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Datasheet for the decision of 25 February 2026

Case Number:	T 0094/23 - 3.3.05
Application Number:	10806517.8
Publication Number:	2463395
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Language of the proceedings:	EN

Title of invention:

STEEL SHEET FOR RADIATION HEATING, METHOD OF MANUFACTURING THE SAME, AND STEEL PROCESSED PRODUCT HAVING PORTION WITH DIFFERENT STRENGTH AND METHOD OF MANUFACTURING THE SAME

Patent Proprietor:

Nippon Steel Corporation

Opponent:

Autotech Engineering S.L.

Headword:

Steel Sheet For Radiation Heating/Nippon Steel

Relevant legal provisions:
EPC Art. 56, 112
RPBA 2020 Art. 13(2)

Keyword:
Inventive step - (no)
Amendment after summons - exceptional circumstances (no)
Referral to the Enlarged Board of Appeal - (no)

Decisions cited:
G 0001/24, G 0003/14, G 0002/03, T 0873/24, T 0261/19, R 0008/16

Catchword:

Europäisches Patentamt
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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

Case Number: T 0094/23 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 25 February 2026

Appellant 1: (Patent Proprietor)	Nippon Steel Corporation 6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo (JP)
Representative:	Vossius & Partner Patentanwälte Rechtsanwälte mbB Siebertstrasse 3 81675 München (DE)
Appellant 2: (Opponent)	Autotech Engineering S.L. AIC-Automotive Intelligence Center Parque Empresarial Boroa P2-A4 48340 Amorebieta-Etxano (ES)
Representative:	de Rooij, Mathieu Julien Bardehle Pagenberg S.L. Avenida Diagonal 598, 3° 1ª 08021 Barcelona (ES)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 9 November 2022 concerning maintenance of the European Patent No. 2463395 in amended form.**

Composition of the Board:

Chairwoman	S. Besselmann
Members:	J. Roider
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. The appeals by the patent proprietor (appellant 1) and the opponent (appellant 2) lie from the interlocutory decision of the opposition division to maintain European Patent No. 2 463 395 B1 on the basis of auxiliary request 2.

II. The following documents, which had been cited in the opposition proceedings, are relevant:

D1	DE 101 62 415 A1
D2	US 2005/0282033 A1
D7	Hein and Wilsius, Status and Innovation Trends in Hot Stamping of USIBOR 1500 P, Steel Research Int. 79, 2008, 85-91
D10	DE 10 2008 027 460 A1
D19	Experiments carried out by the patent proprietor, filed on 10 February 2022
D20	Ullmann's Encyclopedia of Industrial Chemistry, Sixth, Completely Revised Edition, vol. 18, 87-88
D21	Kirk-Othmer Encyclopedia Of Chemical Technology, Fourth Edition, vol. 14, 379

III. Outline of the proceedings

In the communication under Article 15(1) RPBA dated 13 June 2024, the board expressed the opinion that the requirements of Article 100(c) EPC in conjunction with Article 123(2) EPC were not fulfilled.

At the oral proceedings of 23 October 2024, said issue

was discussed, and the board concluded that the outcome of the case depended on the pending referral G 1/24 and therefore stayed the proceedings.

In the communication under Article 15(1) RPBA dated 6 October 2025, issued after the decision in G 1/24 had been handed down, the board in its present composition informed the parties of its preliminary view that G 1/24 strictly concerned Articles 52 to 57 EPC and did not affect the earlier preliminary opinion.

On 9 February 2026, when the minutes of the oral proceedings of case T 873/24 were issued, the board became aware that, in view of already apparent diverging case law, the board in this other case (T 873/24) intended to refer to the Enlarged Board of Appeal questions as to whether the reasoning underlying G 1/24 was to be applied with regard to Article 100(c), 76 and 123(2) EPC, and, if so, to what extent.

In view of the above, the board considered it expedient to continue these proceedings on the presumption, in the patent proprietor's favour, that the main request fulfilled the requirements of Article 100(c) EPC. On 17 February 2026, the board therefore issued a preliminary opinion on the objections under Articles 54(1) and (2) and 56 EPC.

The board informed the parties that after dealing with all objections raised against the patent in suit other than those under Article 100(c) EPC/Article 123(2) EPC, it would be apparent whether the objection under Article 100(c) EPC was decisive. In that event, the further procedure would be discussed with the parties.

On 23 February 2026, the patent proprietor requested that the proceedings be stayed in view of the expected referral and that the objections under Article 100(c) EPC/Article 123(2) EPC be decided before discussing the other objections.

As an auxiliary measure, the patent proprietor requested that the following question be referred to the Enlarged Board of Appeal:

"While no explicit rules regarding the order of examination of each objection exist in the EPC, the EPO usually examines first formality requirements and then substantial requirements. Under which circumstances can a Board deviate from the usual practice?"

Oral proceedings were held on 25 February 2026, during which the patent proprietor filed new auxiliary request 2a.

IV. Claim 1 of the main request and auxiliary requests 1 to 167 and 2a are summarised below (the amendments with respect to the main request are indicated):

Main request:

"1. A steel sheet to be heated by radiant heat transfer, wherein part of a surface of the steel sheet that is to be heated by radiant heat transfer has a reflectance-reduced region where reflectance for a radiant ray is reduced to be lower than that of the original surface of the steel sheet and wherein the reflectance of the reflectance-reduced region is 40% or less."

