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D E C I S I O N
of 11 January 2000

Case Number: T 0895/98 - 3.3.5

Application Number: 85301145.0

Publication Number: 0162536

IPC: B01D 53/50

Language of the proceedings: EN

Title of invention:

Apparatus for wet type flue gas desulfurization

Patentee:

BABCOCK-HITACHI KABUSHIKI KAISHA

Opponent:

L. & C. Steinmüller GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 54(1), 54(2)

Keyword:

"Public prior use proved"
"Novelty (no)"

Decisions cited:

T 0472/92, T 0848/94, T 0097/94

Catchword:

-



Case Number: T 0895/98 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 11 January 2000

Appellant: BABCOCK-HITACHI KABUSHIKI KAISHA
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Respondent: L. & C. Steinmüller GmbH
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Reopresentative: -

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 10 July 1998
revoking European patent No. 0 162 536 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: R. K. Spangenberg
Members: A.-T. Liu
J. C. M. De Preter

Summary of Facts and Submissions

- I. The appeal was against the decision of the Opposition Division revoking European patent No. 162 536.
- II. The decision under appeal was based on a set of claims 1 to 4 as granted, with claim 1 directed to a circulation tank and claims 2 to 4 depending thereon.

Claim 1 reads:

"A circulation tank (36) adapted to be provided in an apparatus for wet type exhaust gas desulfurization and to receive an absorbent slurry into which sulfur oxide(s) contained in the exhaust gas is (are) absorbed outside the tank whereby calcium sulfite is formed, said tank including stirring means (32A-E) for stirring said slurry, a piping (39A) for feeding absorbing liquid to the tank (36) and means (37;13) for withdrawing the resulting slurry from the tank, characterised in that said stirring means includes lower stirring means (32E) and upper stirring means (32A-D) disposed above said lower stirring means and mounted on the sides of the tank (36) and air-feeding means (30A-G) arranged only in the vicinity of the upper stirring means (32A-D)."

- III. The decision of the opposition division was essentially based on the following documents:

D1: Order form dated 3 July 1978, issued by STEAG AG and addressed to L. & C. Steinmüller, for an apparatus for exhaust gas desulfurisation.

- D2: VGB Kraftwerkstechnik 63, vol. 4, page 377
(April 1983).
- D3: Technical Drawing F4G 10753 of Steinmüller,
Keyword: "Bergkamen"
- D4: Technical Drawing F4S 10600 of Steinmüller,
Keyword: "Bergkamen"
- D5': "Rauchgasreinigung", Steinmüller Brochure P
8302-14-06/1 N/S
- D8: Chem.-Ing. Tech. 55 (1983) No. 9, pages 667 to
683
- D10: Reprint from Kraftwerk und Umwelt 1983,
pages 103 to 110; J. Bertram, K. Heyn and
H. Voos: "Betriebserfahrungen mit der
Rauchgasentschwefelung Bergkamen und der
Inbetriebnahme der Rauchgasentschwefelung in
Voerde".
- D11: Declaration dated 12 May 1998, signed by Heyn
and Meier of STEAG AG

IV. In summary, the opposition division held that D5', which was comprised in the state of the art, disclosed part of the drawing according to D4. It was therefore concluded that the confidentiality notices in D3 and D4 had fallen into disuse by the date of publication of D5', which was in 1983. The drawing D3 showed a reaction vessel with all the features as stipulated in claim 1 of the patent in suit.

Furthermore, the declaration D11 was found unambiguously to impart the following information:

- the reaction vessel ordered for the Bergkamen power station in D1 and shown in D3 was installed and brought into service before the priority date of the patent in suit.
- the sale was without any secrecy agreement.
- at least the reaction vessel was available for viewing by the public.

The opposition division therefore concluded that the circulation tank according to claim 1 of the patent in suit lacked novelty due to the public prior use of the Bergkamen reaction vessel.

