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**Datasheet for the decision
of 15 May 2023**

Case Number: T 1572/20 - 3.2.05

Application Number: 13189670.6

Publication Number: 2865528

IPC: B41M5/00

Language of the proceedings: EN

Title of invention:

Manufacturing of decorative surfaces by inkjet

Patent Proprietor:

AGFA NV

Opponent:

Arcolor AG

Relevant legal provisions:

EPC Art. 54(1), 56, 100(a)
RPBA 2020 Art. 13(1)

Keyword:

Inventive step (no: main request, auxiliary requests 1 to 7)
Admittance (no: auxiliary requests 'bis' and 'bis2')

Decisions cited:

G 0001/03, T 1646/12



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Case Number: T 1572/20 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 15 May 2023

Appellant: AGFA NV
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 15 May 2020
revoking European patent No. 2865528 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman P. Lanz
Members: O. Randl
A. Bacchin

Summary of Facts and Submissions

I. The patent proprietor filed an appeal against the opposition division's decision revoking European patent No. 2 865 528.

II. The decision under appeal was based on a public prior use alleged by the opponent. The opposition division was of the opinion that:

- the alleged public prior use (abbreviated as "APPU" in the following) was relevant to novelty and inventive step of the claimed subject-matter and had been established,
- the subject-matter of claim 1 of the main request was not new over the APPU, and
- the subject-matter of
 - claim 2 of auxiliary request 1 and
 - claim 1 of auxiliary requests 2 to 4was not inventive in view of the APPU in combination with common general knowledge.

III. Of all the documents cited by the opposition division, the following are relevant to the present decision:

- D1 EP 2 623 567 A1
- E1 N.N., "Gebündeltes Digitaldruck-Know-how", material-technik möbel 1/10
- E3 DE 199 16 546 A1
- E6 Brochure "Dispergiertechnologie EDAPLAN® und METOLAT®" issued by Münzing (04/2012)
- E7 Brochure "EDAPLAN & METOLAT Guide Formulations for Organic Pigments" issued by Münzing Chemie GmbH (11/2013)
- E8 Extract from Madgassi, S. (ed.), "The Chemistry

- of Inkjet Inks", Singapore, World Scientific Publishing, 2010, pp. 101-115
- E12 Brochure "Dekortiefdruck" issued by Clariant GmbH, June 2002
- E26 WO 2006/012142
- E27 DE 10 2007 029 540 A1
- E29 Webpage "Traditionelles Wissen für High-Tech-Lösungen" published on www.arcolor.ch, extracted from the Internet archive web.archive.org and dated 21 June 2012
- E50 Service manual EPSON Stylus PRO 7000 (© 2000)
- E51 FJ-540 User's Manual issued by Roland DG Corp (© 2002)
- E52 Webpage "Nassenger VII", extracted from www.konicaminolta.com

IV. The appellant filed the following document with its statement of grounds of appeal:

- E53 Brochure "Universal Print Head" by Agfa (© 2005)

V. With its reply to the statement of grounds of appeal, the respondent filed, among other evidence, the following document:

- E59 Zhou, Y. et al, "Applications of Page Wide Piezo Inkjet Printing to Commercial and Industrial Market", Proceedings of the International Conference on Digital Production Printing and Industrial Applications (DPP2001), Antwerp, Belgium, May 2001, Volume 1, pp. 50-53

VI. On 12 April 2023 the board issued a communication pursuant to Article 15(1) RPBA expressing its

provisional opinion that the subject-matter of claim 1 of the patent as granted was new over the APPU and that document D1 appeared to be a better starting point for examining inventive step than the APPU (see points 10 and 11 of the communication).

VII. The oral proceedings before the board of appeal took place on 15 May 2023.

VIII. The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted (main request) or that the decision under appeal be set aside and the patent be maintained in amended form on the basis of one of auxiliary requests 1 to 7 filed together with the statement of grounds of appeal, or on the basis of one of the twelve auxiliary requests "Main-bis" to "Aux7-bis" and "Aux1-bis2" to "Aux4-bis2" filed on 19 March 2021. The requests were to be considered in this order.

For the sake of concision, when referring to the twelve auxiliary requests "Main-bis" to "Aux7-bis" and "Aux1-bis2" to "Aux4-bis2" collectively, the board will use the label "auxiliary requests 'bis' and 'bis2'".

IX. The respondent (opponent) requested that the appeal be dismissed. It also requested that the case be remitted to the opposition division for examination of inventive step of the main request if the board were to conclude that the subject-matter of that request was new over the alleged public prior use.

