specifically claimed "(a) stop" step as encompassing the instantaneous passage through zero rotational velocity occurring during the reversal operation of D6. According to the proprietor, D6 performs a continuous reversal operation, using relay 14 to invert motor polarity, such that reverse torque and acceleration are continuously generated throughout the transition

through zero velocity. Since the stopping period defined in the patent is associated with allowing the pump to come to rest and thereby reducing stress on the pump (paragraph [0020]), the proprietor submitted that a continuous reversal as in D6 would be contrary to the teachings of the contested patent.

The Board is not persuaded by this argument. Paragraphs [0019] and [0020], which specifically describe the stopping period and its stress-reduction effect, disclose a stopping period of 0 to 30 seconds, thereby encompassing a stop of zero or merely minimal duration. Paragraph [0021] further states that the deragging cycle operates "normally with said delays between forward and reverse directions", indicating that such delays are optional. Moreover, the principal teaching of the patent, namely the release of clogging by alternating forward and reverse rotation, is described throughout paragraphs [0022] to [0044] solely in terms of the repeated forward and reverse cycles, without any mention of a delay step or stop step. A continuous reversal operation as disclosed in D6 is therefore not contrary to the teachings of the contested patent.

- 2.6 Nor does claim 1 define any further characteristics of the stop step or exclude the presence of reverse torque during reversal. As already noted by the Board, the patent specification expressly discloses stopping periods ranging from 0 to 30 seconds. The claim formulation adopted is sufficiently broad to encompass the entire disclosed range of embodiments, including both embodiments in which the pump remains stopped for a measurable period and embodiments in which the stop is limited to a momentary zero-velocity condition occurring during reversal. In its broadest technically sensible interpretation, a zero-velocity condition

therefore constitutes a stop in the sense of claim 1 for the skilled person.

- 2.7 Accordingly, the Board concludes that claim 1 differs from the pump apparatus disclosed in D6 only in that the claimed pump monitors torque rather than motor current and initiates deragging cycles when the monitored torque exceeds a predetermined value. As already set out in the Board's preliminary opinion, D6 discloses the detection of motor current for controlling this operation (paragraph [0010]), whereas claim 1 specifies detection of motor torque.

However, as indicated in paragraph [0023] of the patent, the torque is determined by measuring the operating current of the pump. As argued by the opposition division (page 10, first paragraph), the use of a torque reference value (if not implicitly disclosed in D6) would represent an obvious - not inventive - alternative for the skilled person. Measuring torque on the basis of motor current is part of the skilled person's common general knowledge, and no apparent technical advantage arises from choosing current over torque, or vice versa. The two parameters are technically equivalent alternatives.

- 2.8 The Board therefore concludes that claim 1 as granted does not involve an inventive step, Article 100(a) EPC.

3. Auxiliary request 1 - Inventive step

- 3.1 Claim 1 of auxiliary request 1 introduces, in substance, a further limitation specifying how the stop step is performed, namely by controlling the pump to stop by stopping power to the pump and allowing it to coast to a rest.

It is undisputed that document D6 does not disclose this feature.

- 3.2 While the opponent contests the clarity of the introduced feature, the Board considers that the feature is broad rather than unclear.

In its ordinary meaning, "allowing it to coast to a rest" implies the absence of active braking, i.e. no further intervention by the control mechanism. The question under contention was whether the skilled person would additionally understand the feature as requiring that the pump must actually come to a stop.

- 3.3 The Board first notes that the claim is directed to a pump apparatus rather than to a method. The feature is therefore a functional feature imposing limitations on the claimed apparatus, in particular on the control mechanism and its operation. As discussed during the oral proceedings, the only implementation disclosed in the patent specification consists in cutting power to the pump during a stopping period (paragraphs [0019] and [0020]), represented by step 5 of Figure 1. Paragraph [0047] describes this embodiment as follows:

"Thus after the power is cut to the motor it will wait for a pre-defined time A before progressing to the next step."

The appellant proprietor did not dispute that this embodiment falls within the scope of claim 1 and indeed represents the only implementation of the feature disclosed in the patent specification.

- 3.4 As argued by the respondent-opponent, the time required for the pump to come to rest depends on external operating conditions. This is expressly acknowledged in paragraph [0047] of the patent specification, which states that:

"typically the inertia of the pump and the fluid continuing to pass therethrough will keep the pump running in the same direction for a short period of time after the power is cut - the pump will "coast" to a rest".