Auxiliary request 1:

"region where reflectance for a radiant ray which is a near-infrared ray is reduced"

Auxiliary request 2 (as maintained by the opposition division):

"region where reflectance for a radiant ray which is a near-infrared ray with a wavelength of 0.7 to 2.5 µm is reduced"

Auxiliary request 3:

"wherein only part of a surface of the steel sheet that is to be heated by radiant heat transfer"

Auxiliary request 4:

"wherein the reflectance of the reflectance-reduced region is 40% or less, wherein the reflectance is determined in accordance with the description."

Auxiliary requests 5 to 11:

Claim 1 of auxiliary requests 5 to 11 combine the amendments made in claim 1 of:
- auxiliary requests 3 and 4 (auxiliary request 5)
- auxiliary requests 1 and 3 (auxiliary request 6)
- auxiliary requests 1 and 4 (auxiliary request 7)
- auxiliary requests 1, 3 and 4 (auxiliary request 8)
- auxiliary requests 2 and 3 (auxiliary request 9)
- auxiliary requests 2 and 4 (auxiliary request 10)
- auxiliary requests 2, 3 and 4 (auxiliary request 11)

Auxiliary request 12 to 23:

According to the patent proprietor's letter dated 26 July 2023, auxiliary requests 12 to 23 correspond to the main request and auxiliary requests 1 to 11 from which claims 4 and 5 have been deleted.

Auxiliary requests 24 to 95, filed on 19 September 2024, and **auxiliary requests 96 to 167**, filed on 18 December 2025, aim to overcome the objections under Article 123(2) EPC and contain the following amendments.

Claim 1 of auxiliary requests 24 to 47 corresponds to claim 1 of the main request and auxiliary requests 1 to 23, respectively, in which the feature "*wherein the steel sheet is a plated steel sheet*" has been added at the end of the claim.

Claim 1 of auxiliary requests 48 to 71 corresponds to claim 1 of the main request and auxiliary requests 1 to 23, respectively, in which the wording "which is usable for hot stamping" has been inserted in the first part of the claim ("*A steel sheet to be heated by radiant heat transfer, which is usable for hot stamping , ...*").

Claim 1 of auxiliary requests 72 to 95 corresponds to claim 1 of the main request and auxiliary requests 1 to 23, respectively, in which the wording "*before being subjected to reflectance reducing treatment*" has been inserted directly after the wording "*is reduced to be lower than that of the original surface of the steel sheet*".

Claim 1 of auxiliary requests 96 to 119 is based on claim 1 of auxiliary requests 72 to 95, respectively, in which the feature "*wherein the steel sheet is a*

plated steel sheet" has been added at the end of the claim.

Claim 1 of auxiliary requests 120 to 143 is based on claim 1 of auxiliary requests 72 to 95, respectively, in which the wording "*which is usable for hot stamping*" has been inserted in the first part of the claim ("*A steel sheet to be heated by radiant heat transfer, which is usable for hot stamping, ...*").

Claim 1 of auxiliary requests 144 to 167 is based on claim 1 of the main request and auxiliary requests 1 to 23, respectively, in which the wording "*wherein the steel sheet is a hot-rolled steel sheet or a cold-rolled steel which is usable for hot stamping*" has been added at the end of the claim.

Auxiliary request 2a:

"region where reflectance for a radiant ray which is a near-infrared ray with a wavelength of 0.7 to 2.5 μm is reduced [...] and wherein the reflectance of the reflectance-reduced region is ~~40%~~25% or less."

V. Appellant 1 (patent proprietor) objected to dealing with inventive step before deciding on Article 123(2) EPC. They argued that the proceedings should be stayed or the question regarding the order of examination be referred to the Enlarged Board of Appeal.
D7 and D1 could not be combined and did, in any case, not render the claimed subject-matter obvious to the skilled person.
The amendments made in auxiliary requests 1 to 23 were clear, and the subject-matter of the claims was inventive. Auxiliary requests 24 to 167 should be taken into account and admitted into the proceedings under

Article 13(2) RPBA. The unexpected course of the proceedings justified the late filing of new auxiliary request 2a, which should also be admitted under Article 13(2) RPBA.

VI. Appellant 2 (opponent) argued that there was no reason to stay the proceedings and to refer a question to the Enlarged Board of Appeal.
Moreover, the claimed subject-matter was at least not inventive over D7 in view of D1.
The amendments made in the auxiliary requests either gave rise to a lack of clarity or did not overcome the objection of lack of inventive step raised against the main request. Auxiliary requests 24 to 167 and 2a should not be taken into account under Article 13(2) RPBA.

VII. Substantive requests

(a) Appellant 1 (patent proprietor) requested that the decision under appeal be set aside and that the opposition be rejected or, in the alternative, that the patent be maintained on the basis of auxiliary requests 1 to 8, resubmitted with the statement of grounds of appeal, or on the basis of auxiliary requests 9 to 11, first submitted with the statement of grounds of appeal, or on the basis of auxiliary requests 12 to 23, filed with the reply to the opponent's appeal, or on the basis of auxiliary requests 24 to 95, filed with the letter dated 19 September 2024, or on the basis of auxiliary requests 96 to 167, filed with the letter dated 18 December 2025, or on the basis of new auxiliary request 2a, submitted during oral proceedings before the Board.

Further, with the letter dated 23 February 2026, the appellant (patent proprietor) requested a stay of the proceedings (in view of case T 873/24) and a referral to the Enlarged Board of Appeal (concerning the order of examination).

(b) The appellant (opponent) requested that the decision under appeal be set aside and that the European patent be revoked.

