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Datasheet for the decision of 13 March 2026

Case Number: T 0257/24 - 3.4.02

Application Number: 16775718.6

Publication Number: 3360238

IPC: H02K11/40, H02P31/00, H02P29/00

Language of the proceedings: EN

Title of invention:
Electrical machine with resonant circuit in shaft grounding

Applicant:
ABB Schweiz AG

Relevant legal provisions:
EPC Art. 123(2), 84
EPC R. 139

Keyword:
Amendments - extension beyond the content of the application as filed - main request and auxiliary requests 3, 4, 6, 7, 9, 10 and 12 to 14 (yes)
Correction of error - immediately evident that nothing else could have been intended - auxiliary requests 4, 7 and 10 (no)
Claims - support in the description - auxiliary requests 2, 5, 8, 11 and 15 (no)

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Case Number: T 0257/24 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 13 March 2026

Appellant: (Applicant)	ABB Schweiz AG Brown Boveri Strasse 6 5400 Baden (CH)
Representative:	Kransell & Wennborg KB P.O. Box 27834 115 93 Stockholm (SE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 25 September 2023 refusing European patent application No. 16775718.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Flyng
Members:	H. Bronold
	B. Müller

Summary of Facts and Submissions

I. The appeal lies from the decision of the examining division refusing European patent application No. 16 775 718.6.

II. The appellant (patent applicant) requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request as considered in the contested decision, or one of the auxiliary requests **1 to 10** as considered in the contested decision, or one of the auxiliary requests **11 and 12**, comprising the claims thereof filed with the letter dated 1 October 2025 and the description and drawing sheets as published, or one of the auxiliary requests **13 and 14**, comprising the description, claims and drawing sheet 2/2 thereof filed with the letter dated 1 October 2025 and drawing sheet 1/2 as published, or auxiliary request **15** submitted with the letter dated 1 October 2025 and comprising the application as published.

III. Claim 1 according to the main request corresponds to claim 1 as published (see WO 2017/060218 A1) and reads as follows:

"A method for preventing at least one frequency component of a voltage from occurring in an electrical machine (10), the method comprising the steps of:
- obtaining, either by measuring a voltage signal or a current signal from the electrical machine (10) in time domain and transforming the measured signal into frequency domain, by simulating the electrical machine (10), or by deducing from operation settings of an

inverter (20), a first frequency component present in the electrical machine (10) in absence of a grounding (180, 230, 250), the first frequency component representing a first undesired frequency higher than a limit frequency of 500 Hz; and
- providing the electrical machine (10) with a first grounding (180) at a grounding location (260), the first grounding (180) comprising a resonant circuit (190, 240) resonating at the first undesired frequency."

The main request was filed with a letter dated 11 August 2021. It includes an added figure 4 which is based figure 3 as originally filed, but in which the parallel inductor/capacitor (LC) resonant circuit is modified to a series LC resonant circuit. The main request further includes amended pages 12 to 14 of the description in which, additionally, new figure 4 is described in a manner identical to originally filed figure 3, albeit replacing parallel LC resonant circuit with series LC resonant circuit.

IV. Claim 1 according to auxiliary requests 1 and 15 is identical to claim 1 according to the main request (i.e. as published).

Auxiliary request 1 was filed during the oral proceedings before the examining division. Compared to the application as published, it includes a modified figure 3 in which the parallel LC resonant circuits 190, 240 of original figure 3 are modified to series LC resonant circuits. It also includes an amended page 10, in which in line 23 "parallel" is modified to "series".

The description and figures of auxiliary request 15 are as published.

V. In claim 1 according to auxiliary requests 2 to 4, the feature "[the electrical machine] is provided with at least one conventional grounding (250) at a grounding location (260)" was added to the first paragraph and in the last paragraph of claim 1 "a" was changed to "the" before "grounding location".

Auxiliary request 2 contains the description and drawings as published. Auxiliary request 3 contains the description and drawings as filed for the main request and auxiliary request 4 contains the description and drawings as filed for auxiliary request 1.

