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Datasheet for the decision of 7 February 2018

Case Number: T 2204/13 - 3.4.02

Application Number: 05102533.6

Publication Number: 1707958

IPC: G01N30/32, G01N30/34

Language of the proceedings: EN

Title of invention:
Device and method for solvent supply with correction of piston movement

Patent Proprietor:
Agilent Technologies, Inc.

Opponent:
Waters Technologies Corporation

Relevant legal provisions:
EPC 1973 Art. 54(1), 84

Keyword:
Novelty - Main and first auxiliary requests (no)
Clarity of amended claims - Remaining auxiliary requests (no)

Decisions cited:
G 0003/14, T 0190/99

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Case Number: T 2204/13 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 7 February 2018

Appellant: (Patent Proprietor)	Agilent Technologies, Inc. - a Delaware Corporation - 5301 Stevens Creek Boulevard Santa Clara CA 95051 (US)
Representative:	Dilg, Haeusler, Schindelmann Patentanwaltsgesellschaft mbH Leonrodstraße 58 80636 München (DE)
Appellant: (Opponent)	Waters Technologies Corporation 34 Maple Street Milford, MA 01757 (US)
Representative:	Vossius, Corinna Corinna Vossius IP Group Patent- und Rechtsanwaltskanzlei Widenmayerstraße 43 80538 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 9 August 2013 concerning maintenance of the European Patent No. 1707958 in amended form.**

Composition of the Board:

Chairman	R. Bekkering
Members:	F. J. Narganes-Quijano
	B. Müller

Summary of Facts and Submissions

I. Both the patent proprietor and the opponent have lodged an appeal against the interlocutory decision of the opposition division finding European patent No. 1707958 as amended according to the second auxiliary request then on file to meet the requirements of the EPC.

II. The opposition filed by the opponent against the patent as a whole was based on the grounds for opposition under Articles 100 (a), (b) and (c) EPC.

Among the documents cited during the first-instance proceedings, the following document has been considered by the parties during the appeal proceedings:

E6: US 4 043 906 A.

III. In its decision the opposition division found in respect of the requests then on file *inter alia* that

- the ground for opposition under Article 100 (b) EPC did not prejudice the maintenance of the patent,
- the subject-matter of independent claim 9 and of dependent claims 3 and 11 as granted, but not that of claim 1 as granted, extended beyond the content of the application as originally filed (Article 100 (c) EPC),
- the subject-matter of claim 1 as granted was not new (Article 100 (a) together with Article 54(1) EPC) in view of the disclosure of document E6,
- the set of claims of the first auxiliary request then on file complied with Article 100 (c) and Article 123 (2) EPC, but the amended claims 1, 3 and 10 were not clear (Article 84 EPC), and
- the patent amended according to the second auxiliary request then on file met the requirements of

the EPC, and in particular the requirements of Articles 123(2) and (3) EPC and the requirements of novelty and inventive step over the prior art documents considered during the proceedings, and in particular over the disclosure of document E6.

IV. With its letter dated 12 September 2014 the patent proprietor submitted the following documents:

Annex 1: copy of extract from *en.wikipedia.org*, entry "Volumetric flow rate", printing date 12 August 2014, 3 pages

Annex 2: figures showing "Scheme 1", "Scheme 2", and "Scheme 3", 3 pages.

V. In reply to a communication annexed to summons to oral proceedings the patent proprietor submitted with the letter dated 5 January 2018 six sets of claims as a first to a sixth auxiliary request and the following document:

Annex 3: "Simulation of compressibility and elasticity compensation", 4 pages.

VI. Oral proceedings were held before the board on 7 February 2018.

The patent proprietor requested that the decision under appeal be set aside and that the patent be maintained

- as granted (main request) or
- in amended form on the basis of one of the sets of claims of the first to sixth auxiliary requests filed with the letter of 5 January 2018.

The opponent requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

At the end of the oral proceedings the chairman announced the decision of the board.