Reasons for the Decision

1. Stay of proceedings and referral to the Enlarged Board of Appeal

1.1 According to the patent proprietor, the claims had to be interpreted consistently throughout the proceedings. Adopting a particular claim interpretation for the assessment under Articles 54 and 56 EPC at this stage while postponing the assessment under Article 123(2) EPC to a later stage, i.e. to when the referral planned in the other case is decided, would, in their view, entail the risk that following the new referral, claim 1 might have to be interpreted differently for the assessment under Article 123(2) EPC. This could result in the patent in suit being assessed under Article 123(2) EPC on the basis of one claim interpretation, while being assessed under Articles 54 and 56 EPC on the basis of another interpretation.

While such a situation is conceivable, the board is not convinced that the current case gives rise to such a risk. The patent proprietor did not identify any specific claim interpretation that would lead to such

an outcome.

In this case, the opponent's objection of lack of inventive step as dealt with below did not concern subject-matter which in the patent proprietor's view was not within the scope of the claim.

Moreover, avoiding the situation referred to by the patent proprietor is precisely why the board proceeds on the assumption that the objection under Article 100(c) EPC is not convincing. This approach ensures that the possible outcomes are as follows. If the decision on the other grounds for opposition is favourable to the patent proprietor, the maintenance of the patent depends on whether the presumption that the requirements of Article 123(2) EPC are met is ultimately confirmed. If it is confirmed, the patent will be maintained on the basis of a consistent claim interpretation. If it is not confirmed, the patent will be revoked on that ground. Alternatively, one of the other grounds for opposition prejudices the maintenance of the patent, in which case it is irrelevant whether the objection under Article 100(c) EPC constitutes a further ground prejudicing the maintenance of the patent. At the same time, the approach taken and the presumption made in favour of the patent proprietor exclude that patentability (e.g. inventive step) is denied on the basis of an incorrect claim interpretation adverse to the patent proprietor.

1.2 The patent proprietor further argued that it was a fundamental principle of the proceedings that formal issues be examined before substantive issues. Accordingly, the discussion of objections under Articles 54 and 56 EPC prior to a decision on Article 123(2) EPC was said to be contrary to this principle.

Reference was made to G 2/03, Reasons 1.2, according to which "*the formal allowability of the claimed subject-matter is normally examined before the substantive requirements*".

However, as set out in R 8/16 (cited by the patent proprietor), Reasons 25, the order in which a deciding body examines or discusses the subject-matter before it is primarily a matter of procedural economy and lies within the responsibility of the deciding body. This consideration of procedural economy is of particular relevance in this case, which has been pending since 2023. Any further stay of the proceedings would therefore have to be justified by the outcome of the newly envisaged referral and would, accordingly, have to depend on the assessment under Article 100(c) EPC. Moreover, the board considers that the patent proprietor has relied on the citation from G 2/03, Reasons 1.2, in isolation. Reasons 1.1 and 1.2 of that decision suggest that a referral may be considered inadmissible if not all objections were addressed beforehand, i.e. in a situation in which the referred question may turn out to be irrelevant, should another requirement not be fulfilled.

The board therefore sees no reason to stay the proceedings since whether the outcome depends exclusively on the requirements of Article 100(c) EPC/ Article 123(2) EPC can only be established by dealing with the opponent's other objections.

Furthermore, the request for a referral to the Enlarged Board of Appeal must be refused since the board can answer the issue raised without any doubt, as outlined above (see R 8/16, Reasons 25). The order in which objections are examined or discussed lies within the

board's discretion.

1.3 The patent proprietor further submitted that should the board intend to depart so substantially from the opposition division's decision, it would have been unfair to inform the patent proprietor only ten days in advance. This was all the more so as the case had developed in a direction different from that taken by the opposition division, allegedly without prior indication.

The board cannot accept this argument.

As explained during the oral proceedings, no new objections were introduced at the appeal stage. All objections were already on file. If the assessment under Article 123(2) EPC had resulted in a finding favourable to the patent proprietor, which corresponds to the presumption applied by the board for reasons of procedural economy, the objections under Articles 54 and 56 EPC would nonetheless have had to be examined. The patent proprietor therefore had to expect, and should have been prepared, to discuss all objections under Articles 54 and 56 EPC already on file.

2. Main request - inventive step (Article 56 EPC)

The patent in suit is directed to the hot stamping of steel sheets.

2.1 D7 was cited as a starting point for an inventive-step objection.

D7 is directed to hot stamping and quenching in a closed die of USIBOR 1500 P, an aluminium-silicon-

coated high-strength 22MnB5 steel (D7, page 85, left-hand column, first paragraph), and thus has a similar aim to the patent in suit.

It is therefore suitable as a starting point for an inventive-step objection.

The patent proprietor argued that D7 was not appropriate as the closest prior art since it did not relate to the same problem to be solved as the patent.

However, if inventive step has to be denied, the choice of a particular prior art as the starting point for the assessment of inventive step needs no specific justification as the claimed invention must, as a rule, be non-obvious having regard to any prior art (see T 261/19, point 2.5). Moreover, as is evident from the analysis under Article 56 EPC below, D7 even solves the technical problem posed in the patent in suit.

2.2 During the oral proceedings, the patent proprietor considered the technical problem to be solved to be providing a steel sheet that could be effectively, simply and cost-efficiently heated to obtain regions with different temperatures, which, when suitably hot pressed, led to regions with different strengths (first aspect of the technical problem). At times, they also considered the provision of high or increased strength in the hot-pressed steel sheet as a further aspect of the problem.