VI. In claim 1 according to auxiliary requests 5 to 7, the feature "[the electrical machine] is provided with at least one conventional grounding (250) connected via a brush (150) to a grounding location (260) at a shaft (65) of the electrical machine (10)" was added to the first paragraph and in the last paragraph of claim 1 "a" was changed to "the" before "grounding location".

Auxiliary request 5 contains the description and drawings as published. Auxiliary request 6 contains the description and drawings as filed for the main request and auxiliary request 7 contains the description and drawings as filed for auxiliary request 1.

VII. In claim 1 according to auxiliary requests 8 to 10, "during operation of the electrical machine (10), " was added after "obtaining" and "either" and "by simulating the electrical machine (10), or by deducing from operation settings of an inverter (20)," was deleted from the same paragraph.

Auxiliary request 8 contains the description and drawings as published. Auxiliary request 9 contains the description and drawings as filed for the main request and auxiliary request 10 contains the description and drawings as filed for auxiliary request 1.

VIII. Claim 1 according to auxiliary requests 11 and 13 is based on claim 1 according to auxiliary request 5 wherein "in order to reach low impedance at the first undesired frequency" was added at the end.

The description and drawings of auxiliary request 11 are as published. The description and drawings of auxiliary request 13 are those filed for the main request.

IX. Claim 1 according to auxiliary requests 12 and 14 is based on claim 1 according to auxiliary request 5 wherein "the resonant circuit comprises a capacitor (200) and an inductor (210) arranged in series" was added at the end.

The description and drawings of auxiliary request 12 are as published. The description and drawings of auxiliary request 14 are those filed for the main request.

X. In so far as relevant for the present decision, the appellant's arguments may be summarised as follows. The appellant submitted, in essence, that the passage on page 13, lines 6 to 11 of the application as filed disclosed that the resonant circuit shown in figure 3 could, as an alternative, comprise a capacitor and an inductor arranged in series instead of in parallel. The appellant argued that a skilled person would recognise from the intended grounding function that low impedance

at the undesired frequency was required and that, accordingly, the use of a parallel LC circuit in figure 3 was an evident mistake. On that basis, the appellant relied, depending on the request, either on an added figure 4 and corresponding description passages or on an amended figure 3 and a correction of the term "parallel" into "series" in its description. The appellant further argued that the broadly claimed term "resonant circuit" was clear and supported by the description because, in the claimed context, the skilled person would understand it as covering any resonant circuits suitable for achieving low impedance at resonance, and because the description and drawings had to be consulted when assessing patentability.

XI. In its communication pursuant to Article 15(1) RPBA, the Board indicated *inter alia* that amendments introducing an embodiment with a series-connected capacitor and inductor appeared to extend beyond the content of the application as filed, that a correction of "parallel" to "series" did not appear allowable under Rule 139 EPC, and that claims directed broadly to a "resonant circuit" appeared not to meet the requirements of Article 84 EPC.

XII. Oral proceedings before the Board took place on 13 March 2026 via videoconference.

Reasons for the Decision

Overview

1. The decisive issues for the present decision concern, on the one hand, whether the requests containing a series resonant circuit embodiment comply with Article 123(2) EPC and, where applicable, Rule 139 EPC, and, on the other hand, whether the requests relying on the broad definition of a "resonant circuit" comply with Article 84 EPC.

Main request; auxiliary requests 1, 3, 4, 6, 7, 9, 10 and 12 to 14 – Article 123(2) EPC and Rule 139 EPC

2. The main request and auxiliary requests 3, 6, 9, 12, 13 and 14 contain amendments introducing a detailed embodiment in which the resonant circuit comprises a capacitor and an inductor connected in series, in particular either by adding a further figure 4 and corresponding description text or, as for auxiliary request 12, by amending the claims to include subject-matter corresponding to such an embodiment. Auxiliary requests 1, 4, 7 and 10 pursue the same technical content by amending figure 3 such that the capacitor and inductor are connected in series. In the corresponding description passage, the term "parallel" is replaced with "series".

