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**Datasheet for the decision
of 13 September 2022**

Case Number: T 2638/18 - 3.4.01

Application Number: 15163804.6

Publication Number: 2938159

IPC: H05B6/06, D21G1/02, H05B6/14

Language of the proceedings: EN

Title of invention:
INDUCTION HEATED ROLL APPARATUS

Patent Proprietor:
Tokuden Co., Ltd.

Opponent:
Oerlikon Textile GmbH & Co. KG

Headword:
Inductively heated roll / TOKUDEN

Relevant legal provisions:
EPC Art. 100(b)

Keyword:
Grounds for opposition - insufficiency of disclosure (yes)



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 2638/18 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 13 September 2022

Appellant: Oerlikon Textile GmbH & Co. KG
(Opponent) Postfach 110240
42862 Remscheid (DE)

Representative: Keenway Patentanwälte Neumann Heine Taruttis
PartG mbB
Postfach 10 33 63
40024 Düsseldorf (DE)

Respondent: Tokuden Co., Ltd.
(Patent Proprietor) 40, Rikyu-cho
Nishino, Yamashina-ku
Kyoto-shi
Kyoto
607-8345 (JP)

Representative: Horn Kleimann Waitzhofer
Patentanwälte PartG mbB
Ganghoferstraße 29a
80339 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
24 August 2018 concerning maintenance of the
European Patent No. 2938159 in amended form.**

Composition of the Board:

Chairman B. Noll
Members: A. Medeiros Gaspar
C. Almberg

Summary of Facts and Submissions

- I. The opponent gave notice of opposition to European patent 2 938 159 requesting its revocation on the grounds of lack of novelty and lack of an inventive step (Article 100(a) EPC), as well as lack of sufficiency of disclosure (Article 100(b) EPC).

- II. The Opposition Division concluded that none of the grounds evoked by the opponent prejudiced maintenance of the patent based on the amended main request, and took an interlocutory decision accordingly.

- III. The opponent appealed against this decision, arguing lack of compliance of the patent as amended with the requirements of sufficiency of disclosure, as well as of novelty and inventive step and requesting that the contested decision be set aside and the patent revoked.

- IV. In response, the proprietor requested that the appeal be dismissed (main request), or that the patent be maintained as amended based on one of auxiliary requests 1 to 6, filed with the reply to the statement of grounds of appeal.

- V. The opponent objected in substance to the auxiliary requests, arguing that they suffered, in essence, from the same issues as the main request and, additionally, did not comply with Article 123(2) EPC.

VI. The Board summoned the parties to oral proceedings. In the accompanying preliminary opinion, the Board doubted that the patent disclosed the invention in a manner sufficiently clear and complete for it to be carried out by the skilled person, and agreed that the amendments introduced with the auxiliary requests appeared to contravene Article 123(2) EPC.

VII. In reply, the proprietor submitted auxiliary requests 1* to 6*, to be considered after the main request and before auxiliary requests 1 to 6. Original auxiliary request 6 was also replaced by a modified version correcting an error in the numbering of the claims of the former.

VIII. At the end of oral proceedings before the Board,

- the opponent confirmed its final request to be that the appealed decision be set aside and that the patent be revoked, and
- the proprietor confirmed its final requests to be that the appeal be dismissed, i.e. that the patent be maintained in the amended form found allowable by the opposition division (main request), or that the patent be maintained in amended form based on one of auxiliary requests 1* to 6* or auxiliary requests 1 to 6, to be considered in this order.

IX. Claim 1 of the main request reads:

*An induction heated roll apparatus (100)
comprising: a roll main body (2) that is rotatably*

supported; a magnetic flux generating mechanism (3) that is provided inside the roll main body (2) and includes an iron core (31) and a winding (32) wound around the iron core (31); and a power supply circuit (5) that is connected to the winding (32) and provided with a control element (4) adapted to control AC current or AC voltage, the induction heated roll apparatus (100) characterized by

a roll temperature calculation part (64) that calculates an inner surface temperature of the roll main body (2) with use of, as parameters, an AC current value obtained by an AC current detecting part (7) adapted to detect AC current flowing through the winding (32), an AC voltage value obtained by an AC voltage detecting part (8) adapted to detect AC voltage applied to the winding (32), a power factor obtained by a power factor detecting part (10) adapted to detect the power factor of an induction heated roll (200) including the roll main body (2) and the magnetic flux generating mechanism (3), a winding resistance value of the winding (32), and an excitation resistance value obtained from a characteristic of a relationship between magnetic flux density generated by the magnetic flux generating mechanism (3) and excitation resistance of a magnetic circuit configured to include the iron core (31) and the roll main body (2).

- X. Claim 1 of each of the auxiliary requests comprises all the features of claim 1 of the main request and adds further limitations relating to the operation of the control element.