2.3 It is proposed to solve this technical problem by the features of claim 1, which differs from D7 in the presence of a reflectance-reduced region in which the reflectance of a radiant ray is reduced to be lower than that of the original surface of the steel sheet

and wherein the reflectance of the reflectance-reduced region is 40% or less.

2.4 The effect sought, i.e. the formation of regions in the steel sheet which have different strengths, only materialises in a method in which the claimed steel sheet is subjected to suitable heating followed by quenching or hot pressing. As the opponent rightly emphasised, the purported effect cannot be observed if the heating does not reach a temperature sufficient to cause austenitisation in the areas covered by the reflectance-reduced region. Nor can the purported effect be observed if the heating continues for such a duration that the entire steel sheet is heated to the austenitic state.

However, the indicated first aspect of the technical problem is also solved by D7.

D7 discloses methods of selectively altering the microstructure by quenching the USIBOR 1500 P steel sheet in the forming die, while regions that should not be hardened remain below the recrystallisation temperature of 730 °C (page 90, right-hand column, first paragraph; Figure 9).
Depending on the local temperature imparted to the steel sheet, it will either be hardened (Figure 9: martensitic microstructure) or, where the steel sheet remains colder, its microstructure will not be significantly impacted (Figure 9: ferritic-pearlitic microstructure). Therefore, D7 discloses zonal heating of steel sheets that leads to regions of different strengths after quenching the steel sheets in the forming die.

During the oral proceedings, the patent proprietor

alleged that adapting the furnace to provide zonal heating would always be more expensive and complex than applying a reflectance-reducing treatment to the sheet. The opponent countered that the equipment required for the reflectance-reducing treatment of the sheets and the treatment itself also involved costs and complexity.

There was no evidence to suggest that providing the proposed reflectance-reduced regions was less costly or complex or that it was more productive. In fact, the two measures require different technical equipment and have different investment and operating costs. While adjusting a furnace for zonal heating may require more effort, depending on the number of sheets to be processed, this may be offset by the reduced effort required to treat each sheet. It is also not shown that an adjustable furnace is more complex than coating equipment. The general assertion of increased effectiveness, lower cost and reduced complexity is not justified. These aspects cannot be considered when formulating the technical problem.

The further aspect of the alleged problem, namely the provision of high or increased strength, is likewise not convincing.

D7 also discloses high or locally increased strength in USIBOR 1500 P. There is no evidence that the patent in suit provided a solution for yet higher strength. In the absence of a steel specification, this would not be convincing anyway.

Therefore, D7 already provides a solution to the technical problem stated by the patent proprietor.

It follows that the objective technical problem must be reformulated as the provision of an alternative that enables zonal heating of a steel sheet.

2.5 The solution to this technical problem is obvious in view of D1.

D7 discloses examples of how to achieve zonal heating. The solutions disclosed in D7 include a furnace with selectively heated zones isolated from each other, or shielding part of the blank from the thermal radiation in the furnace (page 90, first paragraph of the right-hand column).

When turning to D1, the skilled person immediately recognises a further alternative for providing zonal heating.

D1 relates to a method for manufacturing a workpiece made of metal by means of hot forming (hot pressing), in which a blank or a semi-finished product is formed in a forming tool under pressure and heated by irradiation before and/or during the forming process. D1 addresses the fact that metallic materials have high reflectivity and low absorption rates for thermal and infrared radiation (paragraphs [0001] and [0002]), with the aim of enabling the desired forming temperatures to be set quickly and flexibly in a simple and functionally appropriate manner (paragraph [0003]).

D1 discloses in paragraph [0005] that the possibility of coating only certain areas of the blank with black colours (paragraph [0006]) prior to irradiation with infrared sources is of particular importance. Consequently, as explained in paragraph [0004], the reflectivity is reduced only in the coated zones, so

that accelerated heating takes place in these areas during subsequent irradiation, while the uncoated areas are heated in the conventional manner. Accordingly, the zonal coating allows achieving, within certain limits, an inhomogeneous temperature profile adapted to the forming process, without the need for locally limited or targeted irradiation. Instead, the blank coated in zones may be irradiated uniformly by a substantially spatially homogeneous temperature field. This method is taught to provide higher precision with less effort than a targeted, locally limited irradiation.

A skilled person would immediately recognise that this approach to achieve zonal heating is a well-suited alternative to the examples disclosed in D7 for USIBOR 1500 P which also result in a targeted, locally limited irradiation (D7, page 90, first paragraph of the right-hand column).

It would thus be straightforward for the skilled person to implement the solution disclosed in D1 as an alternative to the examples disclosed in D7 to enable zonal heating of a steel sheet.

Even if the objective technical problem was seen in providing a more effective and less complex measure for zonal heating, the proposed solution would have been obvious, considering that D1 (paragraph [0004]) teaches the benefit of higher precision with less effort compared to a targeted, locally limited irradiation.

This conclusion does not involve hindsight, in contrast to the patent proprietor's view. This is outlined in detail below (see point 2.6).

It was disputed whether the combination of D7 with D1

led to the claimed steel sheet having a reflectance of 40% or less.

