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Datasheet for the decision of 13 May 2025

Case Number: T 0366/23 - 3.3.05

Application Number: 18180241.4

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Language of the proceedings: EN

Title of invention:
METHOD FOR HEAT TREATING COMPONENTS

Patent Proprietor:
RTX Corporation

Opponent:
Siemens Energy Global GmbH & Co. KG

Headword:
Superalloy heat treating/RTX

Relevant legal provisions:
EPC Art. 54(1), 54(2), 56

Keyword:

Novelty - main request (yes)
Inventive step - main request (yes) - main request (yes)

Decisions cited:

Catchword:

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Case Number: T 0366/23 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 13 May 2025

Appellant: (Opponent)	Siemens Energy Global GmbH & Co. KG Otto-Hahn-Ring 6 81739 München (DE)
Representative:	Siemens Energy Global GmbH & Co. KG Postfach 22 16 34 80506 München (DE)
Respondent: (Patent Proprietor)	RTX Corporation 10 Farm Springs Road Farmington, CT 06032 (US)
Representative:	Dehns 10 Old Bailey London EC4M 7NG (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 10 February 2023 rejecting the opposition filed against European patent No. 3421621 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	E. Bendl
Members:	T. Burkhardt
	O. Loizou

Summary of Facts and Submissions

I. The opponent's (appellant's) appeal lies from the opposition division's decision to reject the opposition against European patent No. 3 421 621 B1.

II. The following document was among those discussed at the opposition stage:

D8 DE 10 2010 037 046 A1

III. Broken down into features according to point II.2.2 of the decision under appeal, independent method claim 1 of the main request (version as granted) reads as follows:

Feature

1.1 "A method for heat treating a superalloy component (20), comprising:

1.2 heating a superalloy component (20) to a first temperature;

1.3 cooling the superalloy component (20) from the first temperature to a second temperature (T2) at a first pressure in a furnace (30);

1.4 and cooling the superalloy component (20) from the second temperature (T2) to a final temperature (T3) at second pressure,

1.6 (sic) wherein the second pressure is higher than the first pressure,

1.5 (sic) without removing the superalloy component (20) from the furnace (30),

1.7 wherein the first cooling step has a first rate of cooling and the second cooling step has a second rate of cooling, and wherein the second rate of cooling is greater than the first rate of cooling."

IV. Independent system claim 7 of this request reads as follows:

"A system for heat-treating a superalloy component (20), comprising:
a furnace (30) operable to cool a superalloy component (20) from a first temperature to a second temperature (T2) at a first cooling rate and to cool the superalloy component (20) from the second temperature (T2) to a final temperature (T3) at a second cooling rate, wherein the second cooling rate is higher than the first cooling rate, and wherein the first temperature is above a solvus temperature (T1) for the superalloy component (20) and the second temperature (T2) is below the solvus temperature (T1), wherein the furnace (30) includes a heat exchanger (32), a fan (34) and a controller (36) operable to control the temperature of the furnace (30) by operation of the heat exchanger (32), to control the speed of the fan (34), and to control the pressure in the furnace (30); characterised in that
the superalloy component (20) is cooled from the first temperature to the second temperature (T2) at a first pressure, and is cooled from the second temperature (T2) to the final temperature (T3) at a second pressure, wherein the second pressure is higher than the first pressure."

V. Dependent method claims 2 to 6 and dependent system claims 8 and 9 relate to preferred embodiments.

VI. The arguments put forward by the appellant during the appeal proceedings which are relevant to the present decision can be summarised as follows:

The subject-matter of claim 1 of the main request was not novel over D8.

The subject-matter of claim 1 was not inventive when starting from D8 as the closest prior art.

VII. The arguments put forward by the patent proprietor (respondent) during the appeal proceedings which are relevant to the present decision can be summarised as follows:

The main request met the requirements of the EPC.

VIII. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained in amended form on the basis of one of the ten auxiliary requests submitted with the reply to the grounds of appeal.

