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Datasheet for the decision of 15 January 2015

Case Number: T 0136/10 - 3.4.01

Application Number: 02253664.3

Publication Number: 1265256

IPC: G21C3/20, G21C3/18

Language of the proceedings: EN

Title of invention:
Zirconium-alloy clad fuel rods containing metal oxide for mitigation of secondary hydriding

Patent Proprietor:
GENERAL ELECTRIC COMPANY

Opponent:
AREVA GmbH

Headword:

Relevant legal provisions:
EPC Art. 123(2), 54(1)

Keyword:
added subject-matter (yes; main request)
novelty (no; first auxiliary request)

Decisions cited:

Catchword:

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Case Number: T 0136/10 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 15 January 2015

Appellant: (Patent Proprietor)	GENERAL ELECTRIC COMPANY 1 River Road Schenectady, NY 12345 (US)
Representative:	Szary, Anne Catherine GPO Europe GE International Inc. The Ark 201 Talgarth Road Hammersmith London W6 8BJ (GB)
Respondent: (Opponent)	AREVA GmbH Paul-Gossen-Strasse 100 91052 Erlangen (DE)
Representative:	Meissner, Bolte & Partner GbR Bankgasse 3 90402 Nürnberg (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 19 October 2009 concerning maintenance of the European Patent No. 1265256 in amended form.**

Composition of the Board:

Chairman	P. Fontenay
Members:	H. Wolfrum
	J. Geschwind

Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal against the interlocutory decision of the opposition division, dispatched on 19 October 2009 maintaining the patent in amended form on the basis of a second auxiliary request on file before it.

The notice of appeal was received on 23 December 2009 and the prescribed fee was paid on the same day. On 1 March 2010 a statement of grounds of appeal was filed.

The appellant requested that the contested decision be set aside and that the patent be maintained in amended form on the basis of sets of claims according to a main request or two auxiliary requests (1st and 2nd auxiliary request), all filed with the statement setting out the grounds of appeal. The 2nd auxiliary request was identical to the request with which the opposition division had maintained the patent in amended form. Moreover, the appellant made an auxiliary request for oral proceedings.

II. The respondent (opponent) requested to dismiss the appeal as far as the main request and the 1st auxiliary request were concerned.

In this context, the respondent objected to the admission of the main request into the proceedings because it introduced new factual and legal aspects which should have been discussed already in the opposition proceedings and because claim 1 contained an undisclosed and inadmissible disclaimer.

In addition to disputing the novelty of the subject-matter of claim 1 of each of the main request and the

1st auxiliary request, the respondent considered claim 1 of the main request to encompass added subject-matter.

As regards the objection of lack of novelty, the respondent made reference, inter alia, to the following documents:

E1a: EP-A-1 246 203; and
E4: US-A-4 100 020.

III. On 28 May 2014, the Board summoned the parties to oral proceedings. In an annex to the summons pursuant to Article 15(1) RPBA, the Board noted that in case the main request was admitted into the proceedings questions concerning the basis of disclosure (Article 123(2) EPC) and clarity (Article 84 EPC 1973) required attention before the matter of novelty (Articles 52(1) and 54(1) and (2) EPC 1973) could be addressed. Having regard to the first auxiliary request, the debate would concentrate on the question of novelty.

Having regard to the 2nd auxiliary request, the Board noted that the legal principle of the prohibition of a *reformatio in peius* applied because the patent proprietor was the sole appellant. Thus, neither the respondent nor the Board *ex officio* could challenge the request by which the opposition division maintained the patent and, consequently, no discussion would take place as regards the 2nd auxiliary request.

IV. Oral proceedings were held on 15 January 2015

In the oral proceedings the parties confirmed their requests made in writing.

V. Independent claim 1 of the appellant's **main request** reads as follows:

"*1. A method of fabricating a fuel rod, comprising the step of providing an effective amount of a metal oxide in the fuel rod to cause generation of steam in sufficient amounts to mitigate secondary hydriding, wherein the metal oxide is not within the fuel pellet.*"

Claims 2 to 10 are dependent claims.