The patent proprietor argued that neither D7 nor D1 disclosed that the reflectance-reduced surface had a reflectance of 40% or less. A "*black*" coating did not necessarily imply a reflectance of 40% or less.
It absorbed a lot of visible light but not all of it. The reason it was perceived as black was that the human eye did not receive enough light to perceive a colour. By way of an illustrative example, a painted surface would still be considered black if it reflected only light with a wavelength of 690 to 700 nm and did not reflect at any other wavelength. This was because natural light did not contain enough intensity in this range for the reflected light to cause the surface to be perceived as red.

According to the opponent, D1 taught that to create different temperature zones in a heating stage, the reflectance of specific areas could be changed, dark or black paints being taught for this purpose. The opponent took the view that the reflectance value could not be reliably measured in the absence of a measuring method. Moreover, a value of 40% or less was inevitably obtained when providing a black coating as disclosed in D1. In line with this, for black coatings, Table 1 of the patent in suit disclosed values of only about 10% reflectance (Examples 1 and 4 to 7).
At the oral proceedings, the opponent further argued that even if the reflectance of 40% or less was not considered implicitly disclosed in D1, it was immediately apparent for the skilled person in view of the purpose of D1 to consider such a reflectance. They also referred to Example 3 of the patent in suit, which showed that a hot-dip galvanised steel sheet, treated

with shot blasting (Ra = 0.8 µm), fulfilled the requirements of the reflective-reduced surface of claim 1. The opponent also referred to paragraph [0018] of the patent in suit, according to which black*ish* colours may also be used.
The opponent further argued that no evidence was provided that a surface existed with the properties of the illustrative example. D1 related to black surfaces providing the same effect as the patent in suit.

The patent proprietor's argument cannot be accepted.

D1 does not explicitly mention a reflectance of 40% or less in the coated (reflectance-reduced) zones. However, a reflectance of 40% is not particularly low, considering that it still implies that a substantial proportion of the incident light is reflected. This interpretation is consistent with paragraph [0018] of the patent in suit, according to which a reflectance of 40% or less is to be understood as including black*ish* surfaces. This is further confirmed by Sample 3 of Example 1 of the patent in suit, according to which the surface of a shot-blast hot-dip galvanised steel (Ra = 0.8 µm) has the required reflectance. Such a surface can, at most, be considered dark grey, but not black.

The coating in D1 has the same function as in the patent in suit, namely, to absorb infrared radiation (D1, paragraph [0002]; patent in suit, paragraph [0053]).

The skilled person knows that a lower reflectance means higher heat absorption, i.e. faster heating of the treated zone, and a greater temperature difference compared with the untreated zone. Assuming that the

unambitious reduction of the reflectance to 40% or less is not already implicit for black or dark infrared-absorbing coatings, the skilled person would thus in any case, without exercising any inventive skill, adopt such a reflectance since it directly and predictably serves the objective of D1 to generate temperature differences in the steel sheet. The question of whether the reflectance value provides a clear delimitation can therefore be left open.

The illustrative example outlined by the patent proprietor is based on purely theoretical considerations. No surface was presented showing such properties.
Moreover, this argument does not call into question the skilled person's obvious choice to provide a highly infrared-absorbing coating in line with the teaching of D1. Since achieving a reflectance of 40% or less cannot be regarded as ambitious, the skilled person would, in any event, consider using a coating providing this property.

2.6 The patent proprietor provided several arguments which in their view showed that the combination of D7 and D1 was a hindsight consideration.

- They argued that D7 and D1 related to incompatible technologies because D1 concerned aluminium, whereas D7 related to ultra-high-strength Al-Si-coated steel sheets of USIBOR 1500 P. On that basis, the patent proprietor maintained that the skilled person would not combine these documents. They further argued that an aluminium sheet exhibited higher reflectance compared with steel sheets.
  The patent proprietor also argued that the temperatures disclosed in D1 and D7 did not match

since D1 referred to temperatures of around 600 °C, whereas austenitisation of USIBOR 1500 P required temperatures of approximately 900 °C.
Although the patent proprietor acknowledged that USIBOR 1500 P had an Al-Si coating, they argued that this coating formed an alloy with the base material, such that the reflectance of the surface would not be comparable with that of an aluminium sheet.
The opponent pointed out that since D1 disclosed a method for metals in general, it at least also covered steel because both aluminium and steel could be shaped by press forming.

However, while aluminium and USIBOR 1500 P of course differ in their reflectance and more generally in their mechanical and physical properties, it is not convincing that the skilled person would be discouraged from combining the teaching of D7 with that of D1 on account of these differences of these materials.

As indicated, D1 teaches that a high reflectance of a metal surface impedes heat absorption and that reducing the reflectance of a surface region, for instance by applying a black coating, increases the heat absorption of that region (paragraphs [0001] and [0004]). This is a general relationship independent of the other physical or mechanical properties of the chosen metal. In line with this, while the teaching of D1 is exemplified using aluminium blanks, this choice being explained by the particularly high reflectance of aluminium compared with other metals, it explicitly states that the same issue arises for metals in general (D1, paragraphs [0001] and [0002]). There is thus no reason why this teaching would not equally apply to steel blanks.

The skilled person is also aware of the fact that the heat treatment of different metals requires different temperature levels.
Consequently, it is not decisive whether the Al-Si coating on a USIBOR 1500 P blank presents itself as an aluminium-like or steel-like surface prior to heat treatment, both having a high reflectance, nor how this evolves in the course of the heat treatment due to possible alloying.

- The patent proprietor further argued that D7 did not disclose regions with reduced reflectance.

  However, this fact is part of the distinguishing feature acknowledged in the assessment under Article 56 EPC and does not support an allegation of hindsight.