Reasons for the Decision

Main request

In appeal proceedings, the appellant only raised a novelty objection and an inventive-step objection against the subject-matter of claim 1 in view of document D8.

An objection was not raised against the subject-matter of the system claims.

As will be demonstrated below, these objections are not convincing.

1. Novelty

The appellant considers that **D8** anticipates the subject-matter of method claim 1. It referred in particular to paragraph [0033] of D8.

The appellant merely held that D8 *implicitly* disclosed feature 1.5 of claim 1, which requires that the second cooling step be performed without removing the superalloy component from the furnace.

However, paragraph [0033] of D8 indicates that two different kinds of cooling are carried out: (i) cooling in a furnace ("Ofenkühlung") and (ii) cooling by means of a fan ("Gasgebläsekühlung"). It cannot be deduced from this passage that these two steps are *necessarily* carried out in the same device.

Moreover, in points II.4.3.3 and II.4.3.4, the decision under appeal even explicitly acknowledges that there are alternative possibilities in D8, in particular that different furnaces are used for the cooling steps and that the component is removed from the furnace between the two cooling steps. In the opposition division's view, this possibility was *de facto* excluded since it was not explicitly mentioned in D8 and was "quite cumbersome". This view was shared by the appellant.

However, this is not convincing because a possibility is not excluded merely because it is cumbersome.

In response to the communication under Article 15(1) RPBA, the appellant also argued that controlled cooling was only possible if the component was kept in the same furnace.

This argument is not convincing either. Claim 1 only requires that the pressure and cooling rate of the second cooling step be higher than those in the first cooling step. This is entirely possible even if the cooling of the superalloy component is carried out in different pieces of equipment.

For these reasons, at least feature 1.5 of claim 1 is not directly and unambiguously derivable from D8. Novelty is thus to be acknowledged (Article 54(1) and (2) EPC).

2. Inventive step

2.1 The invention relates to a method for heat-treating a superalloy component.

2.2 The appellant considers **D8** to be the prior art closest to the subject-matter of claim 1, and this has not been disputed.

D8 also discloses a method for heat-treating a superalloy (paragraph [0003]; claim 10). Paragraph [0033] discloses details of the heat treatment method.

Since D8 relates to the same technical field as the patent in suit and has numerous features in common with

the subject-matter of claim 1, it is a reasonable starting point for assessing inventive step.

2.3 According to the patent in suit, the problem to be solved is to provide a method with reduced variability in the microstructure of the superalloy component (paragraphs [0002] and [0020]).

While the grounds of appeal did not mention anything whatsoever regarding a discussion of feature 1.5 in relation to inventive step, at the oral proceedings at the appeal stage, and thus following the communication under Article 15(1) RPBA, the appellant argued that the problem could not be formulated in this way since paragraph [0020] of the patent did not mention the word "problem". The problem was instead to provide a method with improved control of the cooling process.

However, the admission of this alleged fact notwithstanding, "the correct procedure for formulating the problem was to choose a problem based on the technical effect of exactly those features distinguishing the claim from the prior art" (Case Law of the Boards of Appeal, 10th edition, I.D.4.2.1). In the case in hand, paragraph [0020] of the patent in suit explicitly links feature 1.5 to "eliminat[ing] variability". The skilled reader understands that "variability" in this context means the "microstructural variations" mentioned in paragraph [0002].

2.4 It is proposed that this problem be solved by means of the method in claim 1, which is characterised at least in that the second cooling step is performed without removing the superalloy component from the furnace (feature 1.5).

2.5 The appellant has not disputed that the stated technical problem has been successfully solved.

The board sees no reason to view this differently.

2.6 The appellant has also failed to indicate *why* it was obvious to solve the stated technical problem in the claimed manner. In particular, the appellant provided no evidence in this regard.

Under these circumstances, there is no reason to deny inventive step (Article 56 EPC).

2.7 For the same reasons, the subject-matter of dependent method claims 2 to 6 also involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

C. Vodz E. Bendl

Decision electronically authenticated