VII. Claim 1 of the patent as granted and constituting the main request of the patent proprietor reads as follows:

"A solvent supply system comprising:

a first supply flow path (1), for supplying a first solvent, comprising a first metering device (2) having a first piston (4) and being adapted for metering the first solvent, a pressure determination unit, and

a control unit adapted for controlling the first metering device's piston movement in accordance with a first solvent pressure of the first solvent,

wherein a variation of the first solvent pressure gives rise to a corresponding variation of a first solvent volume of the first solvent contained in the first supply flow path (1) or a part thereof,

characterized in that the control unit is adapted for compensating for the variation of the first solvent volume by a corresponding corrective movement of the first piston (4) and

the control unit is adapted for compensating for an increase of the first solvent pressure by superposing a corresponding forward displacement on the piston movement of the first piston, and for compensating for a decrease of the first solvent pressure by superposing a corresponding backward displacement on the piston movement of the first piston."

Claim 1 of the first auxiliary request is identical to claim 1 of the main request.

Claim 1 of the second auxiliary request differs from claim 1 of the main request in that the claim further includes the following paragraph at the end of the claim:

"; wherein the control unit is adapted for compensating for an additional compression or expansion flow due to the variation of the solvent pressure by modifying the metering device's piston movement, whereby an additional solvent quantity pushed into or drawn out of the supply flow path is compensated for".

Claim 1 of the third auxiliary request differs from claim 1 of the second auxiliary request in that the claim further includes the following phrase at the end of the last paragraph:

", wherein such compression or expansion flow includes the effects of solvent compressibility and system elasticity".

Claim 1 of the fourth auxiliary request differs from claim 1 of the main request in that the claim further includes the following paragraphs at the end of the claim:

"; wherein the control unit is adapted for:

first, setting the piston's velocity to a desired flow rate and monitoring the solvent pressure;

in case of pressure variations, superposing a corrective movement that corresponds to the pressure-induced variation of the solvent volume in the supply flow path on the regular piston movement".

Claim 1 of the fifth auxiliary request differs from claim 1 of the main request in that the claim further includes the following paragraphs at the end of the claim:

"; the first supply flow path (1) being adapted for supplying the first solvent to a mixing unit (3),

a second supply flow path (5) comprising a second metering device (6) with a second piston (7), the second supply flow path (5) being adapted for supplying a second solvent to the mixing unit (3),

the mixing unit (3) being adapted for mixing the first and the second solvent and for supplying a composite solvent with a mixing ratio of the first and the second solvent,

with the control unit being adapted for such controlling the piston movements of the first and the second metering device (2, 6) that the mixing ratio becomes substantially independent of a variation of the solvent pressure of the composite solvent,

the control unit is adapted for compensating for an increase of the solvent pressure by superposing corresponding forward displacements on the piston movements, and for compensating for a decrease of the solvent pressure by superposing corresponding backward displacements on the piston movements;

characterized in that the control unit is adapted for deriving the additional piston movement from the parameter of system elasticity of supply flow path components".

Claim 1 of the sixth auxiliary request is identical to claim 1 of the fifth auxiliary request.

Reasons for the Decision

1. The appeal of the patent proprietor and the appeal of the opponent are both admissible.

2. *Main request - Claim 1 - Novelty*

2.1 Claim 1 of the present main request corresponds to claim 1 of the patent as granted, and in the decision under appeal the opposition division held that the subject-matter of this claim was anticipated by the disclosure of document E6.

2.2 It has been undisputed during the appeal proceedings that document E6 discloses a solvent supply system (Fig. 1 and the corresponding description) comprising a supply flow path (reservoir 12 and tubing 16) for supplying a solvent (14), the system including a metering device (motor 22) having a piston (20) and being adapted for metering the solvent. The system also comprises a control unit (differentiating network 40) connected to a pressure determination unit (pressure gauge 36) and arranged to control the movement of the piston in accordance with the determined value "P" of the solvent pressure. In particular, the control unit is arranged to modify the velocity of the piston by a quantity equal to kV (dP/dt) (column 4, lines 16 to 25), wherein "k" and "V" represent respectively the compressibility of the solvent and the volume of the reservoir. As a consequence, the control unit compensates for an increase of the solvent pressure by superposing a forward displacement on the movement of the piston, and compensates for a decrease of the

solvent pressure by superposing a backward displacement on the movement of the piston.

2.3 In its decision the opposition division referred to the passage in document E6, column 1, lines 52 to 56 according to which "a sudden increase or decrease in P cause the volume of the liquid phase to transiently contract or expand, due to the compressibility of the liquid phase thereby causing the transient change in the flow rate", and concluded that in the system of document E6 a variation of the solvent pressure determined by its time derivative (dP/dt) gave rise to a corresponding variation of the solvent volume contained in the supply flow path or part thereof as required by claim 1. The opposition division also referred to the passage in column 4, lines 21 to 26 of document E6 according to which "the velocity of piston 20 [...] is modified by the feedback signal - which, being of the form indicated, precisely cancels out the transient flow", and concluded that the control unit disclosed in document E6 was adapted for compensating for the variation of the solvent volume by a corresponding movement of the piston as also required by claim 1.