The appellant proprietor submitted that such hydraulic effects are negligible compared with the inertia of the pump and that the skilled person can therefore determine, with sufficient certainty, a stopping period ensuring that the pump actually comes to rest. The Board is not persuaded. Paragraph [0047] identifies both the inertia of the pump and the continued flow of fluid as factors influencing the stopping behaviour, without suggesting that the latter is negligible. Nor has any evidence been provided in support of that assumption.

- 3.5 Accordingly, whether the pump actually reaches standstill within a given period depends not only on the design of the pump and its control mechanism, but also on external conditions, such as the hydraulic conditions in the connected circuit and the particular clogging situation. Merely programming a predetermined waiting period into the controller is therefore not sufficient to guarantee this outcome. The skilled person would thus interpret the feature "allowing it to coast to a rest" as requiring that power to the pump is cut and that the pump is allowed to coast for a predetermined period without active braking. The

feature does not require the pump to reach standstill within that period, but merely allows this to occur if operating conditions permit.

- 3.6 Regarding inventive step, both parties consider D6 to represent a suitable starting point. Claim 1 differs from D6 in that:
- the monitored parameter is torque rather than motor current; and
 - the stop step is performed by cutting power to the pump and allowing it to coast to a rest, rather than by the immediate reversal of motor polarity disclosed in D6 (relay 14).
- 3.7 The Board sees no functional interaction between these distinguishing features that would give rise to a combined technical effect. Rather, each feature contributes independently to the solution of a different partial problem. Consequently, inventive step may be assessed separately for each distinguishing feature.
- 3.8 The first distinguishing feature, namely the monitoring of torque instead of current, was already found not to involve an inventive step for the reasons set out above in relation to the main request.
- 3.9 As regards the second distinguishing feature, paragraph [0020] of the patent specification states that allowing the pump to coast to a rest reduces stress on the pump. The corresponding objective technical problem may therefore be formulated as how to reduce stress in the pump system of D6.

In this respect, D8, which likewise relates to a wastewater pump system (paragraph [0001]), discloses that the controller may introduce a delay after the motor has been stopped and/or after a reversal of the motor (paragraph [0030]). D8 further explains that such a delay may be particularly advantageous for capacitor-start motors and may also allow pressure in a discharge pipe connected to other pump systems to dissipate.

The Board agrees with the respondent-opponent that it forms part of the skilled person's common general knowledge that abrupt reversals are associated with increased mechanical and electrical stress. The advantages mentioned in paragraph [0030] of D8 are described there as particular examples of situations in which a delay is beneficial. The skilled person would therefore understand D8 more generally as teaching that the introduction of a pause before or after reversal reduces the stresses associated with the reversal process. Faced with the objective technical problem identified above, the skilled person would therefore apply this teaching to the wastewater pump disclosed in D6 and thereby arrive at the claimed solution in an obvious manner.

- 3.10 The appellant proprietor argued that the skilled person would be prevented from applying the teaching of D8 to D6 because the pump of D6 is intended to operate without stopping. The Board is not persuaded. The cited passages (paragraphs [0009] and [0021] of D6a) merely describe continued operation without manual intervention; they do not exclude a short delay between reversals, but rather concern avoiding a complete stop requiring servicing.

Nor is the Board convinced that even a short delay would create an unacceptable risk of overflow in the device of D6. No evidence has been provided in support of this assertion. Moreover, D6 operates in a storage tank and is activated only once a predetermined level has been reached (paragraph [0003]). The alleged risk must therefore be regarded as speculative.

The further argument that D6 already operates satisfactorily and therefore requires no improvement is likewise unpersuasive. Reducing mechanical and electrical stress is a well-recognised technical objective. The skilled person would therefore recognise the potential benefits of the measure suggested in D8 and would apply it to D6 as a matter of obviousness.

3.11 The Board therefore concludes that the subject-matter of claim 1 of auxiliary request 1 does not involve an inventive step, Article 56 EPC, having regard to D6 in combination with D8. The opposition division's conclusion in this respect is therefore confirmed.

4. As the appellant proprietor's arguments against the findings in the opposition division's decision fail to convince, the Board upholds the opposition division's decision.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar:

The Chairman:



D. Grundner

A. Pieracci

Decision electronically authenticated