V. In the statement of grounds of appeal, the appellant contended that D5' disclosing part of D4 could not be used for proving that document D3 was not confidential. There was no evidence that the specific configuration of the stirring means and air feed means shown in D3 were actually implemented into the Bergkamen project and thereafter publicly disclosed before the priority date of the patent in suit. The declaration D11 was so broadly worded that it was meaningless to the issue of public prior use. The Appellant argued that the opponent has thus not proved his case up to the hilt as required in the decision T 472/92.

VI. With the same letter dated 16 November 1998, the appellant filed a revised set of claims 1 to 4.

Claim 1 was directed to the use of an apparatus for wet type exhaust desulfurisation, with claims 2 to 4 depending thereon. The revised claim 1 reads:

"Use, in a circulation tank (36) of an apparatus for wet type exhaust gas desulfurisation, the circulation tank (136) (sic) receiving an absorbent slurry into which sulphur oxide(s) contained in the exhaust gas is (are) absorbed outside the tank whereby calcium sulphite is formed and including a piping (39A) for feeding absorbing liquid to the tank (36) and means (37;13) for withdrawing the resulting slurry from the tank, of stirring means (32A-E) for stirring said slurry and effecting oxidation of sulphur oxide compounds in said slurry, which stirring means includes lower stirring means (32E) and upper stirring means (32A-D) disposed above said lower stirring means and mounted on the sides of the tank (36) and air-feeding means (30A-G) arranged only in the vicinity of the upper stirring means (32A-D)."

The appellant submitted that the use as claimed was new in that, after the calcium sulfite slurry had been oxidised, the resulting slurry was recirculated for desulfurisation. The claimed use was therefore distinguished from the alleged public prior use at the Bergkamen plant wherein the resulting gypsum slurry was not recirculated.

VII. The following further pieces of evidence were filed in response to the appeal:

D14: Declaration dated 3 May 1999, signed by Heyn and Meier of STEAG AG (English version).

D16: Four photographs filed with the letter dated
10 May 1999

The respondent submitted that, although the reaction vessel according to D3 had been modified a few times before the priority date, all the different versions of said reaction vessel, including the latest version dated 13 February 1981 (version m), had the specific configuration of the stirring means and air feed means as shown in the drawing. It was pointed out that the incorporation at the Bergkamen plant of a vessel with such configuration of the stirring means was confirmed by the declaration D14 and the photographs D16. In particular, the photograph of the control panel (No. 1) clearly showed an apparatus including such a vessel.

VIII. Concerning the new evidence filed on appeal, the appellant submitted that the wording in D14 was deliberately ambiguous and therefore should be examined with a critical eye in view of the legal tests established by the decisions T 848/94 and T 97/94. Furthermore, the declarations would appear to be inconsistent with various pieces of evidence submitted by the respondent. The appellant then concluded that the latter failed to prove up to the hilt that the prior use was not under the seal of confidentiality.

IX. At the end of the oral proceedings held on 11 January 2000, the parties' requests were as follows:

- The appellant requested that the decision under appeal be set aside and the case be remitted to

the opposition division for further prosecution either on the basis of the claims as granted or on the basis of the revised set of claims 1 to 4 submitted on 16 November 1998 as auxiliary request.

- The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The only issue that the Board has to decide upon is that of novelty of the claimed subject-matter according to the main request or, if necessary, according to the auxiliary request.

2. *Citations*

The appellant contended that some of the documents cited in the course of the opposition (appeal) proceedings and still relevant to the present decision did not belong to the public domain. The question as to which of these documents form part of the state of the art needs therefore to be answered here.

- 2.1 As was correctly pointed out by the appellant, the technical drawing D3 carried the notice that it may not be copied, reproduced or made available to the public without express permission by the copyright owner, Steinmüller. The same notice had also been put on the technical drawing D4 but was later removed when essential parts of D4 were reproduced in D5'

(see page 2, paragraph 1 of the letter dated 18 May 1998, submitted during the opposition procedure by Steinmüller). The Board therefore holds that, even if any secrecy obligation concerning D4 had existed, this had lapsed by the time D5' was made available to the public. Upon the appellant's query about the publication date of D5', the respondent explained that this could be deduced from the code (P 8302-14-06/1 N/S) which appeared on the back cover page of the brochure, the first two digits of the code indicating the year and the following two the month of publication. This interpretation of the code was not contested by the appellant. It was also consistent with the respondent's submission that the brochure was laid out at the trade show ENVITEC which took place from 21 to 25 February 1983 in Düsseldorf. The Board therefore accepts that the publication date of D5' was February 1983.