- According to the patent proprietor, D7 provided a number of solutions, which the skilled person recognised as exhaustive. The skilled person at best sought an optimisation of these solutions.

  This argument of the patent proprietor cannot be accepted either.

  The wording *"This solution can for example be realized"* in D7, page 90, is clear in that the list of examples is not exhaustive, *"This solution"* referring to a solution for zonal heating.

- The patent proprietor argued that a number of choices had to be made within D1 when combining D7 with D1 to arrive at the embodiment of claim 1 of the patent in suit. D1 also disclosed the possibility of coating the entire blank and of reducing the absorbance in regions

where lower heating was required, instead of increasing it in regions where higher heating was required.
The opponent argued that for metals with reflecting surfaces, treatment with a reflectance-reducing paint was preferred.

The patent proprietor's argument here is likewise not convincing.

Zonal heating is already the starting point in D7. Therefore, no selection within D1 is required.

Indeed, paragraph [0011] of D1 discloses that where a workpiece is made of a material which inherently exhibits low reflection (i.e. high absorption), it may alternatively be treated to increase reflection. However, this is not the base case of D1. D1 addresses the issue that metallic materials, aluminium in particular, have a high degree of reflectivity and a low degree of absorption of thermal and infrared radiation (D1, paragraph [0002]). Applying a low reflectance coating is preferred (paragraphs [0004]). This means that for workpieces already exhibiting high reflectance and correspondingly low absorption, a further increase in reflectance is not a meaningful option. The skilled person would have no reason to ignore this base case of D1 when dealing with USIBOR 1500 P of D7, an aluminium-coated steel sheet.

- The patent proprietor argued at the oral proceedings that paint suitable for aluminium at 600 °C would not be suitable for steel sheets such as USIBOR 1500 P at 900 °C. The paints according to the examples in the patent in suit had been carefully selected to provide the required reflectance and integrity for steel

processing at about 900 °C. This selection was not trivial.
The opponent argued that no related requirement was found in claim 1. The invention could not rely on the selection of a specific paint.

The patent proprietor's argument cannot succeed.

Claim 1 of the patent in suit does not specify any particular method for achieving the reduction in reflectance and, in particular, does not require a specific paint or paint type, nor any specific temperature stability of the paint.
The description of the patent in suit contains no indication that the paints used were the result of a careful or non-routine selection. As the opponent pointed out at the oral proceedings, paragraph [0018] merely refers to organic or inorganic blacking. This is as general as the reference to black or dark paints in D1.
The skilled person carrying out the teaching of D1 is aware that paints must be used which are suitable for the requirements of the intended heat treatment of the metal blank. This applies to both aluminium blanks and other metal blanks, such as the USIBOR 1500 P of D7. There is no indication that this would involve any particular difficulty. In any case, the fact that D1 does not address the stability of paints at 900 °C would not have discouraged the skilled person from applying a black paint to a USIBOR 1500 P blank in the expectation of achieving some benefit for the zonal heating. To arrive at subject-matter within the scope of the claim, it is not even necessary that a paint be identified which is heat stable up to 900 °C, this not being a requirement of the claim, as indicated.

- The patent proprietor argued that all alternatives in D7 related to alternative manufacturing methods, while the patent in suit related to a specific starting material. Therefore, the skilled person would consider only alternative manufacturing methods and not a completely different type of solution as proposed in D1.

  The patent proprietor's argument here cannot succeed either.

  As outlined above, the non-exhaustive list in the first paragraph of the right-hand column of page 90 of D7 refers to examples of how zonal heating may be achieved. It does not limit the teaching to these examples or to equipment modifications. The reason the skilled person would be guided towards another type of solution is the teaching of D1. D1 teaches that the modification of the metal blank is available as an alternative to a targeted local irradiation (paragraph [0004]), i.e. to equipment modification.

- The patent proprietor also argued that D7 required partial heating and partial cooling, whereas D1 did not mention partial cooling, which the opponent denied.

  Indeed, D7 does not require partial cooling. Quenching, and thus cooling, of the entire blank is carried out in the press-forming die. In so far as D7 mentions partial quenching in the dies, this only relates to a different embodiment (page 90, second paragraph of the right-hand column).

- The patent proprietor referred to D19, which is an attempt to reproduce the disclosure of D10. It argued

that despite providing a blackened surface by zinc phosphate, the reflectance requirement was not met.

D19 discloses the application of a zinc phosphate layer (samples 1a to 3a), in line with D10 (paragraph [0037]).

The relevance of D19 in relation to D1 was raised by the patent proprietor for the first time in the oral proceedings before the board.

Irrespective of whether this new argument is admitted, it is not convincing.

Neither did D1 mention zinc phosphate as a suitable embodiment of a black coating, nor did D19 describe the zinc phosphate layer as black. In fact, the patent proprietor themselves had argued that D10 did not require a dark coating, and that this was illustrated in D19 (submission of 16 November 2023, page 6, lines 1 to 8).

- Finally, the patent proprietor argued that D7 did not specify the heat source.
The opponent argued that D7 disclosed a furnace and explicitly mentioned thermal radiation.

It is correct that at least two heating devices disclosed in the examples of D7 involve thermal radiation heating. These are also mentioned as suitable radiant heat transfer heating apparatuses in paragraph [0027] of the patent in suit.
In any case, the heating method and the coating system for achieving zonal heating are technically interrelated. D1 discloses the use of infrared heating (paragraphs [0002] and [0004]). When implementing the

teaching of D1, the skilled person would therefore use this heating method.

