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**Datasheet for the decision  
of 29 March 2022**

**Case Number:** T 1454/17 - 3.2.03

**Application Number:** 10718623.1

**Publication Number:** 2417389

**IPC:** F23C10/10

**Language of the proceedings:** EN

**Title of invention:**

A CIRCULATING FLUIDIZED BED BOILER

**Patent Proprietor:**

Sumitomo SHI FW Energia Oy

**Opponent:**

Valmet Technologies Oy

**Headword:**

**Relevant legal provisions:**

RPBA Art. 12(4)  
RPBA 2020 Art. 13(2)  
EPC Art. 56, 100(a)

**Keyword:**

Late-filed evidence - could have been filed in first instance proceedings (yes)

Amendment after summons - cogent reasons (no)

Inventive step - (yes)

**Decisions cited:**

R 0006/17, G 0009/91, T 1705/07, T 1067/08, J 0014/19

**Catchword:**



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Case Number: T 1454/17 - 3.2.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.03**  
**of 29 March 2022**

**Appellant:** Valmet Technologies Oy  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 3 May 2017  
rejecting the opposition filed against European  
patent No. 2417389 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chairman** B. Miller  
**Members:** G. Patton  
N. Obrovski

## **Summary of Facts and Submissions**

I. European patent No. 2 417 389 B1 ("the patent") relates to a circulating fluidised bed boiler.

II. An opposition was filed against the patent as a whole based on Article 100(a) EPC (lack of inventive step). The opposition was rejected, and the patent was maintained as granted.

The opponent lodged an appeal against the Opposition Division's decision.

III. In a communication pursuant to Article 15(1) RPBA 2020 annexed to the summons to oral proceedings dated 21 June 2021, the Board provided its preliminary, non-binding opinion to the parties that the appeal was likely to be dismissed.

The opponent reacted with a letter dated 1 October 2021.

Oral proceedings were held on 29 March 2022. For matters that arose during the oral proceedings, in particular the issues discussed with the parties and their requests, see the minutes.

The order of the present decision was announced at the end of the oral proceedings.

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

The patent proprietor ("respondent") requested that the appeal be dismissed.

V. The following documents considered in the opposition proceedings are relevant to the present decision:

D1: US 4 761 131 A  
D2: WO 00/31468 A  
D3: US 2007/0079773 A  
D4: US 7 244 400 B2  
D5: US 2004/0065273 A1

The appellant filed the following documents for the first time with the statement setting out the grounds of appeal:

D6: US 2006/011148 A1  
D7\*: US 2005/0112037 A1  
D8: US 5 203 284 A

\*D7 is the patent application of the granted patent D4.

VI. Claim 1 of the patent as granted reads as follows with the feature numbering used by the parties:

"A circulating fluidized bed boiler (10), comprising

- (1) -a rectangular furnace (12) which is
- (2) horizontally enclosed by a front wall (16), a back wall (16') and two sidewalls (14, 14'),
- (3) wherein the common width of the front wall and the back wall is larger than the common width of the sidewalls,
- (4) - multiple particle separators (18, 18') connected to the upper portion of each of the front wall (16) and

- (5) the back wall (16') for separating particles from a stream of flue gas and particles discharged from the furnace, wherein
- (6) each particle separator comprises a gas outlet (34, 34') for discharging cleaned flue gas from the particle separator, and
- (7) - a flue gas duct system (26) connected to the gas outlets of the particle separators for conducting cleaned flue gas to a back pass (28),

characterized in that

- (9) the multiple particle separators are arranged in multiple pairs of particle separators,
- (10) wherein each pair of particle separators includes
- (11) a front separator (18) arranged adjacent to the front wall (16) and
- (12) a back separator (18') arranged adjacent to the back wall (16'), and in that
- (13) the flue gas duct system comprises multiple cross over ducts (32, 32', 32"), each cross over duct
- (14) connecting the gas outlet (34) of a front separator (18) of a pair of particle separators, across and over the furnace, to the gas outlet (34') of the back separator (18') of the same pair of particle separators, and
- (15) to the back pass (28),
- (16) which back pass (28) is arranged on the back wall side of the furnace (12), outside of the back separators (18')."