Claim 1 of the **1st auxiliary request** reads:

"*1. A method of fabricating a fuel rod, comprising the step of providing an effective amount of a metal oxide in the fuel rod to cause generation of steam in sufficient amounts to mitigate secondary hydriding, wherein the metal oxide is selected from oxides of iron, nickel, tin, bismuth, copper, colbalt* [sic!], *chromium, manganese and combinations of such oxides.*"

Claims 2 to 9 of the 1st auxiliary request are dependent claims.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 99 EPC and is, therefore, admissible.

2. *Main request*

2.1 *Admission into the proceedings*

Claim 1 of the appellant's main request on file has been amended by complementing the wording of claim 1 of the patent as granted by the phrase "*… wherein the metal oxide is not within the fuel pellet*". The amendment aims at overcoming the novelty objection that was raised in the contested decision on the basis of document E1a, which constitutes a state of the art within the meaning of Article 54(3) EPC.

In the Board's view, such an attempt, which has been made at the earliest possible point of time in the appeal proceedings, is legitimate. Moreover, the amendment is not complex and can be dealt with in the legal and factual framework set in the opposition.

Therefore, the Board has decided to exercise the discretion conferred to it by Article 12(4) RPBA in the appellant's favour and to admit the main request into the appeal proceedings.

2.2 *Amendments - Article 123(2) EPC*

2.2.1 The respondent considered the complement "*… wherein the metal oxide is not within the fuel pellet*" to claim 1 to constitute an undisclosed and inadmissible disclaimer, which infringed the provision of Article 123(2) EPC in at least two aspects.

The mere fact that none of the concrete embodiments for specific locations within the fuel rod where the metal oxide could be provided mentioned the presence of metal oxide within the body of the fuel pellets did not allow to draw the conclusion that this option was excluded. Thus, the amendment was not clearly and unambiguously derivable from the original application documents and constituted an inadmissible intermediate generalisation

because it allowed for the provision of the metal oxide at other locations, within the fuel rod and outside the pellets, than those mentioned in the specific embodiments.

Moreover, the reference to "*the fuel pellet*" in the singular form implied that the metal oxide should be absent from only one of the plurality of fuel pellets which was normally present in a fuel rod. Nothing of that kind was disclosed in the originally-filed application documents.

2.2.2 The appellant argued that literal support of an amendment was not a necessary prerequisite so as to meet the requirement of Article 123(2) EPC.

The amendment in question served to distinguish the claimed subject-matter from document E1a, which constituted a state of the art within the meaning of Article 54(3) EPC.

It had a proper basis of disclosure in that it could be readily deduced from the fact that the presence of metal oxide inside the fuel pellets was not included in the description of the specific embodiments, each of which suggested an advantageous site within the fuel rod for placement of the metal oxide. In fact, the skilled reader of the application immediately realised that the absence of metal oxide from the bulk of the pellets was a common characteristic of the various embodiments described. In this context, he understood that if metal oxide were intimately mixed with the uranium oxide fuel within the fuel pellets such oxide would not be readily available for the required rapid reaction with hydrogen and thus could not contribute to the desired mitigation of secondary hydriding. Of

course, the term "*the fuel pellet*" had to be understood as a generic reference to all of the fuel pellets present within a fuel rod.