As apparent from the above, D7 and D1 are not incompatible, nor is this combination based on hindsight.

In conclusion, the subject-matter of claim 1 lacks an inventive step.

3. Auxiliary request 1 - clarity (Article 84 EPC)

Claim 1 of auxiliary request 1 is based on claim 1 of the main request with the additional feature near-infrared ray, which originates from the description and is thus open to an assessment under Article 84 EPC (G 3/14).

As a relative term, the feature does not fulfil the requirements of Article 84 EPC.

This is also evident from documents D20 and D21, referred to by the patent proprietor, which give ranges of 780 to 2500 nm and 750 to 2500 nm, respectively. The patent in suit moreover indicates the range of 700 to 2500 nm (paragraph [0014]).

4. Auxiliary request 2 - inventive step (Article 56 EPC)

Claim 1 of auxiliary request 2 is based on claim 1 of the main request, with the additional feature "*which is a near-infrared ray with a wavelength of 0.7 to 2.5 µm*" , which originates from the description.

The opponent maintained that the reflectance was an unclear feature and moreover challenged that the feature in claim 1 which required that the reflectance-reduced region had a reflectance of 40% or less related to the radiant ray with a wavelength of 0.7 to 2.5 µm.

Even when assuming in the patent proprietor's favour that the claim must be interpreted in this way, i.e. that the reflectance value related to a wavelength within the specified range, and notwithstanding whether the reflectance may be reliably measured, claim 1 lacks an inventive step.

The amendment was an attempt to re-establish a valid priority claim to address an objection under Articles 54(1) and (2) and 56 EPC based on D10, which is an intermediate document.

The patent proprietor did not explain why the added feature, i.e. the claimed infrared wavelength range, involved an inventive step. At the oral proceedings, the patent proprietor argued that neither D7 nor D1 disclosed a coating for absorbing infrared radiation in this wavelength range and that the opponent had not provided evidence that a black paint necessarily exhibited a reflectance of 40% or less within the claimed wavelength range.

This is not convincing.

The patent proprietor did not rely on any specific technical effect, nor did it formulate a corresponding technical problem.

Reference is therefore made to the considerations set out for the main request.

Consequently, as in the case of the main request, the objective technical problem is the provision of an alternative measure that enables zonal heating of a steel sheet.

D1 discloses using infrared heating for the zonal heating method disclosed (paragraphs [0002] and [0004]). As discussed under the main request, obtaining a reflection of 40% or less with dark paints cannot be regarded as an ambitious measure. This concerns in particular the wavelength range overlapping with or close to the end of the visible range (about 700 nm), considering that black paints do not only appear black but have the function of absorbing the thermal, i.e. infrared, radiation.

The application of a dark or black paint which reduces the reflectivity of a radiant infrared ray with a wavelength of 700 to 2500 nm, a particular infrared range, to 40% or less is therefore immediately apparent to the skilled person in view of D1.
The subject-matter of claim 1 of auxiliary request 2 lacks an inventive step for the same reasons as the main request.

5. Auxiliary request 3 - inventive step (Article 56 EPC)

Claim 1 of auxiliary request 3 is based on claim 1 of the main request, with the additional specification that "*only*" part of the steel surface was treated.

This feature is disclosed in D1 and rendered obvious by the combination of D7 with D1, as outlined for the main request.

The subject-matter of claim 1 of auxiliary request 3 lacks an inventive step for the same reasons as the main request.

6. Auxiliary request 4 - clarity (Article 84 EPC)

Claim 1 of auxiliary request 4 is based on claim 1 of the main request, with the generic reference to the description of the measurement method of the reflectance.

The amendment aims to address an objection of lack of novelty or inventive step in view of, inter alia, D2, as well as the objection of lack of clarity.

As the reference to the description was not contained in the granted claims, it is subject to an assessment under Article 84 EPC.

A reference to the description raises the question of whether it is allowable under Article 84 EPC. The patent proprietor took the view that a reference to the description was justified in this case to avoid the claim becoming overly long.

A reference to the description may be acceptable where such a reference is necessary, e.g. because otherwise the claim would lack clarity and conciseness.

According to the patent proprietor, the general reference should - and would - be understood as referring to paragraph [0017] of the patent in suit. The method defined there was clear and could be applied to any wavelength.

The opponent noted that the wavelength of the light to be measured was not defined in paragraph [0017].

The patent proprietor's argument is not convincing.

Even assuming that the reference would indeed be understood as referring to paragraph [0017], it is not apparent that the method is described in a complete enough manner that a reliable result can be achieved. From paragraph [0017], it is not clear whether the measurement method applies to a specific wavelength and if so to which. It is merely stated in paragraph [0017] that "*the reflectance corresponding to a wavelength of the obtained total reflection spectrum was defined as the reflectance in the present invention*". This does not identify any specific wavelength. Even if it is applied to any wavelength, as suggested by the patent proprietor, it remains unknown whether the reflection of each of the measured wavelengths is considered individually and if in that case all or only one of the measured reflections must be within the claimed range or if there is some weighted average across all the measured wavelengths.

It is also not clear why the baseline correction starts at 300 nm, which lies in the UV range, but ends at 2400 nm, which lies in the near-infrared range of 700 to 2500 nm disclosed in paragraph [0014] of the patent in suit.
At the oral proceedings, the patent proprietor stated that calibration is done only up to 2400 nm. However, the measurement method to be applied in the range of 2400 to 2500 nm is not clear. It is therefore also unclear whether this implies a limitation of the wavelength range for the claimed reflectance.