VII. The appellant essentially argued as follows (the arguments are discussed in more detail in "Reasons for the Decision" below where appropriate).

*Late-filed documents D6 to D8 - admissibility*

Not-admitting late-filed documents was exceptional since in accordance with Article 12(4) RPBA 2007, "*(...) everything presented by the parties (...) shall be taken into account by the Board if and to the extent it relates to the case under appeal (...)*".

Documents D6 to D8 were *prima facie* relevant for the feature at stake of the withdrawal of the flue gas from the upper portion of the furnace.

The criterion of *prima facie* relevance was to be applied in light of Article 13(1) RPBA 2007 or Article 13(1) RPBA 2020. The list of criteria in accordance with Article 13(1) RPBA 2007 was non-exclusive, and the criterion of *prima facie* relevance had been applied by some Boards under this provision (Case Law of the Boards of Appeal, 9th Edition, 2019, V.A.4.13.2 and R 6/17). Under Article 13(1) RPBA 2020, the Boards had to apply the criterion of *prima facie* relevance as it was required by this provision.

The limited number of late-filed documents and arguments dealing with only one decisive issue could not lead to "an entirely fresh case", "shifting the case" or jeopardising the procedural efficiency of the proceedings.

Documents D6 to D8 could not be submitted during the opposition proceedings because the Opposition Division

had not provided any preliminary opinion, and no oral proceedings had taken place.

In view of the above, documents D6 to D8 should be admitted into the proceedings.

*Late-filed letter - admissibility of its content*

The line of argument presented under paragraph 3.5.1 of appellant's late-filed letter dated 1 October 2021 had not been submitted previously in the proceedings. However, it should be admitted into the proceedings as it concerned the combination of the same documents in relation to the same features (4) and (5) as in the statement setting out the grounds of appeal.

Paragraph 3.5.2 of the letter only contained refinements of the line of argument for the same objection which had been presented in the statement setting out the grounds of appeal. It should therefore be taken into consideration in the appeal proceedings.

*Inventive step*

The subject-matter of claim 1 did not involve an inventive step starting from D1 as the closest prior art in combination with the teaching of either:

- D6
- D2 (for features (4) and (5)) together with the skilled person's common general knowledge or the teaching of D4 or D5 (for feature (15))
- D5, D7 or D8

In view of the technical effects associated with distinguishing features (4) and (5), the problem to be



solved when starting from D1 could be seen as "to provide an **alternative** method of collecting the particle laden flue gas from the boiler, separating the particles from the flue gas and returning them to the furnace".

The configurations and purposes of the fluidised bed boilers of D1 and D2 were similar such that the skilled person had no difficulties to implement the disclosure of D2 in the boiler of D1.

D2 disclosed that partition walls made of water tubes had drawbacks. Since the furnace of the boiler of D1 also comprised such partition walls, the skilled person immediately thought of implementing the solution of D2 in the boiler of D1.

D2 disclosed features (4) and (5) together with a simplified structure of the furnace. In view of the benefits prompted by D2, the skilled person was clearly motivated to apply its teaching to the boiler of D1 when faced with the above-mentioned problem.

The heat exchangers of the boiler of D1 were merely generic examples, and the skilled person had no difficulties to redesign D1 with respect to them if needed.

Therefore, the skilled person contemplated moving the point of withdrawal of flue gas in the furnace of D1 from a lower or central portion of the furnace to an upper portion of the furnace as taught in D2 without inventive efforts.

VIII. The respondent essentially argued as follows (the arguments are discussed in more detail in "Reasons for the Decision" below where appropriate).

*Late-filed documents D6 to D8 - admissibility*

Documents D7 and D8 were *prima facie* not relevant and, hence, should not be admitted into the proceedings.

*Late-filed letter - admissibility of its content*

The line of argument presented under paragraph 3.5.1 of appellant's late-filed letter dated 1 October 2021 was a new objection based on a new interpretation of the features of claim 1, constituting an amendment of the appellant's case.

