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**Datasheet for the decision
of 27 November 2019**

Case Number: T 1714/14 - 3.4.01

Application Number: 03809908.1

Publication Number: 1556869

IPC: G21C3/07, G21C21/02, C22F1/18

Language of the proceedings: EN

Title of invention:
METHOD, USE AND DEVICE CONCERNING CLADDING TUBES FOR NUCLEAR
FUEL AND A FUEL ASSEMBLY FOR A NUCLEAR PRESSURE WATER REACTOR

Patent Proprietor:
Westinghouse Electric Sweden AB

Opponent:
AREVA NP

Headword:
Cladding tubes / Westinghouse

Relevant legal provisions:
EPC Art. 54, 104(1), 111
RPBA Art. 13(1)

Keyword:

Novelty

Use established by way of the terms employed to define a physical entity

Use not novel despite the absence of evidence that actual use ever took place

Apportionment of costs - (no)

malicious intention not established

General principles - protection of legitimate expectations

Decisions cited:

G 0002/88, T 0952/00, T 0273/10, T 0534/89



Beschwerdekammern

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Case Number: T 1714/14 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 27 November 2019

Appellant: AREVA NP
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
16 May 2014 concerning maintenance of the
European Patent No. 1556869 in amended form.**

Composition of the Board:

Chairman P. Scriven
Members: P. Fontenay
R. Winkelhofer

Summary of Facts and Submissions

- I. The opponent's appeal is against the interlocutory decision of the Opposition Division to maintain European patent EP-B-1 556 869 in amended form, according to the patentee's auxiliary request.
- II. The opposition was initially filed against the patent as a whole, on the grounds of Article 100(a) EPC for lack of novelty and lack of inventive step, and on the grounds of Article 100(b) EPC.
- III. The Opposition Division held that the subject-matter of independent claims 1 and 11 of the patent as granted (main request), regarding respectively a method of producing a cladding tube and the cladding tube itself, was not new in view of document
- O1: P. V. Shebaldov et al., "E110 Alloy Cladding Tube Properties and Their Interrelation with Alloy Structure-Phase Condition and Impurity Content", Zirconium in the Nuclear Industry, George P. Sabol and Gerry D. Moan (editors), January 2000.
- IV. The patentee's auxiliary request before the Opposition Division comprised a set of claims 1-15. Compared to the main request, the claims of the auxiliary request had been limited to the use of the cladding tubes for a nuclear Pressure Water Reactor (PWR), and to the fuel assembly.

The Opposition Division held that the subject-matter of independent claims 1 and 10 of the auxiliary request met the requirements of patentability. Concretely, the Opposition Division considered that the claimed subject-matter was disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art; that the claimed subject-matter was new in view both of document O1 and of document

O5: A. V. Nikulina, "Metal science aspects of zirconium-base reactor material production in the Soviet Union", Presentation on the occasion of the Award of the William J. Kroll Zirconium medal, Kobe (JP) November 1990;

and that the claimed invention did not result in an obvious manner from documents O1 or O5, both of which they held to be possible starting points for the assessment of inventive step.

With regard, more specifically, to the objection of lack of novelty on the basis of document O1, the Opposition Division observed that the actual use of the cladding tubes in a PWR was not disclosed in O1. On the contrary, the cladding tubes of O1 recrystallized to a degree of 60% or 90% served primarily as a point of comparison. The message conveyed by O1, as a result of the tests carried out, was unambiguous: since the best mechanical properties were obtained with fully recrystallized tubes, this was the structure that was to be used in PWRs. The use of partially recrystallized tubes appeared, therefore, to be excluded by O1, rendering claims 1 and 10 of the auxiliary request novel.

- V. On appeal, the opponent requested that the decision of the Opposition Division be set aside and that the patent be revoked.

The appellant reiterated its view that the subject-matter of the use claims considered allowable by the Opposition Division was not sufficiently disclosed, that the claimed use was known from O1, from O5, and from

O12: EP-A-155 167

which was filed as new evidence with the grounds of appeal. The view that the claimed use was not inventive was also reiterated.

- VI. In its response to the appeal, the proprietor requested that the appeal be dismissed (i.e. that the patent be maintained on the basis of the claims considered allowable by the Opposition Division).
- VII. In a communication under Article 15 RPBA 2007, the parties were informed of the Board's provisional opinion.

