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**Datasheet for the decision
of 30 April 2021**

Case Number: T 0185/16 - 3.2.05

Application Number: 10001532.0

Publication Number: 2357069

IPC: B29C33/02, B29C33/38, B29C35/02

Language of the proceedings: EN

Title of invention:
Mould, apparatus and method for manufacturing a composite part including at least one fibre reinforced matrix

Patent Proprietor:
Siemens Gamesa Renewable Energy A/S

Opponent:
Vestas Wind Systems A/S

Relevant legal provisions:
EPC Art. 83, 101(3)(b)
RPBA 2020 Art. 24(1), 25(3)
RPBA Art. 13

Keyword:

Sufficiency of disclosure (no)

Non-admittance of late-filed auxiliary requests 1, 3, 5, and 7
(prima facie not allowable)

Inadmissibility of auxiliary requests 2, 4, 6 and 8
(reformatio in peius)

Decisions cited:

G 0009/92, T 0718/98, T 0950/16



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Case Number: T 0185/16 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 30 April 2021

Appellant: Vestas Wind Systems A/S
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
30 November 2015 concerning maintenance of the
European Patent No. 2357069 in amended form.**

Composition of the Board:

Chairman P. Lanz
Members: B. Spitzer
T. Karamanli

Summary of Facts and Submissions

- I. The opponent lodged an appeal against the opposition division's interlocutory decision that European patent No. 2 357 069 as amended according to the main request filed on 24 June 2015 met the requirements of the EPC.
- II. During the opposition proceedings, the opponent had raised the grounds for opposition according to Article 100(a) EPC in conjunction with Article 56 EPC (lack of inventive step) as well as according to Article 100(b) EPC.
- III. A summons to oral proceedings was issued on 31 July 2019.
- IV. Following a request for postponement by the appellant, the board's registrar informed the parties in a communication dated 16 November 2020 that the oral proceedings had been cancelled.
- V. A second summons to oral proceedings was issued on 24 November 2020.
- VI. In a communication pursuant to Article 15(1) RPBA 2020 issued on 1 December 2020, the board expressed its preliminary opinion on the case.
- VII. By letters dated 1 February 2017, 2 March 2021 and 19 April 2021, the appellant provided further submissions in support of its case.
- VIII. With its letter dated 18 March 2021, the respondent filed auxiliary requests 1 to 8 and a Wikipedia article entitled "Wärmezähler" and its English machine

translation (document E21/E21a). Further submissions on behalf of the respondent were filed by letter dated 7 April 2021.

IX. Oral proceedings before the board of appeal were held by videoconference on 30 April 2021.

X. *Requests*

The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked. It further requested that the respondent's auxiliary requests 1 to 8 and the Wikipedia article entitled "Wärmezähler" filed by the respondent not be admitted into the appeal proceedings.

The respondent (patent proprietor) requested that the appeal be dismissed and, as an auxiliary measure, that the decision under appeal be set aside and that the patent be maintained as amended according to one of auxiliary requests 1 to 8, all filed by letter dated 18 March 2021.

XI. The documents cited during the appeal proceedings include the following:

E3: "Design of Large-Scale Composite Mould With Inside Circulating Water Heating System", Master thesis by Dai Chunhui, available at <http://www.doc88.com/p-003701851492.html> and <http://www.dissertationtopic.net/doc/796531>;

E3a: Extract from Globethesis.com demonstrating public availability of E3 from Globethesis.com from 17 May 2008;

E3a: Extract from Globethesis.com demonstrating public availability of E3 from Globethesis.com from 17 May 2008;

E3b: English abstract on page ii of E3, English translation of the cover page of E3 and of the text relating to Figures 2.2 and 2.6 of E3;

E3c: Paper copy of E3;

E3d: English (machine) translation of E3c;

E3e: Professional translation of pages 8 (up to Section 1.2.3), 13 (starting at Section 2.1.3), 14, 39, 53 (starting at Table 4.4) and 54 to 59;

E21: Wärmehähler - Wikipedia;

E21a: English machine translation of document E21.

XII. Claim 1 according to the respondent's main request reads as follows:

"Mould (1) for manufacturing a composite part including at least one fibre reinforced matrix, in particular a wind turbine blade, comprising

- at least one thermal insulating core layer (2) disposed between at least one inner laminate layer (3) and at least one outer laminate layer (4) and
- at least one heating and/or cooling means disposed in contact or in close proximity to the inner and/or outer laminate layer (3, 4), whereby
- the heating and/or cooling means comprises at least one pipe (6, 6') for transporting a heating and/or cooling medium, and
- the mould (1) comprises at least one sensor (17, 17') for determining the flow and heating power of the heating and/or cooling medium."