The lack of inventive step objection presented in paragraph 3.5.2 of the appellant's letter contained new arguments.

In the absence of exceptional circumstances for their late submission, the contents of the paragraphs should not be admitted into the proceedings.

*Inventive step*

Features (4), (5) and (15) of claim 1 were distinguishing features over the disclosure of D1 taken as the closest prior art.

The problem to be solved as derived from the technical effects of distinguishing features (4) and (5) could be seen as "*to provide an **alternative** method of collecting the particle laden flue gas from the boiler, separating*

*the particles from the flue gas and returning them to the furnace".*

The skilled person faced with this technical problem could think of implementing the configuration of the boiler of D2 in that of D1. However, they would not implement it owing to the technical difficulty entailed.

Therefore, the subject-matter of claim 1 involved an inventive step.

## **Reasons for the Decision**

### 1. *Late-filed documents D6 to D8 - admissibility*

Documents D6 to D8 were filed for the first time with the appellant's statement setting out the grounds of appeal. Hence, their admittance into the proceedings is subject to the conditions set in Article 12(4) RPBA 2007.

Article 12(4) RPBA 2007 reads in full:

*"Without prejudice to the power of the Board to hold inadmissible facts, evidence or requests **which could have been presented** or were not admitted in the first instance proceedings, everything presented by the parties under (1) shall be taken into account by the Board if and to the extent it relates to the case under appeal and meets the requirements in (2)" (emphasis by the Board).*

The excerpt of this provision provided by the appellant is misleading as it omits the entire first subclause,

i.e. the reference to the power of the Boards to hold inadmissible documents which could have been presented during the opposition proceedings. Given this, the Board applies an approach that assesses whether the appellant not only **could** but also **should** have presented the documents during the opposition proceedings.

As to the criteria for exercising the Board's discretion under Article 12(4) RPBA 2007, the Board emphasises that the criterion of *prima facie* relevance is not specified in Article 12(4) RPBA 2007. Since Article 12(4) RPBA 2007 applies, the appellant's arguments relating to Article 13(1) RPBA 2007 and Article 13(1) RPBA 2020 - which contain different criteria to Article 12(4) RPBA 2007 - are moot.

The Board holds, in the exercise of its discretion under Article 12(4) RPBA 2007, that the appellant could and should have filed documents D6 to D8 in the opposition proceedings.

Firstly, the mere fact that the Opposition Division did not accept the appellant's view with respect to its objections of lack of inventive step on the basis of the documents they presented in the opposition proceedings (D1 to D5) does not justify the filing of further documents in the appeal proceedings. Parties must take into account that an Opposition Division may come to a different conclusion than they do.

Secondly, documents D6 to D8 are patent documents and as such cannot be considered to represent the skilled person's common general knowledge. They were submitted in relation to the point of withdrawal of flue gas from the furnace being at the upper portion of the furnace. In the impugned decision, the corresponding discussion

focuses on the mandatory redesign of D1 (see the respondent's reply to the notice of opposition dated 12 September 2016, page 4) and is based on the disclosure of this feature in documents D2, D3, D4 and D5 (see point II.3. of the grounds), which were introduced into the opposition proceedings by the appellant, i.e. were regarded as its most promising documents on this feature. As a result, nothing in the impugned decision could be considered a surprise for the appellant.

Thirdly, an Opposition Division is not required to provide a preliminary opinion to the parties before issuing the decision when it can decide the case on the basis of the written submissions without holding oral proceedings. As the parties had not requested oral proceedings, the Opposition Division was permitted to issue the decision in written proceedings. Hence, this was a direct consequence of the appellant's choice not to request oral proceedings.