The Board, in essence, shared the analysis of the Opposition Division with regard to the objections of sufficiency of disclosure and novelty. In this respect, the Board was not persuaded by the arguments of the appellant according to which the mere disclosure of cladding tubes recrystallised to a degree of 60% or 90% constituted disclosure of their use and formed part of the state of art. O1 contained a clear statement to the effect that fully recrystallized tubes were to be

preferred. Doubts were, however, expressed as to the existence of an inventive step when starting from document O5.

VIII. During oral proceedings before the Board, the appellant further requested that the respondent bear the costs incurred by the appellant in the course of the opposition and appeal proceedings. By hiding relevant information, as evidenced by the fact that the respondent had repeatedly failed to provide a complete copy of the report from which document P1 was an extract, the respondent had occasioned higher costs for the appellant. P1 had been filed in the course of the opposition proceedings as evidence of the advantages resulting from the use of partially-recrystallized tubes of ZrNb alloys in a PWR. It consisted of a single page. A complete copy of the report was only provided, much later, at the Board's explicit request. The information in the full document differed substantially from what had previously been asserted. Concretely, the page that had been selected by the respondent did not, in fact, refer to the claimed alloys but to another category of alloys used in in a different type of reactor, namely Boiling Water Reactors. The application itself also showed the respondent's intention to mislead the appellant and the public. It relied on pure speculation, since the measurements referred to by the respondent to show the existence of radial hydrides at the origin of the secondary cracks in the cladding tubes had actually never been carried out.

Had the respondent come forward with a complete copy of document P1, much of the costs incurred by the appellant in the course of the opposition and appeals proceedings could have been avoided.

IX. During oral proceedings, the respondent filed an auxiliary request.

X. Claim 1 of the main request, i.e. as considered allowable by the Opposition Division, reads:

Use of a cladding tube produced according to a method of producing a cladding tube for nuclear fuel for a nuclear pressure water reactor, which method comprises the following steps:

formation of a tube which at least principally consists of a cylindrical tube component (1) of a Zr-based alloy, where the alloying element, except for Zr, which has the highest content in the alloy is Nb, wherein the Nb content in weight percent is between 0.5 and 2.4 and wherein no alloying element, except for Zr and Nb in said alloy, has a content which exceeds 0.3 weight percent, characterized in that after that the cladding tube has been formed according to the above and after possible rolling steps with heat treatments between them, the cladding tube is finally annealed at a temperature and during a time such that said tube component (1) is partly recrystallized but not completely recrystallized, wherein said final anneal is carried out such that the degree of recrystallization in said tube component (1) is higher than 40% and lower than 95%,

wherein the thus produced cladding tube is used in a fuel assembly for a nuclear pressure water reactor.

- XI. Independent claim 1 of the auxiliary request differs from claim 1 of the main request in that it incorporates after the mention of the recrystallization rates the following features:

wherein in said method before said final anneal, the method comprises the following steps:

a bar of said Zr-based alloy is formed; this bar is heated to between 900°C and 1300°C and is thereafter quenched, preferably in water;

a billet is extruded from the bar after heating to between 500°C and 900°C; the billet is cold rolled to a tube in at least two steps, with heat treatments between them at between 550°C and 650°C.

- XII. The auxiliary request further differs from the main request in that the claims regarding the fuel assembly have been withdrawn.

Reasons for the Decision

Main Request - Novelty (Article 54 EPC)

1. The respondent did not appeal the decision of the Opposition Division, but nevertheless reiterates its view that O1 does not disclose cladding tubes as such. It submits that the tests carried out in O1 in order to compare the mechanical properties of the different materials used for cladding tubes in the nuclear industry were not carried out on the tubes themselves, normally about 4m long, but only on short test specimens.

2. A further difference between the claimed subject-matter and O1 results, in the respondent's opinion, from the fact that claims 1-9 of the main request relate to the use of partially recrystallized cladding tubes. No such use was disclosed in O1. The materials with recrystallization degrees of 60% and 90%, explicitly mentioned in O1, were to be disregarded for PWRs. In effect, O1 explicitly taught the skilled person to use only fully recrystallized tubes in such reactors (cf. last paragraph on page 550 in combination with table 2), since it was the only structure actually tested in the framework of O1 that appeared to meet the specifications required from the standards. The respondent refers, in particular, to the passage on page 551 according to which "...the properties needed by the fuel rod designers for VVER and RBMK operating conditions required that the tubes be fabricated from fully recrystallized E110 alloy ...".