During the appeal proceedings the patent proprietor disputed the opposition division's findings in this respect and submitted different arguments in support of its view that the claimed compensation approach was different from that disclosed in document E6 and was not anticipated by document E6.

2.3.1 According to a first line of argument of the patent proprietor, the passage of document E6 in column 4, lines 21 to 26 recited above disclosed that the velocity of the piston was modified by a feedback

signal which precisely cancelled out the transient flow (-KV)(dP/dt) (cf. equation (1) in column 1 of document E1), this quantity representing the transient flow rate resulting from a sudden pressure change when taking into account the compressibility of the solvent (document E6, column 1, lines 40 to 52). The patent proprietor submitted that the control unit of E6 was limited to this compensation and was therefore specifically arranged to compensate for the variation of the flow rate resulting from a pressure change, and not adapted for compensating for the variation of the solvent volume resulting from pressure variations as claimed.

However, as shown in Annex 1, the flow rate of the solvent is defined as the time derivative of the volume of the solvent flowing through the flow path and, as submitted by the opponent by reference to paragraph [0007] of the patent specification and to the passage in column 1, lines 52 to 56 of document E6 recited in point 2.3 above, in case of pressure variations in both the claimed system and the system of document E6, the corresponding variations in the solvent volume and the corresponding variations in the flow rate of the solvent are intrinsically related to each other. More particularly, claim 1 is directed to the compensation of the variation of the solvent volume arising from a variation of the solvent pressure, and this variation of the solvent pressure also causes a corresponding variation of the flow rate as mentioned in document E6. Accordingly, the modification of the velocity of the piston by the control unit of document E6 not only compensates for the variation of the flow rate caused by the variation of the solvent pressure determined by the value dP/dt, but also intrinsically compensates for

a corresponding variation of the solvent volume caused by the mentioned variation of the solvent pressure.

It is also noted in this respect that the embodiment of the claimed invention disclosed in the patent specification with reference to Figures 6A to 6D and 7A to 7D also shows that the claimed compensation of the variations of the solvent volume arising from variations of the solvent pressure are accompanied by a corresponding compensation of the variations of the flow rate (see Fig. 6B and 7B).

The board concludes that the control unit of the system of document E6 not only compensates for the variation of the flow rate arising from a variation of the solvent pressure, but also intrinsically compensates for the corresponding variation of the solvent volume arising from the variation of the solvent pressure as required by the claimed subject-matter.

2.3.2 The patent proprietor also referred to Scheme 1 to Scheme 3 represented in Annex 2 in support of its view that the claimed compensation approach is distinguished from the compensation approach disclosed in document E6.

Scheme 1 reproduces Fig. 6A (the time variation of the pressure without compensation) and Fig. 6D (the time variation of the position of the piston without compensation) of the patent specification, Scheme 2 reproduces Fig. 7A (the time variation of the pressure with compensation) and Fig. 7D (the time variation of the position of the piston with compensation) of the patent specification, and Scheme 3 shows a graph "Fig. E6" representing the "Δ Piston Velocity", i.e. the variation of the piston velocity, which is proportional

to the time derivative (dP/dt) of the pressure (P) represented in Fig. 6A. According to the patent proprietor, a comparison of these graphs showed that the compensation approach according to the invention and that disclosed in document E6 were different.

However, the graph "Δ Piston Velocity" represented in "Fig. E6" of Scheme 3 of Annex 2 only represents the value (dP/dt) corresponding to the uncorrected pressure represented in Fig. 6A, without however taking into account that in the system of document E6 the actual value of the pressure would immediately change to a corrected value by an amount proportional to dP/dt when the pressure varies and would then change at any subsequent time by the corresponding amount computed, not on the basis of the value of the uncorrected pressure shown in Fig. 6A, but on the basis of the value of the pressure previously corrected. Therefore, the board cannot follow the submissions of the patent proprietor that the graph of Scheme 3 showing "Δ Piston Velocity" represents the compensation approach disclosed in document E6. In addition, Fig. 7A and 7D of the patent specification shown in Scheme 2 represent a particular embodiment of the invention based on a specific compensating movement of the piston position (see Fig. 7D), and claim 1 is not restricted to this particular embodiment. For these reasons, the graphs shown in Annex 2 do not allow the conclusion that the compensation approach underlying the claimed system is different from the compensation approach disclosed in document D1.