Fourthly, the filing of D6 to D8 aims to raise completely new objections of lack of inventive step. However, the appeal proceedings, which are largely determined by the factual and legal scope of the first-instance proceedings, are not about bringing an entirely fresh case to a Board. This means that an appellant is not at liberty to shift its case to the appeal proceedings as it pleases and so compel a Board either to give a first ruling on the critical issues or to remit the case to the Opposition Division. Conceding such freedom to an appellant would run counter to orderly and efficient appeal proceedings, contrary to Article 12(4) RPBA 2007 and to the primary object of the appeal proceedings to review the decision under appeal in accordance with Article 12(2) RPBA 2020. In

effect, it would allow a kind of "forum shopping" which would jeopardise the proper distribution of functions between the departments of first instance and the Boards and would be absolutely unacceptable for procedural economy generally (G 9/91, OJ EPO 1993, 408, point 6; T 1705/07, point 8.4 of the Reasons and T 1067/08, points 7.1 to 7.2 of the Reasons).

Consequently, there is no reason which would justify that the appellant filed documents D6 to D8 for the first time only in the appeal proceedings. Instead, the appellant could and should have filed D6 to D8 during the opposition proceedings for the Opposition Division to take into account in the impugned decision.

Hence, the Board has decided not to admit documents D6 to D8 into the appeal proceedings pursuant to Article 12(4) RPBA 2007.

2. *Late-filed letter - admittance of its contents*

2.1 Under Article 13(2) RPBA 2020, any amendment to a party's appeal case made after notification of a summons to oral proceedings must, as a rule, not be taken into account unless there are exceptional circumstances which have been justified with cogent reasons by the party concerned.

2.2 With the letter dated 1 October 2021 submitted after notification of the summons to oral proceedings dated 21 June 2021, the appellant filed new objections based on new interpretations of the features of claim 1 of the patent. During the oral proceedings before the Board, the appellant withdrew the objections referred to in points 3.3, 3.4 and 3.6 of this letter, maintaining only those in paragraphs 3.5.1 and 3.5.2.

2.3 Paragraph 3.5.1

- 2.3.1 The lack of inventive step objection presented in paragraph 3.5.1 of the appellant's letter dated 1 October 2021 refers to paragraph 3.2 of the letter.

The appellant argued, for the first time in the proceedings, that features (4) and (5) of claim 1 no longer related to the inner design of the furnace of the boiler but instead to the design of the flue gas duct system outside the furnace regardless of the inner design of the furnace.

Hence, according to the appellant, the solution to the problem to be solved derived from distinguishing features (4) and (5) could be dealt with independently of the inner design of the furnace of the boiler. Since no internal re-designing of the furnace of D1 was required, the solution - i.e. features (4) and (5) - was disclosed in D2, and no inventive step could be acknowledged.

- 2.3.2 Undisputed by the appellant, this line of argument had not previously been submitted in the proceedings.

However, the appellant argued that the objection should be admitted into the proceedings as it concerned a combination of the same documents in relation to the same features (4) and (5) as in the statement setting out the grounds of appeal.

- 2.3.3 The Board does not share the appellant's view and considers that the appellant's new interpretation of features (4) and (5) of claim 1 constitutes a new objection, even though this objection concerns the same

documents in relation to the same claim features. The new claim interpretation by the appellant in combination with the documents referred to introduces a new factual element in the appellant's appeal case which constitutes an amendment to it. The mere fact that certain documents are already in the proceedings does not mean that their entire contents are automatically part of a party's appeal case, in whichever factual or legal context (see J 14/19, Reasons 1.8), or can be used in any manner as it pleases the appellant.

2.3.4 Since the appellant has not provided any cogent reasons justifying exceptional circumstances for the late submission, the Board has decided not to admit the objection referred to in paragraph 3.5.1 of the letter dated 1 October 2021 into the proceedings (Article 13(2) RPBA 2020).

2.4 Paragraph 3.5.2

2.4.1 The lack of inventive step objection in paragraph 3.5.2 of the appellant's letter dated 1 October 2021 was based on D1 taken as the closest prior art in combination with the teaching of D2 (for features (4) and (5)) together with the skilled person's common general knowledge or the teaching of D4 or D5 (for feature (15)). This objection had been raised by the appellant in its statement setting out the grounds of appeal.