3. The Board, however, concurs with the Opposition Division in their findings that document O1 discloses

cladding tubes, notably cladding tubes with a recrystallization rate of 60% or 90%. Both the abstract and table 2 on page 551 of O1 explicitly use said terms. This is not in contradiction with the fact that the tests were carried out, for reasons of convenience, on short specimens. On that basis, the explicit reference in O1 to cladding tubes simply confirms that said specimens were obtained from real cladding tubes according to well-known protocols, as put forward by the appellant. The measured properties are thus representative of the cladding tubes from which the specimens are obtained.

4. Claim 1 of the main request refers to the use of a cladding tube and not to the tube as such. The subject-matter of claim 1 thus belongs to the general category of physical activities (cf. G 2/88 "Friction reducing additive", OJ EPO 1990, 93).
5. With cladding tubes having recrystallization degrees of 60% and 90% being known from O1, the novelty of the claimed use hinges on the question of whether the physical activity consisting of using said partially recrystallized tubes in a fuel assembly for a PWR is indeed disclosed in O1, although the general conclusion conveyed by this document, on the basis of the results of the tests carried out, is that only fully recrystallized tubes meet the specifications.
6. The technical features of a claim directed to an activity are the physical steps which define it. In a "use" claim, this may be limited to a single step of using a physical entity for a particular purpose. This is the present situation, in which claim 1 defines precisely one step of using the cladding tube mentioned in claim 1 in a nuclear PWR. In this context, the steps

of producing the cladding tube reproduced in claim 1 do not actually pertain to the claimed use, but only to defining the cladding tube that is the object of the claimed use.

7. The Board has finally come to the conclusion, different from its provisional opinion, that O1 discloses the use of recrystallized cladding tubes, whether they are fully or only partially recrystallized. Although O1 unambiguously teaches that only fully recrystallized cladding tubes are suitable for reactors of the PWR kind, the use of cladding tubes recrystallized to a degree of 60% and 90% are nevertheless part of the disclosure of O1.
8. Whether the tests in O1 are carried out on the tubes themselves or on specimens obtained therefrom does not affect the finding that the disclosure refers, in the first place place, to "cladding tubes" (cf. abstract, Table 2, page 551). This terminology inherently reflects the fact that the tests were to be carried out on objects whose primary purpose was to clad pellets of nuclear material in nuclear reactors of the PWR kind. Whether said tubes were effectively later used in fuel assemblies for PWRs or not, is without any bearing on this finding. In the Board's view, the use of a physical entity for a particular purpose is considered to be known if an item of prior art refers to such a use independently of any evidence that such use ever took place.
9. The terminology of O1 constitutes sufficient evidence of an inherent intention or acknowledgement by the authors of O1 that the use of the tubes disclosed in O1 for cladding purposes in fuel assembly for PWRs was envisaged. That the tests carried out show that some of

the materials may not be the best, or that some of them may even not be suited to the claimed purpose, does not change the fact that said use was considered in the first place and was indeed disclosed by means of the terminology employed. In principle, even evidence that a material would clearly not be suited to a certain purpose would not affect the disclosure of its "use" as such, but might well imply that the claimed use does not achieve the intended purpose, leading to a lack of sufficient disclosure.

10. In conclusion, O1 discloses both cladding tubes with degrees of recrystallization of 60% and 90%, and the step of using them in PWRs. Thus, it takes away novelty of the claims of the main request. This is all the more true of the 90% recrystallized alloy which provides similar properties to the fully recrystallized alternative (cf. Table 2).

Auxiliary request

11. The respondent justified the filing of the new request in oral proceedings by the fact that it was surprised by the position finally adopted by the Board concerning the lack of novelty of claim 1 of the main request, with regard to document O1.
12. Article 13(1) RPBA 2007 provided that "Any amendment to a party's case after it has filed its grounds of appeal or reply may be admitted and considered at the Board's discretion. The discretion shall be exercised in view of inter alia the complexity of the new subject matter submitted, the current state of the proceedings and the need for procedural economy".