During the oral proceedings the patent proprietor also based its submissions on a Scheme 3 differing from Scheme 3 referred to above. The differences between the two schemes, however, have no incidence on the above

assessment as the above considerations also apply to Scheme 3 shown during the oral proceedings.

2.3.3 The patent proprietor also submitted that, when the pressure increased over a predetermined, target value and reached a stationary, constant value during a predetermined time period (the "plateau" of the graph represented in Scheme 5 shown on page 13 of the letter dated 19 December 2013 and in point 2.3.1 of the letter dated 7 May 2014), the claimed control unit would carry out the claimed compensation when the value of the pressure was the stationary value because this value represented a variation of the pressure over the target value. According to the patent proprietor, the derivative of the pressure (dP/dt) at this constant, stationary value would, however, be zero, and therefore the control unit of document E6 would, contrary to the claimed invention, execute no corrective piston movement.

The board, however, does not find this line of argument persuasive for several reasons. The line of argument of the patent proprietor fails to take into account that, before the uncorrected pressure may reach a higher, constant value of the pressure as represented in Scheme 5, the system disclosed in document E6 would already have triggered the compensation process when the pressure started to increase in the previous time period, so that the actual, corrected pressure at a subsequent time period would generally not correspond to the uncorrected pressure represented in Scheme 5 and would not reach the higher, stationary value mentioned by the patent proprietor. In addition, claim 1 requires that the control unit "is adapted for compensating for an increase [...] and for compensating for a decrease of the first solvent pressure", but the claim leaves

open how an increase and a decrease of the solvent pressure is measured or determined and/or how the control unit specifically operates on the basis of the variation of the solvent pressure. Consequently, as submitted by the opponent, claim 1 does not support the patent proprietor's submissions that the claimed system is required to carry out compensation when the pressure is constant, but higher than a predetermined, target value. Therefore, the board is of the opinion that none of the claimed features exclude that the control unit of the claimed system operates in the same way as the control unit of document E6.

2.3.4 Finally, the patent proprietor submitted that, while document E6 was based on a differential control of the compensation (in particular, on the time derivative of the pressure), the claimed system relied on a global or integral control of the compensation as shown by Fig. 7D of the patent specification.

However, as submitted by the opponent, the claimed subject-matter does not reflect any such difference and does not exclude a differential control as disclosed in document E6. In particular, claim 1 requires that the claimed control unit is "adapted for controlling the first metering device's piston movement in accordance with a first solvent pressure", "adapted for compensating for the variation of the first solvent volume", wherein the variation of the solvent volume arises from "a variation of the first solvent pressure", and also "adapted for compensating for an increase of the first solvent pressure [...] and for compensating for a decrease of the first solvent pressure [...]". The derivative of the pressure constitutes a measure of the variation of the solvent pressure and, more particularly, a measure of any

increase and any decrease of the solvent pressure. Accordingly, the claimed subject-matter does not exclude that the control unit operates on the basis of the variation of the solvent pressure when specifically determined, as it is the case in document E6, by the time derivative of the pressure. Similarly, the compensation approach of document E6 relies on the time derivative of the pressure and therefore, as submitted by the patent proprietor, the compensation approach is independent of a static or reference value of the pressure. Claim 1, however, does not exclude that the compensation by the control unit is also carried out only on the basis of the time derivative of the pressure, i.e. independently of the mentioned static or reference value of the pressure.

For similar reasons, the further argument submitted by the patent proprietor during the oral proceedings that the claimed compensation would go beyond a mere compensation of the flow rate as disclosed in document E6 and would also be quantitatively different from the compensation generated by the control unit of document E6, is not supported by the subject-matter actually claimed. In particular, none of the claimed features determines a degree of quantitative compensation that would allow distinguishing the claimed system from the system disclosed in document E6.

2.3.5 Annex 3 shows the results of simulations carried out by the patent proprietor in support of its submissions relating to novelty and inventive step of the independent claims of the third, the fifth and the sixth auxiliary requests requiring consideration of the "system elasticity" in the claimed compensation approach. Since this feature is absent from claim 1 of

the main request, Annex 3 is not relevant for the issue of novelty of claim 1 of the main request.