3. The Board is not persuaded by the appellant’s argument that page 13, lines 6 to 11 of the application as filed directly and unambiguously discloses, as an alternative to the embodiment of figure 3, a complete embodiment in

which the resonant circuit comprises a capacitor and an inductor connected in series. That passage does not refer expressly to figure 3. Nor can it be derived from the mere presence of reference numerals 190 and 240 in that passage that everything disclosed in relation to figure 3 may be transposed into a new embodiment in which the topology of the resonant circuit is replaced. The passage is formulated at a general level and presents possibilities in the wording "does not necessarily need to comprise … but it may also comprise … or a combination …". In that context, it does not amount to a direct and unambiguous disclosure of the specific detailed embodiments subsequently introduced by the appellant.

4. The appellant's contextual argument based on the word "also" and on the two preceding sentences of page 13 is likewise not convincing. Even if those passages convey that the invention is not limited to one particular type of electrical machine or one particular grounding location, this does not establish that the application as filed discloses directly and unambiguously a concrete replacement of the parallel LC circuit shown in figure 3 by a series LC circuit, while preserving the remainder of the detailed embodiment. The cited passage still leaves open a number of possibilities and selections which are specified with respect to figure 3 and therefore cannot serve as a basis for the particularised series-circuit embodiments added later.

5. Furthermore, the overall disclosure of the application as filed is not such that the skilled person would derive an embodiment in which the resonant circuit comprises a capacitor and an inductor connected in series as part of the original disclosure. The application consistently describes and depicts the

detailed resonant-circuit embodiment with a capacitor and an inductor arranged in parallel. Figure 3 shows such a parallel arrangement, and the corresponding description passage on page 10 expressly states that the first resonant circuit comprises a capacitor and an inductor arranged in parallel. The subsequent general statement on page 13 does not alter the fact that the only concrete embodiment originally described in detail is the parallel one.

6. The appellant's submissions based on the alleged technical implausibility of a parallel LC circuit and on the skilled person's understanding of grounding involving a low impedance when resonating at the undesired frequency do not change that conclusion. For the assessment under Article 123(2) EPC, the decisive question is not which embodiment the skilled person might consider preferable or technically more suitable, but what the skilled person would derive directly and unambiguously from the application as filed. Even if the skilled person were to identify an internal tension between the "low impedance" reached when resonating and the "parallel" LC arrangement in the original disclosure at page 10, lines 17 to 26, that would not provide a basis for importing into the application a specific series-LC embodiment unless that embodiment were itself clearly and unambiguously disclosed.

7. The Board also does not agree with the appellant that the original application contains an evident error in figure 3 and page 10 whose correction necessarily yields a resonant circuit comprising a capacitor and an inductor connected in series. On the contrary, the original disclosure leaves open at least two different ways of resolving the internal inconsistency alleged by the appellant: either the statement concerning "low

impedance" is inaccurate, or the indication "parallel" is inaccurate. The original application itself does not make it immediately evident that nothing else would have been intended than a series connection, as required by Rule 139, second sentence, EPC. The possibility that the error lies in the statement "low impedance" is, in the Board's view, at least equally plausible. A correction of "parallel" to "series" is therefore not allowable under Rule 139 EPC.

8. The appellant's reliance on common general knowledge and on its analysis of the impedance behaviour of series and parallel LC circuits cannot remedy that deficiency. Such considerations may explain why the appellant prefers one technical reading over another, but they do not satisfy the aforementioned strict requirement of Rule 139 EPC.

9. It follows that the new figure 4 and description passages of the main request and of auxiliary requests 3, 6, 9, 13 and 14, as well as the claims of auxiliary request 12, insofar as they introduce a concrete series-LC embodiment, add subject-matter extending beyond the content of the application as filed. The same applies, *mutatis mutandis*, to auxiliary requests 1, 4, 7 and 10, because the attempted replacement of "parallel" with "series" is not an allowable correction under Rule 139 EPC and, absent such a correction, introduces technical information not directly and unambiguously derivable from the application as filed.