Independent claim 9 according to the respondent's main request reads as follows:

"Apparatus for manufacturing a composite part, especially a wind turbine blade, comprising at least

one mould (1) according to one of the preceding claims connectable or connected with a heating and/or cooling system (11) with control unit (12) for controlling the heating and/or cooling process of the mould (1)."

Independent claim 13 according to the respondent's main request reads as follows:

"Method for manufacturing a composite part, in particular a wind turbine blade, using the apparatus (10) according to one of the claims 9 to 12."

XIII. Compared with the main request, claim 1 of auxiliary request 1 contains the following additional feature:

"whereby the mould is connected to a heating and/or cooling system with a control unit, which is built to receive and process data from the at least one sensor generating control data."

XIV. Compared with the main request, claim 1 of auxiliary request 2 additionally contains the following underlined features:

"- the mould (1) comprises at least one sensor (17, 17') for determining the flow and/or heating power of the heating and/or cooling medium, whereby the mould is connected to a heating and/or cooling system with a control unit, which is built to receive and process data from the at least one sensor generating control data."

XV. Compared with the main request, claim 1 of auxiliary request 3 contains the following additional feature:

"whereby the mould is connected to a heating and/or

cooling system with a control unit, which is built to receive and process data from the at least one sensor generating control data, whereby the control data delivers a signal to the heating means which increase the temperature in the according region."

XVI. Compared with the main request, claim 1 of auxiliary request 4 additionally contains the following underlined features:

"- the mould (1) comprises at least one sensor (17, 17') for determining the flow and/or heating power of the heating and/or cooling medium, whereby the mould is connected to a heating and/or cooling system with a control unit, which is built to receive and process data from the at least one sensor generating control data, whereby the control data delivers a signal to the heating means which increase the temperature in the according region."

XVII. Compared with the main request, claim 1 of auxiliary request 5 contains the following additional feature:

"whereby the mould is connected to a control unit, wherein the control unit (12) is adapted to determine and control the degree of cure of the part at least from the data from the thermal sensor (8)."

XVIII. Compared with the main request, claim 1 of auxiliary request 6 additionally contains the following underlined features:

"- the mould (1) comprises at least one sensor (17, 17') for determining the flow and/or heating power of the heating and/or cooling medium, whereby the mould is connected to a control unit,

wherein the control unit (12) is adapted to determine and control the degree of cure of the part at least from the data from the thermal sensor (8)."

XIX. Compared with the main request, claim 1 of auxiliary request 7 contains the following additional feature:

"wherein the heating and/or cooling means is disposed in at least one recess (5, 5') within the thermal insulating core layer (2) and/or the inner and/or outer laminate layer (3, 4), or is disposed on the top of the thermal insulating core layer (2) or is moulded into the thermal insulating core layer (2) and/or the inner and/or outer the laminate layer (3, 4)."

XX. Compared with the main request, claim 1 of auxiliary request 8 additionally contains the following underlined features:

"- the mould (1) comprises at least one sensor (17, 17') for determining the flow and/or heating power of the heating and/or cooling medium, wherein the heating and/or cooling means is disposed in at least one recess (5, 5') within the thermal insulating core layer (2) and/or the inner and/or outer laminate layer (3, 4), or is disposed on the top of the thermal insulating core layer (2) or is moulded into the thermal insulating core layer (2) and/or the inner and/or outer the laminate layer (3, 4)."

XXI. The appellant essentially argued as follows:

Non-admittance of document E21 (Wikipedia article entitled "Wärmezähler") and its English machine translation E21a

Document E21/E21a should not be admitted into the proceedings. It was not *prima facie* highly relevant as required by the case law (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition, 2019, V.A.4.13.2). It concerned a device comprising multiple sensors and not a (single) sensor. There was no suggestion as to how such a device could be incorporated into a wind turbine blade mould. In addition, this document demonstrated the common general knowledge of a person skilled in the art of building technology, but not of industrial applications such as moulds. The technical field of document E21/E21a was the building sector and was thus remote from and unrelated to the field of wind turbine blades and the design of moulds.