2.4 In view of the above considerations, the board concludes that, as already found by the opposition division in its decision, the subject-matter of claim 1 of the main request is not new over the disclosure of document E6 (Article 100 (a) together with Article 54(1) EPC 1973).

3. *First to sixth auxiliary requests - Admissibility*

The set of claims of the present first to sixth auxiliary requests constitute amended versions of the sets of claims of the auxiliary requests previously filed by the patent proprietor with its statement of grounds of appeal, and they were submitted by the patent proprietor in reply to the summons to oral proceedings. During the oral proceedings the opponent did not object to the admittance of the present auxiliary requests into the proceedings, and since the amendments were in reaction to the observations made by the board in the communication annexed to the summons to oral proceedings, the board considered it appropriate to admit the present first to sixth auxiliary requests into the proceedings.

4. *First auxiliary request - Claim 1 - Novelty*

Claim 1 of the first auxiliary request is identical to claim 1 of the main request. Therefore, the subject-matter of claim 1 of the first auxiliary request is not new over the disclosure of document E6 (Article 100 (a) together with Article 54(1) EPC 1973) for the same reasons as those given in point 2 above in respect of claim 1 of the main request.

5. *Second auxiliary request - Claim 1 - Clarity*

5.1 Claim 1 of the second auxiliary request is based on claim 1 as granted, the claim further specifying the features of the last paragraph of the claim (cf. point VII above). These features introduced into the claim are based on the third alternative of dependent claim 2 of the application as originally filed and on the first sentence of paragraph [0011] of the description of the application as originally filed (Article 123(2) EPC). Consequently, the amended claim 1 may, pursuant to Article 101(3) EPC, be examined for compliance with Article 84 EPC 1973, although only when, and then only to the extent that the mentioned amendment introduces non-compliance with Article 84 EPC 1973 (see decision G 3/14, OJ EPO 2015, 102, Order).

5.2 Claim 1 of the second auxiliary request requires - as does claim 1 as granted - that the control unit "is adapted for compensating for the variation of the first solvent volume [arising from a variation of the first solvent pressure] by a corresponding corrective movement of the first piston" (emphasis added) and, as a consequence of the amendment, the claim further requires that the control unit "is adapted for compensating for an additional compression or expansion flow due to the variation of the solvent pressure by modifying the metering device's piston movement [...]" (emphasis added).

The opponent submitted that it could not be derived from the formulation of the amended claim whether the "additional compression or expansion flow" was equivalent to the "variation of the first solvent volume", and that for this reason it was not clear in

the context of the claim if and how the amended feature "modifying the metering device's piston movement" was related to the "corrective movement of the first piston" previously defined in the claim.

The patent proprietor contested this view and submitted that according to the standard of claim construction mentioned in decision T 190/99, claim 1 was to be construed by the skilled person and, in particular, by a mind willing to understand. According to the patent proprietor, the claim stated that "an additional solvent quantity pushed into or drawn out of the supply flow path is compensated for", and it was therefore clear for the skilled person that in the claimed context the variation of the solvent pressure was correlated with an additional compression or expansion flow, and that an additional compression or expansion flow was correlated with a variation of the solvent volume. In addition, it was also clear for the skilled person that the piston movement was modified for compensation purposes, and that this modification was called corrective movement of the piston. Accordingly, the skilled person would see in the last paragraph of claim 1 a clarification or explanation of the compensation and he would understand that the compensation relates to an additional solvent quantity, and that the "variation of the first solvent volume" corresponded to the "additional compression or expansion flow", and the "corrective movement of the first piston" corresponded to the modification defined by the feature "modifying the [...] piston movement", as confirmed by paragraphs [0012], [0019] and [0071] of the patent specification. The patent proprietor submitted that, in the absence of any alternative technically reasonable interpretation, claim 1 was clear.

5.3 The board notes that in the case of a granted claim, for the purposes of Article 123(3) EPC, it may be justified in some specific cases - in particular, when the granted claim presents ambiguities or inconsistencies, see for instance decision T 190/99 cited by the patent proprietor, points 2.2.1, 2.2.4 and 2.3.3 of the reasons - to construe the claimed subject-matter taking into account the whole disclosure of the patent (see the mentioned decision T 190/99, points 2.2.5, 2.3.4 and 2.4 of the reasons). However, in the case of a granted claim having been amended and being, as a consequence of the amendment, subject to examination under Article 84 EPC 1973, the amendments should be clear for the skilled person from the formulation of the claim itself.