13. The auxiliary request was introduced at a particularly late stage of the appeal proceedings.
14. The objection of lack of novelty on the basis of O1 was raised in the notice of opposition. The mere fact that the Board, in its preliminary opinion, had initially endorsed the position of the Opposition Division, thus concurring with the respondent's approach, is no sufficient justification for the late filing of said request. The communication under Article 15(1) RPBA 2007 with the Board's provisional opinion also contained an explicit indication that the Board was not bound in any manner by the communication's content, with reference to Article 17(2) RPBA 2007.
15. It is, moreover, doubtful whether the added features, which relate to the method of producing the cladding tubes and not to the claimed use as such, would be sufficient to render the claimed subject-matter new and inventive. The consideration of the auxiliary request, at this late stage of the appeal proceedings, would therefore be detrimental to procedural economy referred to in Article 13(1) RPBA 2007.
16. Its consideration could have been justified if it was an appropriate reaction to unforeseeable developments in the proceedings, and if it was clearly allowable by virtue of a clearly permissible amendment (cf. Case Law of the Boards of Appeal, 9th edition, V.A.4.4.2.a and V.A.4.5.1.b). Neither of these conditions is met here: From the Board's communication, it was clear that the issue would have to be discussed, the more so as the appellant had always relied on its argument thereto; that the Board might alter its opinion is always a foreseeable possibility, for which parties generally have to be prepared. Moreover, as just outlined, the

amendment would not have been clearly allowable.

17. The auxiliary request is thus not admitted into the appeal proceedings.

Apportionment of costs

18. In opposition appeals proceedings, the Board may, for reasons of equity, deviate from the principle that each party bears its own costs, and order a different apportionment (Article 104(1) EPC). Such reasons may exist when a party's costs arise from culpable actions of another party, or even abusive behaviour. If, however, there is nothing to indicate negligence, wrongdoing, or an abuse of procedure, a different apportionment of costs is not justified (Case Law of the Boards of Appeal, 9th Edition, III.R.2,; cf. also *Bostedt in Singer/Stauder*, EPÜ, 8th Edition, Art. 104 Rn 5.3).
19. In the appellant's view, the patentee's behaviour was illustrative of its intention to mislead not only the opponent, but also the organs of the EPO and the public at large. The assertions made by the patentee regarding the experimentations and measurements showing the existence of radial hydrides were false, and the refusal to file a full copy of P1 confirmed the patentee's intention to withhold information relevant for the issues to be decided. Reference was made to decision T 952/00, where the Board, dealing with similar circumstances, considered that the opponent was entitled to the reimbursement of all the costs it had incurred as a consequence of the false statements made by the patent proprietor.

20. According to the respondent, P1 had been filed to illustrate the problems resulting from the presence of radial hydrides and the existence of secondary cracks resulting therefrom. Since the report from which P1 had been obtained also contained confidential information, it was initially decided to file only one page.
21. The patent description does not contain any evidence of false statements concerning the existence of radial hydrides for fully recrystallized ZrNb alloys in cladding tubes for use in PWRs.
22. The appellant's assertion that, if a full copy of P1 had already been produced before the Examining Division, a patent would not even have been granted, is mere speculation and not based on evidence. This is the more the case for the allegation that the respondent deliberately withheld it with a view to obtaining a patent fraudulently. Even if the impression resulting from the content of P1, that is from the sole page of the report actually filed, could be misleading in the context of the proceedings, nothing points in the direction that the appellant's costs incurred by the opposition proceedings could be attributed in any causal fashion to a negligent or even abusive behaviour of the respondent. For this reason alone, no apportionment of these costs can take place.
23. Insofar, the present case differs from T 952/00 as cited by the appellant (see Case Law of the Boards of Appeal, 9th Edition, III.R.2.5), where inaccurate statements had culpably been made, as well as from T 273/10 (see Case Law of the Boards of Appeal III.R. 2.1.1.b) where documents had abusively been withheld.

24. As to the costs of the appeal proceedings, neither in the decision of the Opposition Division nor in any phase of the appeal proceedings, did P1 play a decisive role. Already in view thereof, also no apportionment of these costs can be justified (T 534/89, OJ 1994, 464 and others, see Case Law of the Boards of Appeal III.R. 2.1.1.b).
25. Moreover, these costs could not be attributed in any causal fashion to any negligent or even abusive behaviour of the respondent.
26. Lastly, even if the appellant had been able to provide evidence that the technical problem did not exist, this would by no means have shown any negligent or even abusive behaviour on the respondent's side.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.
3. The request for apportionment of costs is refused.

The Registrar:

The Chairman:



T. Buschek

P. Scriven

Decision electronically authenticated