In addition, the public availability of document E21 was contested. As its publication date was only about one month before the priority date of the patent in suit, it was unlikely that it had become common general knowledge within such a short period of time.

Furthermore, it had been filed late and could have already been filed during the opposition proceedings. The respondent could not have been surprised by the objection regarding the sensor for determining the flow and heating power as the lack of evidence on this point had already been addressed in the appellant's letters dated 26 September 2014 (see section 1.4), 19 May 2015

(see sections 1.4 and 1.8) and 1 February 2017 (see section 1.5). The late filing of document E21 constituted an abuse of procedure (see T 718/98 and Case Law of the Boards of Appeal of the European Patent Office, 9th edition, 2019, V.A.4.13.4 b)).

Admitting document E21 would be contrary to procedural economy, as it would increase the complexity of the case by raising more questions than it answered.

Insufficiency of disclosure

The invention was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The feature of claim 1 "the mould (1) comprises at least one sensor (17, 17') for determining the flow and heating power of the heating and/or cooling medium" was not clear.

A "sensor for" had to be interpreted in the sense that the mould comprised at least one sensor which was suitable for determining the flow and heating power of the heating and/or cooling medium. Accordingly, claim 1 was directed to a mould having a known construction with sensors that were merely suitable for determining flow and heating power, even if these sensors were not in fact used for this. It was not clear which type of sensor was considered suitable for determining heating power as specified in claim 1.

The patent in suit failed to disclose a single example of a sensor that would be suitable for determining flow and heating power. It was unclear how the heating power could be measured or determined using at least one sensor, i.e. a single sensor. The respondent asserted that a sensor for determining heating power was well

known and that it was the core of the present invention. The respondent's interpretation that a sensor might consist of multiple sensors and an arithmetic unit was not correct. A camera, given as an example of a multiple sensor by the respondent, was not considered to be a sensor. A sensor, by definition, was a device that measured a physical parameter and that might send the information to other electronic devices, for instance a control unit, for processing. Such a control unit was mentioned in the patent in suit in paragraphs [0026], [0027], [0028], [0032], [0033], [0041], [0042] and [0043]. The person skilled in the art could not derive from the patent in suit that a sensor for determining the flow and heating power of the heating and/or cooling medium included several sensors and a special arithmetic unit for performing calculations as asserted by the respondent. The patent in suit did not suggest the use of a device for determining the flow and heating power either. Furthermore, the respondent's argument that a single temperature sensor or a flow sensor was not suitable for determining heating power, but at least two temperature sensors and one flow sensor were necessary for determining heating power, lacked a basis in the patent in suit. In addition, one temperature sensor and one flow sensor or two temperature sensors might be sufficient for determining heating power if the starting temperature was known or in the case of a constant flow rate.

Furthermore, the heating power was an ambiguous and undefined parameter. The patent failed to disclose a definition or any explanation of the term "heating power" and its units. There was nothing on file to support the respondent's contention that the parameter "heating power", as it related to a heating and/or

cooling medium in a pipe, was so well known that it required no explanation in the patent. Paragraph [0020] stated that the heating power of the heating and/or cooling medium or the heating and/or cooling means itself was determined. The respondent proposed two different techniques for determining heating power. The first technique, which constituted a new argument, was based on a temperature change and the flow of the fluid. In the second concept, heating power was determined using the temperature change between the cold and hot side of the laminate layer and the stored values of area, thickness and thermal conductivity. It was not stated how the heating power of the heating and/or cooling medium was determined via the heat transfer rate. These two different techniques achieved different results. In reality, there were a lot of influences when modelling the heat transfer. The determination of the heating power via the heat transfer rate also lacked a basis in the patent in suit. Furthermore, there was the option with electrical wires wound around the pipes. It was not disclosed how this situation should be considered when determining the heating power.

Document E21, which was provided by the respondent to demonstrate the alleged common general knowledge, was not concerned with moulds for producing wind turbine blades, but was a device for measuring heat energy used in buildings. Document E21 defined the heating power in a way which was contrary to the respondent's arguments in the opposition proceedings. Moreover, a heat meter according to document E21 was not considered to be a sensor. There was nothing in the patent in suit that hinted at using such a device.