In addition, the skilled person reading the amended claim 1 would be confronted with the question of whether the last feature of the claim only constitutes - as submitted by the patent proprietor - a clarification or explanation of the compensation previously defined in the claim, or whether it requires an additional compensation (see expression "compensating for an additional compression or expansion flow [...] by modifying the metering device's piston movement" [emphasis added]). The wording of the claim allows for both interpretations of the claimed subject-matter. In addition, the submissions of the patent proprietor show that the first interpretation is technically possible and reasonable, but, contrary to the patent proprietor's contention, the second interpretation is also technically plausible and technically reasonable as the skilled person would alternatively understand it as requiring that the control unit is adapted to carry out, in addition to

the first compensation defined in the claim and involving "a corresponding corrective movement of the first piston", a further or additional compensation specifically directed to the mentioned compression or expansion flow and further involving "modifying the metering device's piston movement". The question of whether this second interpretation would be inconsistent with, or excluded by the description of the patent specification is not pertinent because, as already noted above, the amended claim should be clear for the skilled person from the formulation of the claim itself.

5.4 The board concludes that the amendments of claim 1 of the second auxiliary request render the claim ambiguous and that, consequently, the claim is not clear within the meaning of Article 84 EPC 1973.

6. *Third auxiliary request - Claim 1 - Clarity*

Claim 1 of the third auxiliary request differs from claim 1 of the second auxiliary request in that the claim further specifies at the end of the claim that "such compression or expansion flow includes the effects of solvent compressibility and system elasticity". This feature has no incidence on the objection of lack of clarity considered in point 5 above in respect of claim 1 of the second auxiliary request, and the patent proprietor has made no submission in this respect. Therefore, claim 1 of the third auxiliary request lacks clarity (Article 84 EPC 1973) for the same reasons as those given in point 5 above in respect of claim 1 of the second auxiliary request.

7. *Fourth auxiliary request - Claim 1 - Clarity*

7.1 Claim 1 of the fourth auxiliary request is based on claim 1 as granted, the claim further specifying the features of the last paragraphs of the claim (cf. point VII above). These features introduced into the claim are based on paragraph [0007] of the description of the application as originally filed (Article 123(2) EPC). Consequently, the amended claim 1 may, pursuant to Article 101(3) EPC, be examined for compliance with Article 84 EPC 1973 (cf. point 5.1 above).

7.2 Claim 1 of the fourth auxiliary request requires - as does claim 1 as granted - that the control unit "is adapted for compensating for the variation of the first solvent volume [arising from a variation of the first solvent pressure] by a corresponding corrective movement of the first piston" (emphasis added) and, as a consequence of the amendment, the claim further requires that the control unit "is adapted for [...] in case of pressure variations, superposing a corrective movement that corresponds to the pressure-induced variation of the solvent volume in the supply flow path on the regular piston movement" (emphasis added).

The opponent submitted that the amended feature can be interpreted - in accordance with the patent proprietor's submissions - as a clarification of the compensation previously defined in the claim, but - contrary to the patent proprietor's view - also as requiring an additional compensation superposed on the compensation previously defined.

The patent proprietor submitted that the terminology of the amended feature matched with the terminology of the remaining features, and that the second of the interpretations mentioned by the opponent was excluded

from the formulation of the claim in view of the reference in the amended feature to "monitoring the solvent pressure", this feature being linked to the "variation of the first solvent pressure" referred to in the compensation previously defined in the claim, and also in view of the reference to "a corrective movement that corresponds to the pressure-induced variation of the solvent volume".

However, as pointed out by the opponent, the amended feature refers to "pressure variations" (emphasis added) and also refers not to "the", but to "a corrective movement" (emphasis added) to be "superpos[ed] [...] on the regular piston movement" (emphasis added). In view of the formulation of the amended feature, the board is of the opinion that the skilled person would be confronted with the question of whether the amended feature only constitutes a clarification of the compensation previously defined in the claim, or whether it requires a further or additional compensation, both interpretations being technically plausible and reasonable.