Consequently, whilst D3 is not considered to be part of the prior art, the Board holds that D4 and D5' were made available to the public before the priority date of the patent in suit.

2.2 The respondent has indicated that the photographs D16 were taken on 8 May 1999 (see letter dated 10 May 1999). The Board therefore neither accepts that these photographs form part of the state of the art, nor considers that they can be regarded as pieces of evidence showing a configuration which had existed before the priority date of the patent in suit.

3. *Allegation of public prior use*

The decision under appeal was based on the finding that the circulation tank according to claim 1 as granted corresponded to a reaction vessel which had been publicly used in the Bergkamen power plant before the priority date of the patent in suit. This finding was disputed by the appellant. In order to establish whether this reaction vessel belongs to the state of the art as defined in Article 54(2), the Board shall therefore reassess the evidence submitted by the respondent pertaining to:

- (i) the date of the alleged prior use
- (ii) the precise object of that prior use
- (iii) the circumstances of said prior use.

3.1 Date of the alleged prior use

The fact that the alleged use of the Bergkamen plant took place before the priority date of the patent in suit has never been contested. Document D1 bearing the date of 3 July 1978 was accepted as evidence that the firm STEAG AG issued an order to L. & C. Steinmüller GmbH for exhaust gas desulfurisation equipment associated with the Bergkamen A power station. Furthermore, document D2, published in April 1983 and reporting the start-up of the same Bergkamen plant in 1981, clearly proved that the equipment ordered by STEAG AG had indeed been delivered and assembled before the priority date of the patent in suit.

3.2 Object of the alleged prior use

3.2.1 The respondent submitted that the vessel as used in the Bergkamen power plant was represented by the drawing D3 bearing the references "F4G 10753, Auftr. Nr.: 22.1390, Baugruppe: 300, Kennwort: KW-Bergkamen". This was disputed by the appellant. The Board does not ignore the fact that document D3 had been modified a few times before the priority date. However, the date and subject of each modification, the last one dated 13 February 1981, was recorded in the document (see "Änderg." at the lower right hand corner of D3). The accompanying remarks showed that these were minor modifications which did not affect the relevant parts of the reaction vessels. The Board therefore holds that all the different versions of the reaction vessels of D3 were equipped with the stirrer configuration as illustrated.

As was expressly indicated, the vessels represented in D3 were designed for the Bergkamen project (see D3, "Kennwort: KW.-Bergkamen"). Their incorporation into the Bergkamen plant was also confirmed by the declarations D11 and D14 (see in particular D14: "With the order 15-8/00/003082 of July, 3 1978 for ... reation (sic) vessels, ... according to the Steinmüller drawing F4G 10753, Keyword:Bergkamen, LCS-Ord. 22.1390, subassembly 300). Thus, although D3 itself was not part of the state of the art (see point 2.1), the Board holds that its content illustrates the object of the alleged prior use.

3.3 Circumstances of the alleged prior use

3.3.1 In this respect, the appellant has conceded that the statement in the first paragraph of D14 meant that

there was no secrecy obligation concerning the construction and erection of the vessels. However, it was contended that the statement was broadly worded and did not address the substantial issue of the case, namely whether or not the technical features of the reaction vessels as recited in the characterising part of claim 1 were protected by a secrecy agreement.