Without disclosure of "at least one sensor for determining the flow and heating power of the heating

and/or cooling medium", the person skilled in the art was deprived of the promise of the invention (see T 608/07). As the sensor was the gist of the invention, there should have been at least one example. This was a fundamental requirement in this case. The patent in suit did not contain any details concerning such a sensor. A sensor for determining heating power requiring anything other than just flow and temperature sensors was not explained in the patent in suit.

The decision under appeal (see section 15 of the Reasons; sections 3.16 and 3.27 of the minutes of the first-instance oral proceedings) was based on a theoretical interpretation of the terms "heating power", "determining" and "at least one sensor", without having a basis in the disclosure of the patent in suit. The patent in suit did not differentiate between parameters that were directly measured and those that were determined based upon measured parameters. The person skilled in the art was not taught how to measure the flow and then to derive the heating power. The interpretation that a sensor might also consist of multiple sensors (see section 4.48 of the minutes of the first-instance oral proceedings) was incorrect and had no basis in the patent in suit.

Non-admittance of auxiliary requests 1 to 8

Auxiliary requests 1, 3, 5 and 7 should not be admitted because:

- they had been filed very late; their admittance was subject to Article 13 RPBA 2007;
- they were unsubstantiated;
- they were *prima facie* not allowable.

Auxiliary requests 2, 4, 6 and 8 should not be admitted for the following reasons:

- they had been filed late;
- they introduced subject-matter from the description;
- they were unsubstantiated and the requirements of Article 12(2) RPBA 2007 were not met (see T 1890/09);
- they were *prima facie* not allowable;
- because of the prohibition of *reformatio in peius* (see G 9/92).

In addition, auxiliary requests 6 and 8 were not convergent (see T 1685/07).

XXII. The respondent's submissions may be summarised as follows:

Admittance of document E21 (Wikipedia article entitled "Wärmezähler") and its English machine translation E21a

Document E21/E21a should be admitted into the proceedings as it was *prima facie* relevant. It disclosed a sensor for determining flow and heating power and its implementation. This document had been filed at such a late stage of the proceedings because the implementation of a sensor for determining heating power had been considered clear beforehand. In section 8.4 of the communication of the board of appeal dated 1 December 2020, the board had stated that the question of sufficiency of disclosure primarily depended on how the claimed sensor would be implemented and why its implementation would form part of the common general knowledge of the person skilled in the art. Therefore, it appeared to be in the interests of procedural economy to provide evidence on this point.

Moreover, the submission of document E21/E21a did not raise any issues which could not be dealt with without adjournment of the oral proceedings. On the contrary, it was considered an exceptional circumstance that a common sensor used in industrial applications was not recognised as common general knowledge.

Decision T 718/98 cited by the appellant was not relevant in this case. In T 718/98 the party had introduced new evidence one week prior to the oral proceedings, whereas document E21/E21a had been filed six weeks before the oral proceedings in answer to a specific question from the board.

Sufficiency of disclosure

The feature of claim 1 relating to the at least one sensor for determining the flow and heating power of the heating and/or cooling medium had to be interpreted in the sense that the mould comprised at least one sensor which was suitable for determining the flow and heating power of the heating and/or cooling medium.

Regarding the "at least one sensor for determining the flow and heating power", it was part of common general knowledge that a sensor could be constructed from one or more similar or different sensors, for example a sensor assembly or a platform that was able to measure different physical values at the same time so that a quantity could be derived from the measured values. The person skilled in the art was aware of which physical values were necessary for determining the flow and heating power and, hence, knew that a single sensor constructed from multiple sensors had to be used to measure these physical values. There were simple

sensors, for instance temperature sensors, and more complex sensors such as flow sensors, ultrasound distance sensors or cameras. The latter might consist of several sensors and a processing unit. The best example was a flow sensor based on an ultrasonic time-of-flight measurement in which a time of flight of a short ultrasonic pulse between converters was measured in both directions and the flow velocity was then calculated therefrom. If no kind of processing were part of a sensor, then a flow sensor would not be a sensor.

With respect to the paragraphs cited by the appellant concerning data being sent, these data constituted processed data.

According to the decision under appeal, how to determine the temperature and the flow of a medium was common general knowledge for the person skilled in the art and how to determine the heating power from the required physical values was also common general knowledge (see paragraphs [0020], [0021], [0039] and [0040] in association with Figure 1 of the patent). There was no need to define or clarify the term "heating power" as it was obvious to the person skilled in the art that "*[h]eating power can be obtained for a known fluid in a specific system by measuring the temperature difference between the fluid and the surface it touches, and is thereby linked to the flow of the fluid*" (see decision under appeal, section 15 of the Reasons). Therefore, the heating power could be determined since the respective sensors and the required physical values were available. The opposition division had correctly held that claim 1 complied with the requirements of Article 83 EPC.