Therefore, claim 1 of auxiliary request 4 lacks clarity (Article 84 EPC).

7. Auxiliary requests 5 to 11

7.1 Claim 1 of auxiliary requests 5, 7, 8, 10 and 11 contains the amendments made in auxiliary request 4, while claim 1 of auxiliary requests 6, 7 and 8 (additionally) contains amendments made in auxiliary request 1, those amendments introducing a lack of clarity.

These requests therefore lack clarity (Article 84 EPC) for the same reasons, the further amendments made in them not overcoming that deficiency.

7.2 Claim 1 of auxiliary request 9 combines the amendments of claim 1 of auxiliary requests 2 and 3.

The patent proprietor repeated arguments relating to the infrared wavelength, which had been, however, considered in the assessment of auxiliary request 2.

This claim therefore lacks an inventive step starting from D7 in view of D1 for the same reasons as claim 1 of auxiliary request 2.

8. Auxiliary requests 12 to 23

According to the letter dated 26 July 2023, auxiliary requests 12 to 23 correspond to the main request and auxiliary requests 1 to 11, from which claims 4 and 5 have been deleted.

The conclusions for claim 1 of the main request and auxiliary requests 1 to 11 therefore apply accordingly.

9. Admission of auxiliary requests 24 to 167

Auxiliary requests 24 to 95, filed on 19 September 2024, and auxiliary requests 96 to 167, filed on 18 December 2025, aim to overcome the objections under Article 123(2) EPC. They were filed after the communication under Article 15(1) RPBA, dated 13 June 2024.

9.1 The opponent raised an objection under Article 13(2) RPBA against these auxiliary requests filed for the first time during appeal proceedings.

9.2 The objections under Article 123(2) EPC, which these requests intend to address, had been raised before the opposition division. Since the opposition division did not accept these objections, the opponent pursued them on appeal.

The amendments made in auxiliary requests 24 to 167 do not address the objections of lack of novelty or inventive step but only the objections under Article 123(2) EPC. No substantiation was provided during the written proceedings as to how these requests could be relevant to Article 56 EPC.
With regard to auxiliary request 24, some substantiation concerning Article 56 EPC was provided during the oral proceedings (see below).

The board sees no exceptional circumstances, nor has the proprietor alleged any, which justified taking auxiliary request 25 to 167 into account at this stage

of the proceedings (Article 13(2) RPBA), in particular for overcoming an objection under Article 56 EPC.

9.3 The same applies to auxiliary request 24, for which the patent proprietor submitted further arguments during the oral proceedings before the board on 25 February 2026. They justified the late filing by reference to the board's intention to overturn the decision of the opposition division.

Furthermore, the patent proprietor explained that the features of granted claim 2 were included in claim 1 of auxiliary request 24. Claim 1 therefore required a plated steel plate, whereas D7 related to a coated steel plate such as produced by hot-dip galvanising. Since coating and plating were different methods, it distinguished the claimed subject-matter from D7.

This is not convincing.

First, the opponent has maintained the objection under Article 56 EPC starting from D7 in combination with D1 since the filing of the notice of opposition.

There are no exceptional circumstances that justified admitting this request at this late stage of the appeal proceedings to overcome an objection under Article 56 EPC.

Moreover, as discussed during the oral proceedings, on a *prima facie* basis, the amendment is unsuitable for overcoming the objection. The known Al-Si-coated steel of D7 represents a "*plated*" steel. This is consistent with paragraph [0013] of the patent in suit, which discloses that plated steel sheets include steel sheets having undergone, inter alia, hot-dip galvanising or

hot-dip aluminium plating.

The alleged difference is therefore not supported by the description (G 1/24).

Besides there being no exceptional circumstances, the amendment is in any event not suitable for overcoming the objection of lack of inventive step. Auxiliary request 24 is thus not taken into account (Article 13(2) RPBA).

10. Admission of auxiliary request 2a

Auxiliary request 2a was filed during the oral proceedings on 25 February 2026.

It must therefore be assessed under Article 13(2) RPBA.

The patent proprietor justified the late filing by referring to the board's opinion on auxiliary request 2, which differed from the opposition division's decision.
They explained that claim 1 contained the amendments made in auxiliary request 2 and moreover reduced the range for the reflectivity of the surface-treated regions from 40% or less to 25% or less. That value originated from paragraph [0020] of the description as filed (corresponding to paragraph [0017] of the patent in suit).

In the opponent's view, the amendment should have been filed earlier and gave rise to new objections under Article 123(2) EPC because the wavelength range of 700 to 2500 nm was not originally disclosed in combination with a reflectivity of 25% or less.

Amendments under Article 13(2) RPBA are, in principle, not taken into account unless the party demonstrates exceptional circumstances. The patent proprietor's justification already fails because the opponent has maintained the objection under Article 56 EPC starting from D7 in combination with D1 since the filing of the notice of opposition. The patent proprietor should have anticipated that the board might disagree with the opposition division and accept the opponent's arguments.

An opinion by the board that diverges from the decision under appeal is an inherent part of the judicial review process and does not constitute a surprising change in the factual framework or an exceptional circumstance. Therefore, the patent proprietor should have filed this fall-back request with their reply to the opponent's statement of grounds of appeal, making the current filing unjustifiably late.

Auxiliary request 2a is therefore not taken into account.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairwoman:

A. Chavinier-Tomsic S. Besselmann

Decision electronically authenticated