The Board is unable to concur with the appellant that D14 did not contain any explicit statement concerning the details of the vessel itself. In fact, this declaration is more specific than the first one (D11) in that it unequivocally mentions the exact arrangement of the stirrers in the reaction vessels as commissioned by STEAG ("... reation (sic) vessels, ... have lower stirrers 16 without air injection and upper stirrers 11 with air injection arranged on the side of the vessel, as well as a gypsum suspension return ..."). The same document contains in paragraph 2 the statement that the details of the vessels were shown and explained to the visitors. In the Board's judgment, this clearly and unambiguously implies that the owner of the plant, STEAG AG, felt free to show these details to the public. Thus, the first paragraph of the declaration, relating to the lack of a secrecy obligation, must clearly cover the details mentioned in the second paragraph.

- 3.3.2 The Board does not agree with the appellant's submission that, although the respondent had control over the selection of the evidence adduced, the documents he chose to submit were either ambiguous or contained gaps and inconsistencies.

- 3.3.2.1 The appellant pointed out that D1 mentioned an additional agreement ("Zusatzvereinbarung") between STEAG AG and Steinmüller but no copy of such agreement had been filed.

In the Board's judgment, it clearly followed from the wording of D1 that the additional agreement mentioned therein was solely directed to the terms of conditions, time limits and prices fixed for the delivery of the equipment commissioned. Such terms of conditions did not prima facie implicate a secrecy agreement between STEAG and Steinmüller. On the contrary, the fact that prices and dates of delivery had been fixed and mentioned on the order form would rather point to a commercial transaction, for which the ancillary terms of conditions were normally spelled out. Thus, the Board sees no need for requiring the respondent to submit a copy of this agreement which might contain rather sensitive information not relevant to the question here at issue.

- 3.3.2.2 The appellant contended that the order D1 was made for equipment in relation to specific processes; yet, the names of the processes concerned have been removed from document D1 for fear of competition. In addition to that, D5' expressly stated that Steinmüller had also relied on the know-how of licensor GEESI - General Electric Environment Services Inc. -) for building up the Bergkamen plant (see D5', page 3, left hand column, first paragraph; page 4, first sentence and back cover page, left hand column, first paragraph). He went on to argue that all this would rather corroborate a joint project

between STEAG and Steinmüller, wherein a dissemination of know-how was expressly restricted as stated in D3.

The Board is aware that process names had been eradicated from D1. However, the present opposition (appeal) proceedings concern the contention of prior use of a particular vessel, and not that of a particular process. The Board therefore considers that the names of the processes which were to be used with the vessel are not relevant. Likewise, it is irrelevant to answer the appellant's question as to whether it was conceivable that, for example, STEAG had been free to pass on the know-how to Babcock who was also building a power plant at approximately the same time (see list at page 669 of D8).

Furthermore, the reference to a license agreement with GEESI and to Steinmüller's know how was merely in broad terms. The Board is unable to infer from these general statements whether constructional details of the Bergkamen plant or details of the process not expressly disclosed in D5' was effectively proprietary knowledge. On the other hand, essential parts of the flow chart with minute details of the equipment for the Bergkamen plant had already been laid open in D5' (see also point 2.1). The drawing even revealed that each reaction vessel was equipped with a set of 7 stirrers, 4 of which were with air and 3 without air (see D5', in particular page 11, upper drawings, annotations within reaction vessel 1 and reaction vessel 2). Thus, the Board has difficulty assuming that, contrary to the statement in D14 (see point 3.3.1) the only missing detail

about the stirrers configuration, namely the disposition of these two distinct sets of stirrers in two separate levels, was part of the know-how which was meant to be kept secret.

3.3.2.3 The statement in D3 concerned a copyright ("Urheberrecht") prohibiting copying, reproducing the drawing or making it available to the public without express permission by the copyright owner. However, the Board also takes into account the degree of publicity surrounding the Bergkamen project as witnessed in D2, D5' and D10 and the fact that essential parts of the technical drawing D4, which contained the same copyright statement, had been reproduced in D5' by the respondent itself. The Board is therefore convinced that the copyright statement in D3 did not entail a restriction concerning the dissemination of the content of the drawing. The Board therefore cannot concur with the appellant that the declaration D14 contradicted said copyright remark.