There were two ways of implementing "a sensor for determining the flow and heating power of the heating and/or cooling medium". One way was by calculating the heat loss with a temperature difference and a flow rate of the heating and/or cooling medium. This constituted basic physics. Since this heat loss was substantially equivalent to the heat transferred to the mould, another way of determining the heating power was via the heat transfer. The thickness of the mould and the heat-transfer coefficient were known and the temperature difference between the inner and outer wall had to be determined. It was sufficient that the patent taught the person skilled in the art to have at least one sensor to determine the heating power.

The question of whether the flow and temperature sensors shown in Figure 4.2 of document E3 could be considered to be a sensor for determining the flow and heating power was to be answered in the negative. The sensor itself had to determine the heating power. In document E3, there were several flow and temperature sensors. The control unit was not part of the sensor. Therefore, there was no sensor for determining the heating power.

When answering the question of where a sensor for determining the heating power was shown in Figure 1 or 2 of the patent in suit, it was admitted that no such sensor was shown in said figures but that these were instead sensors for determining the temperature.

Document E21 disclosed a sensor for determining the heating power. The person skilled in the art would know how to implement such a sensor in the mould according to claim 1 of the patent in suit. Furthermore, companies such as Landis+Gyr provided sensors for

industrial applications.

Admittance of auxiliary requests

Auxiliary requests 1, 3, 5 and 7, submitted by letter dated 18 March 2021, had been filed in response to the objection relating to the prohibition of *reformatio in peius*, raised for the first time in section 11.4 of the board's communication dated 1 December 2020. Auxiliary requests 2, 4, 6 and 8 were identical to auxiliary requests 1 to 4 as filed together with the reply to the statement of grounds of appeal.

Reasons for the Decision

1. Admittance of document E21 (Wikipedia article "Wärmezähler") and its English machine translation E21a
- 1.1 According to Article 25(3) of the revised version of the Rules of Procedure of the Boards of Appeal (RPBA 2020, OJ EPO 2019, A63), where the summons to oral proceedings has been notified before its date of entry into force (i.e. 1 January 2020; see Article 24(1) RPBA 2020), Article 13(2) RPBA 2020 does not apply. Instead, Article 13 of the Rules of Procedure of the Boards of Appeal in the version of 2007 (RPBA 2007; see OJ EPO 2007, 536) continues to apply.
- 1.2 In the case at hand, the first summons to oral proceedings was posted on 31 July 2019 and notified before 1 January 2020. Therefore, Article 13 RPBA 2007 applies although a second summons was issued on 24 November 2020 (see also decision T 950/16, section 3.2 of the Reasons).

1.3 Article 13(1) RPBA 2007 stipulates that any amendment to a party's case after it has filed its grounds of appeal or reply may be admitted and considered at the board's discretion. The discretion "shall be exercised in view of, *inter alia*, the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy".

Article 13(3) RPBA 2007 specifies that "amendments sought to be made after oral proceedings have been arranged shall not be admitted if they raise issues which the board or the other party or parties cannot reasonably be expected to deal with without adjournment of the oral proceedings".

1.4 Although document E21/21a was filed at a very late stage of the appeal proceedings and despite the fact that the question of sufficiency of disclosure regarding the feature of the "at least one sensor for determining the flow and heating power" had already been discussed during the first-instance proceedings, document E21 is not detrimental to procedural economy. It is the only document that mentions a device for determining heating power and consequently facilitates the discussion of sufficiency of disclosure. Document E21 is a short document and technically not difficult, and therefore it does not increase the complexity of the issues to be discussed. Rather, it can be considered an attempt by the respondent to provide evidence regarding the knowledge of the person skilled in the art in terms of the determination of the heating power. Finally, the filing of this document did not lead to issues which necessitated an adjournment of oral proceedings.