2.4.2 The respondent contested the admittance into the appeal proceedings of paragraph 3.5.2 arguing that it contained new arguments, such as the reference to the partition walls of D1 and D2, which had not been made before.



2.4.3 The Board does not share the respondent's view and considers that paragraph 3.5.2 only contains refinements of the line of argument presented in the statement setting out the grounds. Hence, it does not constitute an amendment of the appellant's case and is to be taken into consideration in the appeal proceedings.

3. *Inventive step*

In view of the fact that D6 to D8 have not been admitted into the proceedings (see point 1 above), the objections of lack of inventive step involving any of these documents are not discussed in the following.

3.1 The Board concurs with the parties that D1 can be considered the closest prior art for the subject-matter of claim 1 since it lies within the same technical field of circulating fluidised bed boilers (see column 1, lines 6 to 17).

3.2 Also undisputed by the parties, D1 discloses all the features of claim 1 except features (4), (5) and (15).

D1 (column 2, lines 26 to 67; and Figures 1 and 2) discloses a circulating fluidised bed boiler ("reactor" 10) comprising a rectangular furnace ("enclosure" 12) with two chambers (12a, 12b). The walls (14, 16, 18, 20) of the furnace (12) are formed by water tube panels; a partition wall (28) is arranged between the two chambers (12a, 12b); and heat exchangers (32, 34, 36), i.e. banks of heat exchange tubes, are provided in the chambers (12a, 12b). A lower portion of the wall (16) of the furnace (12) comprises an opening (16a) for the withdrawal of the flue gas from the furnace, and

the opening (16a) is connected to the particle separators (50, 52, 54, 56).

3.3 From the contested patent taken as a whole, the point of withdrawal of flue gas from the furnace according to features (4) and (5) enables discharging the stream of flue gas and particles from the furnace, like at any other point of withdrawal of flue gas from the furnace.

The technical effect associated with a single back-pass according to feature (15) seems to be providing a simplified structure for the boiler.

Hence, there is no synergy in the technical effects of features (4) and (5) on the one hand and feature (15) on the other hand. They can be dealt with independently from each other for assessing the inventive step of the subject-matter of claim 1, as in the decision under appeal, point II.3.

3.4 Features (4) and (5)

3.4.1 Problem to be solved

In view of the technical effects associated with the distinguishing features (4) and (5) given under point 3.3 above, the Board sees no reason to deviate from the problem to be solved formulated in point II.3 of the decision under appeal, also agreed upon by the parties at the oral proceedings, namely "*to provide an **alternative** method of collecting the particle laden flue gas from the boiler, separating the particles from the flue gas and returning them to the furnace*".

### 3.4.2 Combination with D2

The Board holds the view that the skilled person would come across D2 and consider its disclosure since D2, like D1 and the patent, lies within the technical field of circulating fluidised bed boilers (see page 9, lines 7 to 14).

D2 (see page 9, line 7 to page 10, line 2; page 10, lines 24 to 29; page 11, lines 1 to 2; claim 1; and Figures 1 and 2) discloses a circulating fluidised bed boiler (1) comprising a furnace (2) with walls (4) formed by water tube panels. Inside the furnace (2), there are chambers (12) also made of water tube walls (13). Heat exchangers (20, 33), i.e. superheating or heat transfer surfaces, are provided in the chambers (12), and particle separators (3) are connected to the upper portions of the walls (4) of the furnace via conduits (10). Hence, undisputed by the parties, D2 discloses features (4) and (5) of claim 1.

However, the Board considers, contrary to the arguments of the appellant as discussed in detail below, that the skilled person facing the above technical problem and intending to implement the solution of D2 in the boiler of D1 would encounter technical difficulties in that they would have to completely redesign the boiler of D1. Such a redesign would require inventiveness from the skilled person.

Hence, the Board considers that the reasoning and the conclusion in the impugned decision, point II.3, are correct.