3.3.2.4 The appellant has also advanced the argument that Steinmüller should have formally acknowledged the lack of secrecy obligation by submitting an affidavit or a declaration under oath. The lack of such evidence amounted to an important gap in the substantiation of the alleged public prior use.

It is true that the Board may require submissions from a party if there is reason to suspect that this party is withholding an important piece of evidence which could contribute to elucidating the matter at issue. In the present case, however, Steinmüller has

already submitted with the letter dated 10 October 1996 that a flue gas desulfurisation plant had been commissioned by and delivered to STEAG AG without any secrecy obligation (see Reasons for Opposition, page 2, last paragraph). This submission was in agreement with the declarations filed by the alleged user (D11 and D14). Therefore, the Board holds that the gap asserted by the appellant does not exist and that a sworn statement or an affidavit by Steinmüller to this effect would have been superfluous.

3.3.3 Since STEAG has commissioned the vessel and the veracity of its declarations has not been questioned, the Board accepts that STEAG was not bound by any confidentiality agreement. The corollary of all the above is that STEAG itself was part of the public and that the reaction vessel used at the Bergkamen power plant and shown in D3 was comprised in the state of the art.

3.3.4 In view of this finding, the question as to whether or not STEAG has passed on this knowledge to a third party is not relevant. The Board therefore need not dwell on the question as to whether visitors had been admitted to the Bergkamen plant and, if so, whether they had been able to see all the relevant parts of the reaction vessels.

3.3.5 The present case is not comparable with the cases cited by the appellant, where the Boards concerned came to the conclusion that the opponent had not proved his allegation of public prior use beyond all reasonable doubt.

In case T 472/92 (OJ EPO 1998, 161), the Board answered in the negative the question as to whether the delivery of labels to Sun-Lily were sale transactions (point 3.6). Furthermore, the documentary evidence was not found to be cogent and convincing enough to support the allegation that the materials delivered to other companies complied with all the requirements of the claimed subject-matter (point 3.9.4). Here, the respondent has submitted corroborative evidence as to the object and the commercial nature of the transaction.

In T 848/94 of 3 June 1997 (not published in OJ EPO) and T 97/94 (OJ EPO 1998, 467), the Board found that the evidence was insufficient to show that the object of prior use was the same as the subject-matter as claimed in the respective patent in suit (see T 848/94, point 3.1.2 and T 97/94, point 9). Here, it has been established that the reaction vessels used at the Bergkamen plant did in fact correspond to the drawing D3, so that there is no reasonable doubt as to the object of the prior use.

The Board's findings are therefore not in conflict with the decisions cited by the appellant.

Main request

4. It was undisputed that the vessel illustrated in D3 exhibited all the technical features as stipulated in claim 1 of the main request, specifically means for receiving an absorbent slurry, lower stirring means, upper stirring means disposed above said lower stirring means and mounted on the sides of the tank

and air-feeding means arranged only in the vicinity of the upper stirring means and means for withdrawing the resulting slurry from the tank. Furthermore, as indicated above, the reaction vessel used at the Bergkamen plant corresponded to the drawing D3. Therefore, the subject-matter of claim 1 lacks novelty with regard to the Bergkamen reaction vessel.

Auxiliary request

5. Claim 1 is now directed to the use of stirring means in a circulation tank of an apparatus for wet type exhaust gas desulfurisation. The claimed use comprises the process steps wherein absorbent slurry is contacted with the exhaust gas outside the circulation tank (36), and the resulting calcium sulphite slurry introduced into this tank where it is oxidised by the said stirring means (32A-E) which includes air-feeding means (30A-G) (see claim 1: "Use, in a circulation tank ..., the circulation tank (136) (sic) receiving an absorbent slurry into which sulphur oxide(s) contained in the exhaust gas is (are) absorbed outside the tank whereby calcium sulphite is formed and including a piping (39A) for feeding absorbing liquid to the tank (36) and means (37;13) for withdrawing the resulting slurry from the tank, of stirring means (32A-E) for stirring said slurry and effecting oxidation of sulphur oxide compounds in said slurry").