The board does not see an abuse of the proceedings as

identified in decision T 718/98. In that case, the board decided that a party's introduction, at a very late stage of the proceedings, of evidence which could have been filed much earlier, as a strategic measure to improve its own case against the opposing party, amounted to an abuse of procedural rights and was therefore rejected irrespective of the possible relevance of the evidence (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition, 2019, V.A.4.13.4 b)). In the case at hand, the respondent did not file the document late as a strategic measure to improve its own case. Instead, in view of the opposition division's positive conclusions on the ability of the person skilled in the art to carry out the claimed invention (see decision under appeal, section 15 of the Reasons), the respondent had not considered it necessary to prove what it considered to be accepted as common general knowledge.

- 1.5 For these reasons, exercising its discretion under Article 13(1) and (3) RPBA 2007, the board decided to admit document E21/E21a into the appeal proceedings.
2. Claim 1 - insufficiency of disclosure
 - 2.1 Article 83 EPC states that a European patent application must "disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art".
 - 2.2 The issue of sufficiency of disclosure hinges on the last feature of claim 1, according to which "the mould (1) comprises at least one sensor (17, 17') for determining the flow and heating power of the heating and/or cooling medium". It is uncontested that the patent in suit does not explicitly define such a

sensor.

The board notes that both parties agree that this feature has to be interpreted in the sense that the mould comprises at least one sensor which is suitable for determining the flow and heating power of the heating and/or cooling medium.

The person skilled in the art seeking to implement a sensor for determining the flow and heating power is confronted with the following obstacles.

- 2.3 The patent in suit fails to disclose "at least one sensor for determining the flow and heating power of the heating and/or cooling medium".

The board points out that the heating power is a derived value, which is calculated based on flow and temperature measurements (see section 2.5 below). The respondent argued that a sensor might consist of multiple sensors and an arithmetic unit; however, this assertion lacks a basis in the patent specification. In paragraphs [0026], [0027], [0032], [0041] and [0043] of the patent in suit, a control unit separate from the sensor is disclosed which receives and processes data from the sensor generating control data for controlling the heating and/or cooling system. Paragraph [0041] of the patent in suit refers to Figure 2, which shows a mould with an associated control unit 12, thermal sensors 8 and sensors 17. According to this paragraph, sensors 17 are sensors for determining the flow and/or temperature and/or heating power of the heating and/or cooling medium; however, the respondent explained that the sensors 17 in Figure 2 were temperature sensors and that no sensor for determining the heating power was shown in this figure. Paragraphs [0028], [0033]

and [0042] of the patent in suit mention a control unit adapted to determine and control the degree of cure of the moulded composite part at least from the data from the thermal sensor; however, these paragraphs do not specify the sensor for determining the heating power. Paragraph [0039] is concerned with sensors 17 for determining the flow and/or temperature and/or heating power of the heating and/or cooling medium flowing through the pipes; however, even this paragraph does not give any further details with respect to sensors for determining heating power. (See in particular the following statement: *"Thus, for example a permanent or intermitting measurement of temperature, pressure, flow of water or any other liquid acting as heating or cooling medium respectively floating through the pipes 6, 6' is achievable."*)

- 2.4 Consequently, it has to be evaluated whether such a sensor is part of the common general knowledge of the person skilled in the design of moulds. Document E21, which was put forward by the respondent to demonstrate the availability of such a sensor, discloses a heat meter for the heating power used in buildings. It comprises an arithmetic unit, a measuring device for the volume flow, and temperature sensors; however, the board is not convinced of why a heat meter as shown in document E21, which includes a processing unit and is designed for an entirely different purpose and flow volume, should be a suitable sensor for determining the flow and heating power in a mould according to claim 1.
- 2.5 Common general knowledge and physical theories are not sufficient to fill the gaps in the disclosure of the invention in the patent in suit. In physics "power" is the amount of energy transferred or converted per time unit and the unit of power is "watt". The heating power

of a heating and/or cooling system depends on the flow rate, the heat capacity of the fluid, and the temperature difference. It is also known how to calculate the heat transfer rate depending on the heat transfer coefficient, the thickness of the layer, and the surface temperatures. The person skilled in the art is aware of how to set up an energy balance. However, the question arises as to how the heating power is to be determined in the case at hand. As stated above, the patent (see in particular paragraphs [0020], [0021], [0039] and [0040]) does not provide any information on how, in the context of the claimed mould, the heating power of the heating and/or cooling medium is to be determined and which sensor would be suitable in this regard. The respondent stated that there were two theoretical ways of calculating the heating power, both having the same result. Leaving aside the issue of how realistic the results of such calculations would be in view of the inevitable heat losses in an industrial environment, this still does not answer the question of how the person skilled in the art would put the contested claim feature of a sensor for determining the flow and heating power of the heating and/or cooling medium into practice.