3.4.3 The appellant submitted the following on this matter.

The configurations and purposes of the fluidised bed boilers of D1 and D2 were similar (see D1, column 1, line 49 to column 2, line 14; D2 page 3, line 12 to page 4, line 3 and page 9, lines 9 to 20). Both known boilers also comprised heat exchangers. Thus, based on the teaching of D2, the skilled person had no difficulties to implement the solution of D2 in the boiler of D1.

D2, page 1, lines 20 to 30, disclosed that partition walls made of water tubes had drawbacks in term of achieving sufficient rigidity when they extended from the bottom to the top of the furnace.

Since the furnace of the boiler of D1 also comprised such partition walls (28) forming the chambers as well as water tube walls (14, 16) providing vaporising surfaces, the skilled person immediately thought of implementing the solution of D2 in the boiler of D1.

D2 disclosed features (4) and (5) of relocating the point at which particle separators are connected to the upper portions of the walls of the furnace of the boiler. Thus, document D2 taught a simplified structure of the furnace enabling relocation of separator inlet ducts to upper portions of the furnace. In view of the benefits of D2, the skilled person was clearly motivated to apply its teaching to the boiler of D1 when faced with the above-mentioned problem of providing an alternative method.

Regarding the banks of heat exchange tubes (32, 34, 36) or chambers (12b) of D1, the skilled person envisaged relocating or rearranging them with the help of tube

panels or superheating surfaces (20) of the furnace of D2. The bank of heat exchange tubes (36) in the chamber (12b) of D1 could, for example, be relocated or replaced with the heat transfer surfaces (33) of the heat transfer chamber (30) of D2. At any rate, the heat exchangers of D1 were not essential to the invention it disclosed, and this was all the more true for their location in the furnace. They were merely generic examples, and the skilled person had no difficulties to redesign D1 with respect to them if needed. They could not represent any hindrance for the skilled person to follow the teaching of D2.

Therefore, the skilled person contemplated moving the point of withdrawal of flue gas from the furnace of D1 from a lower or central portion of the furnace to an upper portion of the furnace as taught in D2 without inventive efforts. By doing so, they brought about not only the benefits taught in D2 but also the claimed solution according to features (4) and (5) to the above-mentioned technical problem.

3.4.4 The Board does not share the appellant's view.

As put forward under point 3.4.2 above, the skilled person faced with the above-mentioned problem would indeed consider the disclosure of D2.

However, the skilled person would not just select in the boiler of D2 the point of withdrawal of the flue gas at the upper portion of the furnace, i.e. features (4) and (5), and implement it in the boiler of D1 since the resulting combination would not be functional.

As apparent from the appellant's submissions, the skilled person would not only have to replace in the

boiler of D1 the location where the flue gas is withdrawn from the furnace in accordance with features (4) and (5) as disclosed in D2 but also the way the flue gas circulates in the furnace, the position of the heat exchangers, and how the flue gas and the bed material are cooled. As argued by the appellant during the oral proceedings, "almost all" the features of the boiler of D1 would have to be replaced with those of the boiler of D2.

For the Board, the appellant's line of argument amounts to completely replacing the part of the boiler (10) below the penthouse (24) in Figure 1 of D1 with that of Figure 1 of D2.

The Board considers, however, that the skilled person would not do this as it would be contrary to the disclosure of D1 with regard to how the flue gas circulates and how the flue gas and the bed material are cooled.

### 3.5 Feature (15)

Since features (4) and (5) alone justify an inventive step for the claimed subject-matter, a possible further contribution of feature (15) for inventive step can be left open.

### 3.6 Combination with D5

The appellant has not substantiated the objection of lack of inventive step related to the combination of the boiler of the closest prior art D1 with the teaching of D5. At any rate, the same reasons and conclusion as above for the combination of D1 with D2 apply *mutatis mutandis* for the combination of D1 with

D5, as was indicated in the Board's preliminary opinion in the communication dated 21 June 2021, point 7.7. As this has subsequently not been commented on or contested by the parties, neither in writing nor orally at the oral proceedings, the Board sees no reasons to change its preliminary assessment of this issue after reconsidering all relevant submissions.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



C. Spira

B. Miller

Decision electronically authenticated