7.3 The board concludes that the amendments of claim 1 of the fourth auxiliary request render the claim ambiguous and that, consequently, the claim is not clear within the meaning of Article 84 EPC 1973.

8. *Fifth auxiliary request - Claim 1 - Clarity*

8.1 As submitted by the patent proprietor during the oral proceedings, claim 1 of the fifth auxiliary request results from a combination of granted claim 1, the second alternative of granted dependent claim 7, claim 3 of the application as originally filed, and the third

alternative of claim 4 of the application as originally filed. In particular, the feature of the penultimate paragraph of claim 1 of the fifth auxiliary request reading "the control unit is adapted for compensating for an increase of the solvent pressure [...], and for compensating for a decrease of the solvent pressure [...] on the piston movements" is based on the third alternative of claim 4 of the application as originally filed, wherein "solvent pressure" means the pressure of the composite solvent resulting from mixing the first and the second solvents (see the expression "solvent pressure of the composite solvent" in both the antepenultimate paragraph of claim 1 of the present fifth auxiliary request, and in the last paragraph of claim 3 as originally filed to which claim 4 as originally filed refers back).

It is noted that the above mentioned feature of the penultimate paragraph of claim 1 of the fifth auxiliary request providing a compensation for an increase/ decrease of the pressure of the composite solvent is not present in the granted claims, in particular not in granted claim 3 providing a separate compensation for an increase/decrease of the pressure of the first and the second solvents, and a compensation for the variations of the first solvent volume and a compensation for the variations of the second solvent volume.

Consequently, the amended claim 1 may, pursuant to Article 101(3) EPC, be examined under Article 84 EPC 1973 at least to the extent that the mentioned amended feature introduces non-compliance with Article 84 EPC 1973 (cf. point 5.1 above).

8.2 During the oral proceedings the opponent raised a series of objections under Article 84 EPC 1973 and Article 123(2) EPC in respect of the amendments of claim 1 resulting from the juxtaposition of different features of granted claims and of claims of the application as originally filed, some of these claims requiring only "a first solvent" and the corresponding "first piston" and other claims involving a first and a second solvent together with the corresponding first and second pistons, and a mixing unit for mixing the first and second solvents into a composite solvent. The discussion during the oral proceedings focused, in particular, on the relationship between

- the feature of claim 1 of the fifth auxiliary request, already present in claim 1 as granted, and requiring that the control unit "is adapted for compensating for an increase of the first solvent pressure by superposing a corresponding forward displacement on the piston movement of the first piston, and for compensating for a decrease of the first solvent pressure by superposing a corresponding backward displacement on the piston movement of the first piston" (emphasis added), and

- the feature introduced into claim 1 of the fifth auxiliary request, based on the third alternative of dependent claim 4 as originally filed, and requiring that the control unit "is adapted for compensating for an increase of the solvent pressure [of the composite solvent] by superposing corresponding forward displacements on the piston movements, and for compensating for a decrease of the solvent pressure [of the composite solvent] by superposing corresponding backward displacements on the piston movements" (emphasis added).

The board adheres to the view expressed by the opponent that it is unclear in the amended claim 1 whether the compensation defined in the first of the claimed features mentioned above and involving only the first solvent and the corresponding first piston is different from or, on the contrary, is to be understood as being included in the compensation defined in the second of the claimed features mentioned above and involving the composite solvent and both of the first and the second pistons. As a consequence, it is unclear in claim 1 whether the control unit is only adapted for carrying out compensation for the composite solvent - and therefore intrinsically also for the first solvent - by controlling simultaneously the first and the second pistons, or whether the control unit is, in addition thereto, adapted for separately carrying out compensation for the first solvent only by separately controlling only the first piston.

8.3 In view of the above considerations, claim 1 of the fifth auxiliary request includes amendments that render the claim ambiguous and, consequently, the claim is not clear within the meaning of Article 84 EPC 1973.

9. *Sixth auxiliary request - Claim 1 - Clarity*

Claim 1 of the sixth auxiliary request is identical to claim 1 of the fifth auxiliary request. Therefore, claim 1 of the sixth auxiliary request is not clear (Article 84 EPC 1973) for the same reasons as those given in point 8 above in respect of claim 1 of the fifth auxiliary request.

10. Since none of the requests of the patent proprietor is allowable, the board concludes that the patent is to be revoked.

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:

M. Kiehl R. Bekkering

Decision electronically authenticated