- 2.6 The subject-matter of present claim 1 is essentially directed to a mould for manufacturing a composite part, the mould comprising at least one sensor for determining the flow and heating power of the heating and/or cooling medium. Even if the person skilled in the art were aware of such a sensor, the patent in suit does not disclose how it could be implemented in the mould according to claim 1. The respondent confirmed that none of the sensors shown in Figures 1 and 2 of the patent corresponded to the at least one sensor for

determining the flow and heating power of the heating and/or cooling medium of claim 1.

It also stated that the arrangement of flow and temperature sensors shown in Figure 4.2 of document E3 could not be considered to be a sensor for determining the flow and heating power in the sense of the contested claim 1 since the sensor itself had to determine the heating power.

Finally, the respondent asserted generally that sensors for industrial applications and in particular for determining the flow and heating power were available from companies such as Landis+Gyr; however, when asked by the board, the respondent could not provide any specific information in this regard.

In order to fulfil the requirements of sufficiency of disclosure, it is normally necessary to clearly indicate at least one way that enables the person skilled in the art to carry out the invention (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, II.C.5.2). Neither the description and the drawings of the patent in suit nor the alleged common general knowledge contain any indication as to how the claimed sensor would be devised, where it could be placed, and how the mould of claim 1 comprising such a sensor would be designed.

2.7 In the light of the above, the disclosure in the patent as a whole has to be considered insufficient for enabling the person skilled in the art to carry out the invention as defined in claim 1 (Article 83 EPC).

3. Non-admittance of auxiliary requests 1, 3, 5 and 7

3.1 Auxiliary requests 1, 3, 5 and 7 were filed by letter dated 18 March 2021 and, hence, constitute an amendment to the respondent's appeal case. According to Article 13 RPBA 2007, which applies in this case (see sections 1.1 and 1.2 above), their admittance is at the board's discretion. The amended claim 1 according to auxiliary requests 1, 3, 5 and 7 also includes "at least one sensor for determining the flow and heating power of the heating and/or cooling medium" of claim 1 according to the main request. In consequence, the considerations set out above for the main request with respect to insufficiency of disclosure also apply to auxiliary requests 1, 3, 5 and 7.

3.2 Since the amendments do not overcome the objection of insufficiency of disclosure *prima facie* (Article 83 EPC), the board exercised its discretion under Article 13 RPBA 2007 and decided not to admit auxiliary requests 1, 3, 5 and 7 into the appeal proceedings.

4. Inadmissibility of auxiliary requests 2, 4, 6 and 8

4.1 Auxiliary requests 2, 4, 6 and 8 were filed by letter dated 18 March 2021. These requests are identical to the previous requests 1 to 4 as filed together with the reply to the statement of grounds of appeal.

4.2 If the opponent is the sole appellant against an interlocutory decision by an opposition division maintaining a patent as amended, the patent proprietor, as the respondent, is primarily restricted in the appeal proceedings to defending the patent as thus maintained in order to comply with the principle of

prohibition of *reformatio in peius* (see G 9/92, OJ EPO 1994, 875). Amendments proposed by the patent proprietor may be rejected by the board as inadmissible if they are not appropriate or necessary (see G 9/92, *supra*, Order).

- 4.3 In this case, claim 1 of auxiliary requests 2, 4, 6 and 8 broadens the definition of the "at least one sensor for determining the flow and heating power of the heating and/or cooling medium" (as defined in the version of claim 1 considered allowable by the opposition division) to "at least one sensor for determining the flow and/or heating power of the heating and/or cooling medium". Since this amendment of claim 1 according to auxiliary requests 2, 4, 6 and 8 broadens the scope of claim 1, it worsens the appellant's legal position. As the amendment of the claim is not occasioned by the appeal, it is neither appropriate nor necessary for defending the version in which the patent in suit was maintained by the opposition division. It therefore violates the established principle of prohibition of *reformatio in peius*.
- 4.4 It follows that amended auxiliary requests 2, 4, 6 and 8 have to be rejected as inadmissible in accordance with decision G 9/92 (*supra*).
5. Since none of the respondent's requests is allowable, the patent must be revoked (Article 101(3)(b) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



N. Schneider

P. Lanz

Decision electronically authenticated