10. The appellant argued that, in auxiliary requests 13 and 14, figure 3 was expressly indicated as not being covered by the claims and that the claims were aligned with figure 4. However, excluding the original parallel embodiment from the claimed subject-matter does not

create a basis for the newly introduced series embodiment. The decisive deficiency remains that the application as filed does not directly and unambiguously disclose that detailed series-LC embodiment. Auxiliary requests 13 and 14 therefore do not overcome the objection under Article 123(2) EPC either.

11. Consequently, the Board has arrived at the conclusion that the main request and auxiliary requests 1, 3, 4, 6, 7, 9, 10 and 12 to 14 contravene Article 123(2) EPC. In the context of auxiliary requests 1, 4, 7 and 10, the requested correction of "parallel" into "series" is additionally not allowable under Rule 139 EPC.

Auxiliary requests 2, 5, 8, 11 and 15 – Article 84 EPC

12. Auxiliary requests 2, 5 and 8 retain, in the independent claims, the feature that the first grounding comprises a "resonant circuit ... resonating at the first undesired frequency". Although these requests contain further limitations concerning the conventional grounding or the manner of obtaining the first frequency component, those amendments do not affect the breadth of the resonant-circuit definition.

13. The Board agrees with the examining division that, in the context of the claimed invention, the broad term "resonant circuit" is not supported by the description and that essential technical features are missing from the independent claims, contrary to Article 84 EPC. The application as filed describes only one detailed embodiment of the resonant circuit, namely a circuit with a capacitor and an inductor arranged in parallel. No further concrete example of a resonant circuit at

the claimed grounding location is disclosed. The claims, however, are not restricted accordingly and cover an unjustifiably broad range of possible resonant circuits. It is therefore not clear from the claim wording which specific circuit realisation is meant to solve the identified technical problem.

14. The appellant submitted that, in the claimed context, the skilled person would understand "resonant circuit" as meaning only a circuit that provides low impedance at resonance, and that non-working embodiments would be disregarded. The Board does not agree with that argument. The claims themselves do not define the resonant circuit by such a functional limitation in auxiliary requests 2, 5 and 8. Nor can an unduly broad claim be rendered compliant with Article 84 EPC merely if the skilled person disregarded certain embodiments as unsuitable. The requirement of support by the description is not met where the claims extend far beyond what the description teaches as a concrete realisation of the invention.

15. The appellant also relied on the need to consult the description and drawings when interpreting the claims. Even if the description and drawings are consulted, they do not cure the objection. On the contrary, they confirm that the application discloses only a specific parallel LC implementation and not the full breadth of the claimed term "resonant circuit". The Board therefore sees no basis for departing from the conclusion that auxiliary requests 2, 5 and 8 do not meet the requirements of Article 84 EPC.

16. Auxiliary request 11 adds to both independent claims the feature that the resonant circuit resonates at the first undesired frequency "in order to reach low

impedance at the first undesired frequency". That amendment does not overcome the clarity objection. The described embodiment on which the request still relies is the parallel LC circuit of figure 3. According to the common general knowledge acknowledged by the appellant, a parallel LC circuit exhibits high, not low, impedance at resonance. Auxiliary request 11 therefore in addition to lack of support in the description also lacks clarity within the meaning of Article 84 EPC.

17. This applies irrespective of whether the claims of auxiliary request 11 are read in the light of the description: consultation of the description only makes the contradiction more apparent.

18. Auxiliary request 15 corresponds to the application documents as published. The objections under Article 123(2) EPC directed to added figure 4 and the amended description are therefore irrelevant for that request. However, the objections under Article 84 EPC remain valid. The published claims still define the grounding merely as comprising a "resonant circuit ... resonating at the first undesired frequency", without specifying the technical features necessary to delimit the claimed solution in a manner supported by the description. Since the description as published discloses only the specific parallel-LC embodiment, auxiliary request 15 likewise lacks support in the description and omits essential features. The appellant’s reference to the unamended state of the description does not alter that conclusion.

Consequently, the Board has arrived at the conclusion that auxiliary requests 2, 5, 8, 11 and 15 do not meet the requirements of Article 84 EPC.

Conclusion

19. Since none of the appellant's requests is allowable, the appeal has no success.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L. Gabor G. Flyng

Decision electronically authenticated