Reasons for the Decision

Sufficiency of the disclosure

3. The invention relates to an inductively heated roll apparatus. Such an apparatus is schematically represented in Figure 1 of the patent in terms of its main structural elements as defined in the preamble of claim 1.
4. The invention aims at determining in operation the temperature of the main rolling element, without the need to provide a temperature sensor on the rolling element (paragraphs [0001]-[0004] and [0006] of the patent).
5. For that purpose, the inductively heated roll apparatus is represented by means of an equivalent circuit depicted in Figure 4 of the patent and described in paragraph [0011].
6. Based on this equivalent circuit, the inner surface temperature of the roll main body is described as indirectly determinable from five other quantities, namely:
 - (a) an AC current value corresponding to the current flowing through the winding,
 - (b) an AC voltage value corresponding to the voltage applied to the winding,
 - (c) a winding resistance value of the winding,
 - (d) a power factor, and
 - (e) an excitation resistance value.

7. While some of these quantities, such as those referring to the winding, are easy to determine, others are not.
8. One of the arguments brought forward by the opponent was that the patent does not sufficiently disclose how to determine the "excitation resistance value".
9. The patent discloses this "excitation resistance" as corresponding to the resistance r_0 depicted in the equivalent circuit of figure 4, a quantity to be considered in addition to the winding resistance r_1 (paragraph [0011]).
10. However, contrary to what is the case for r_1 , which can be easily measured, this "excitation resistance" r_0 does not relate to a concrete structural element of the apparatus, but rather models "parasitic" effects.
11. In fact, in the patent, this quantity is referred to as a "magnetic resistance of the magnetic circuit" and is said to depend on several characteristics of the heating roll apparatus, such as the configuration of the iron core, the material and thickness of the roll many body and the distance to the winding (paragraphs [0013] and [0086]).
12. It is then not immediately apparent to the skilled person how this "excitation resistance" r_0 could be determined.
13. The patent discloses that it can be "obtained from characteristics of the preliminarily measured relationship between magnetic flux density and magnetic resistance of the magnetic circuit" (paragraph [0086]).

14. Figure 7 depicts such a "relationship" for a specific heating roll apparatus with a roll main body of a specific material and thickness placed at a specific distance from the winding.
15. However, the "excitation resistance values" are indicated in units of Ω .Kg. It is then not sufficiently clear how to use the depicted relationship to obtain, for a given magnetic flux, a resistance value, in Ω , compatible with Figure 4 and required as input for the temperature calculation.
16. In any case, even if the skilled person were capable of using of the curve of Figure 7, for the specific apparatus it refers to, this disclosure is still not sufficient to render apparent to the skilled person how to obtain such a "relationship" for any of the other heating roll apparatuses covered claim 1.
17. In fact, the patent does not provide the skilled person with any information on how the mentioned preliminary measurements could be carried out and the "excitation resistance values" obtained.
18. In its submission in reply to the summons, and at the oral proceedings, the proprietor indicated how preliminary measurements could be implemented, following a four step approach, involving in a first step cutting the roll body and then carrying out measurements on the apparatus modified in such a way.
19. Irrespective of whether or not the skilled person were able, based on the information now provided, to carry out preliminary measurements leading to curves such as the one depicted in figure 7, relevant for this

decision is only the fact that the patent itself does not provide any information whatsoever in this regard.

20. Such preliminary measurements can also, for the reasons provided under paragraphs 10 to 12 above, not be regarded as having formed part of the common general knowledge of the skilled person, nor has the proprietor provided any evidence that it did.
21. The proprietor noted that neither the examining and opposition divisions dealing with this application and patent, nor other deciding bodies dealing with similar applications in other jurisdictions, found the disclosure of the invention to be insufficiently disclosed.
22. Concerning the reference to the opposition division, the Board notes that, in essence for the reasons indicated in paragraph 14 to 16 above, the Board does not consider the reasoning presented under item 2.3.8 of the contested decision convincing.
23. Concerning the reference to the other deciding bodies, in the absence of any accompanying substantive arguments, the Board fails to see the relevance of this submission. It could, at most, be taken as an indication that the determination of the "excitation resistance" r_0 was part of the the common general knowledge of the skilled person, even if none of these persons, or groups of persons, can be considered to represent the skilled person. However, for the reasons already indicated, that was not the case.
24. In conclusion, since, in order to implement the invention and determine the inner surface temperature of the roll main body as defined in claim 1 of the main

request, the skilled person needed to be able to determine an "excitation resistance value" disclosed in the patent as obtainable from preliminary measurements, and since neither the patent provides any information on how such preliminary measurements could be carried out, nor did it form part of the skilled person's common general knowledge, it must be concluded that the patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by the skilled person (Article 100(b) EPC).

Auxiliary requests

25. The calculation of the inner surface temperature of the roll main body is defined in claim 1 of each of the auxiliary requests as based on an "excitation resistance value", as in claim 1 of the main request.
26. The reasons given above with regard to claim 1 of the main request also apply with regard to claim 1 of each of the auxiliary requests.
27. The auxiliary requests are therefore, irrespective of the question of their admissibility, evidently not allowable.

Final conclusion

28. As none of the claim requests on file complies with the requirements of the EPC, the patent has to be revoked.

Order

For these reasons it is decided that:

1. The appealed decision is set aside.
2. The patent is revoked.

The Registrar:

The Chair:



D. Meyfarth

B. Noll

Decision electronically authenticated