It is not in dispute that the fluid circulated through the vessel in the Bergkamen plant was an absorbent slurry which was contacted with the exhaust gas outside the vessel and that the resulting calcium

sulfite slurry was oxidised in that vessel by using stirring means (including air feed means) as illustrated in D3. The reactions involved are for example described in D5' (page 5, reaction equations under "Absorption" and "Oxidation").

6. According to the appellant, the use according to claim 1 is, however, distinguished from the use of the prior art in that the present claim stipulates the use in a "circulation tank of an apparatus for wet type exhaust gas desulfurisation".

The argument advanced by the appellant is that the expression "circulation tank of an apparatus for wet type exhaust gas desulfurisation" in the present case implies that, after the resulting slurry was withdrawn from the tank, it is returned to the apparatus for **effecting** (emphasis added) exhaust gas desulfurisation. It was submitted that, in contrast to claim 1 of the main request, the circulation tank is used here inside the apparatus for wet type exhaust gas desulfurisation. The term "circulation" has thus to be understood as involving withdrawing the absorbent slurry from a tank, its recirculation to the apparatus for effecting exhaust gas desulfurisation and its reintroduction into the same tank which is inside the apparatus. The interpretation given by the appellant was based on the description, page 3, lines 27 to 28 and Figure 1 (numerals 36, 37, 22 and 1).

Since the appellant has relied on the expression "circulation tank of an apparatus for wet type exhaust gas desulfurisation" as the only

distinguishing feature, the Board shall first elaborate on the interpretation of this expression and its implication in assessing the novelty of the claimed use.

6.1 Interpretation of the claim

The flue gas desulfurisation apparatus was described as comprising a circulation tank 36 for the dust-removing part 34 and a second circulation tank 38 for the absorbing part 35 (see patent in suit, page 3, lines 27 and 33 and Figure 1). In use, the absorbent slurry was fed to the absorbing part by circulating pump 39, then collected and returned to the circulation tank 38 (page 3, lines 47 to 50). A part of the same absorbent slurry was fed to the circulation tank 36 and circulated by pump 37 (page 3, lines 54 to 58). In one particular embodiment, the liquid-circulation systems were kept separated with water circulating in circulation tank 36 and absorbent slurry in circulation tank 38 (page 5, lines 24 to 39 and Figure 8). The Board therefore holds that the term "circulation" as disclosed in the patent in suit encompassed the usual process of retrieving a fluid from a container and its returning to an inlet of the same container.

The Board does not see any reason to accept the restrictive meaning as advanced by the appellant. In particular, the wording of the claim neither implies that the circulation tank has to be inside the apparatus nor that the oxidised slurry is necessarily returned to the absorption part. On the contrary, the expression "circulation tank of an apparatus for wet

type exhaust gas desulfurisation" encompasses any reaction vessel which is part of an apparatus, wherein the vessel itself is designed for retrieving and reintroducing a fluid and the apparatus is used for wet type exhaust gas desulfurisation.

6.2 Novelty

As was clear from the drawing D3, the Bergkamen reaction vessel had an inlet for sulfite suspension, an outlet for withdrawing gypsum slurry and second inlet for returning gypsum slurry. Furthermore, this reaction vessel was an integral part of the Bergkamen plant, which part was dedicated to the desulfurisation of exhaust gas evolving from the power plant. It is thus undeniable that the prior art vessel corresponded to the definition of "a circulation tank of an apparatus for wet type exhaust gas desulfurisation", based on the interpretation as outlined in point 6.1 above. This feature is therefore not appropriate for distinguishing the claimed use from the prior use of the Bergkamen vessel.

As is established above (see points 4 and 5), the remaining features, specifically the arrangement of the stirring means (including the air-feeding means) and their purpose, are the same in the Bergkamen vessel and in the present claim. The finding in respect of claim 1 of the main request therefore apply *mutatis mutandis* to the use according to present claim 1.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

S. Hue

R. K. Spangenberg