2.2.3 The Board disagrees with the appellant.

Although it is true that none of the specific embodiments shows a fuel rod having the metal oxide dispersed within the bulk material of the fuel pellets, the skilled reader of the application documents as originally filed does not have any cause to pay attention to this circumstance. On the contrary, he gathers from the original application documents at repeated occasions (*e.g.* original claim 1; description paragraphs [0001], [0005], [0006], [0013]) that it is immaterial for the purpose of mitigating secondary hydriding where exactly the metal oxide would be provided within a fuel rod. In this context, it has to be kept in mind that the skilled person in the technical field at issue knows about the ability of gaseous hydrogen to rapidly diffuse into solid structures. Thus, he is aware of the fact that metal oxide present within the bulk of a fuel pellet would as easily react with hydrogen as if it were provided at any other location within the fuel rod. If hydrogen did not possess this property an embodiment such as the fourth embodiment described in the present patent, according to which the metal oxide may be present in the form of a powder or pellet in a (porous) container at one end of the fuel rod only, would not be of help for mitigating secondary hydriding.

For these reasons, it would not occur to a skilled reader of the original application documents that the metal oxide provided in the fuel rod should be for any reason absent from the interior of the fuel pellets.

Moreover, in the circumstances of the present case the complement "*… wherein the metal oxide is not within the fuel pellet*" cannot be justified as serving as an (undisclosed) disclaimer for restoring novelty with respect to a state of the art according to Article 54(3) EPC (*i.e.* that of document E1a) for the simple reason that novelty and inventive step have also to be established with respect to all prior art within the meaning of Article 54(2) EPC (including that according to document E4).

2.2.4 In summary, the amendment to claim 1 of the main request introduces subject-matter which cannot be derived from the application documents as originally filed so that the main request does not comply with the provision of Article 123(2) EPC.

3. 1st auxiliary request - novelty

Document E4 (Figures 1 and 2 with the corresponding description; claims 2 and 5) refers to a fuel rod and (implicitly) to a corresponding method of fabricating it in which, in addition to the fuel pellets, metal oxide is provided within the fuel rod. According to E4 (column 3, lines 10 to 12), the metal oxide can be present "*in different forms and placed at various locations within fuel pin*". In one concrete embodiment, which corresponds to the 3rd embodiment of the present patent, the metal oxide is present in the form of individual pellets which are placed at both ends of the stack of fuel pellets. In another embodiment, which corresponds to the first embodiment of the present patent, the metal oxide is present as a coating on an interior surface of the cladding of the fuel rod. Suitable metal oxides are oxides of the transition

metals nickel, chromium, manganese, iron and cobalt (claims 2 and 5; column 2, lines 31 to 33).

3.1 In the appellant's view, the subject-matter of claim 1 of the 1st auxiliary request was rendered novel and inventive vis-à-vis document E4 due to the claimed provision of an effective amount of one or more metal oxides specifically selected from oxides of iron, nickel, tin, bismuth, copper, cobalt, chromium and manganese for the purpose of causing the generation of steam in sufficient amounts to mitigate secondary hydriding.

In distinction thereto, document E4 referred to an outdated prior art, which was concerned with reducing the vulnerability of the fuel rod to chemical reaction with iodine. There was nothing in E4 which suggested that the metal oxide present there could mitigate massive secondary hydriding.

3.2 The appellant's argumentation is not convincing.

The alleged difference between the claimed subject-matter and the teaching of document E4 constitutes merely the statement of an effect which has to be caused by the metal oxide provided inside the fuel rod. As correctly pointed out by the respondent, in the absence of any distinction as regards the chemical nature of the metal oxides and the sites at which they are located within the fuel rod, the metal oxides provided in a method of fabricating a fuel rod according to document E4 must inevitably ensue the same effects as in the present patent.

Therefore, a distinction between the claimed subject-matter and the prior art according to document E4

concerns at best the motive for which the step of providing metal oxides in the fuel rod is performed but not the fact that this step is indeed executed.

3.3 Document E4 thus discloses a method of fabricating a fuel rod which encompasses all the features comprised in claim 1 under consideration.

The subject-matter of claim 1 of the 1st auxiliary request is therefore not novel, contrary to the requirement of Articles 52(1) and 54(1) and (2) EPC.

4. In summary, the Board has come to the conclusion that neither the main request nor the 1st auxiliary request filed by the appellant is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Nachtigall P. Fontenay

Decision electronically authenticated