X. Claim 1 as granted (main request) reads (the feature numbering used by the appellant is indicated in square brackets):

"1. [1] A method for manufacturing decorative surfaces including the steps of:
a) [2] inkjet printing a colour pattern [3] on a paper substrate [4] with one or more aqueous inkjet inks of an aqueous inkjet ink set; [5] and thereafter
b) [6] impregnating the paper substrate with a thermosetting resin,
characterized in that [7] the paper substrate includes one or more ink receiving layers for improving the image quality of the aqueous inkjet inks jetted thereon; and that [8] the aqueous inkjet ink set includes [9] a cyan aqueous inkjet ink containing a copper phthalocyanine pigment; [10] a red aqueous inkjet ink containing a pigment C.I Pigment Red 254 or a mixed crystal thereof; [11] a yellow aqueous inkjet ink containing a pigment C.I Pigment Yellow 151 or a mixed crystal thereof; and [12] a black aqueous inkjet ink containing a carbon black pigment; [13] with the proviso that the aqueous inkjet inks do not include a polymer latex binder."

Auxiliary request 1 contains two independent claims 1 and 2.

Claim 1 of auxiliary request 1 differs from claim 1 of the main request by the additional step "c) [6a] heat pressing the thermosetting paper carrying the colour pattern into a decorative panel selected from the group consisting of flooring, kitchen, furniture and wall panels".

Claim 2 of auxiliary request 1 differs from claim 1 of the main request by the additional feature "wherein [15] the one or more aqueous inkjet inks are jetted at a jetting temperature of not more than 35°C".

Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 by the additional feature "wherein [14] the inkjet printing is performed by a single pass printing process". Claim 2 of auxiliary request 2 is identical to claim 2 of auxiliary request 1.

Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 2 in that the quantity of each pigment is defined as being "more than 2 wt%" (features 9 to 12 becoming features **9' to 12'**) and the specification "[16] the wt% [are] based on the total weight of the ink" is added. Claim 2 of auxiliary request 3 is identical to claim 2 of auxiliary request 2.

Claim 1 of auxiliary request 4 differs from claim 1 of auxiliary request 3 in that the features "[4a] a red aqueous inkjet ink containing a pigment C.I Pigment Red 254 or a mixed crystal thereof, and [4b] one or more aqueous inkjet inks selected from [4c] a cyan aqueous inkjet ink containing a copper phthalocyanine pigment; [4d] a yellow aqueous inkjet ink containing a pigment C.I Pigment Yellow 151 or a mixed crystal thereof; and [4e] a black aqueous inkjet ink containing a carbon black pigment" replace features 8, 9' to 12' and 16. Claim 2 of auxiliary request 4 is identical to claim 2 of auxiliary request 3.

Auxiliary requests 5 to 7 contain only one independent claim.

Claim 1 of auxiliary requests 5, 6 and 7 is identical to claim 1 of auxiliary requests 1, 2 and 4, respectively.

The suffix "bis" in the designation of an auxiliary request expresses the fact that the expression "with a thermosetting resin" in feature 2 is replaced by "with an aqueous solution of a thermosetting resin" (feature 2 becoming feature **2'**) in all the independent claims.

The suffix "bis2" in the designation of an auxiliary request expresses the fact that feature 2 is replaced by feature 2' in all the independent claims and that in independent claim 2 the words "of no more than 35°C" in feature 15 is replaced by "between 20°C and 35°C" (feature 15 becoming feature **15'**).

XI. The submissions of the parties relevant to the outcome of the appeal may be summarised as follows:

(a) Claim interpretation

(i) Appellant (patent proprietor)

Claim 1 involves a set of inks of different colours. Normally all the colours are used, but in specific cases one or two inks may suffice. That at least one of the four inks is used follows from feature 4. The ink set is defined in features 8 to 12. The understanding according to which none of the four claimed inks has to be used does not make sense if the claim is read in the light of the description and in particular of the examples of the patent.

(ii) Respondent (opponent)

Claim 1 does not require that the whole set of inks be used for printing. Step a) states that the printing is done "with one or more aqueous inkjet inks of an aqueous inkjet ink set". Thus it is enough if one of

the inks according to features 9 to 12 is used. Moreover, the ink set according to feature 8 is defined in an open manner: it has to "include" the four inks but it does not necessarily consist in a set of only four inks. In this respect, method claim 1 is drafted much more broadly than product claim 8. Consequently, claim 1 is anticipated by any method using only one of the inks of features 9 to 12.

(b) Main request: inventive step of claim 1, starting from document D1

(i) Respondent (opponent)

Document D1 discloses two different types of inkjet inks. Paragraph [0030] states that the inks "are preferably aqueous or water based". Radiation curable inks are also disclosed, but it is also stated that "unlike aqueous or water based inks for obtaining a high image quality that they do not require to be printed on a paper to produce a so-called decorative paper". Thus the radiation curable inks are not intended for use on paper. However, the description of the process in paragraph [0152] contains a clear reference to printing on paper.

Document D1 discloses the use of inks according to features 9 to 12. In paragraph [0053] phthalocyanine pigments are disclosed. Paragraph [0047] mentions C.I Pigment Red 254. Paragraph [0057] discloses the use of carbon black pigments. The same pigments are also used in the examples. In view of the broad formulation of claim 1, **features 8 to 12 do not constitute a distinguishing feature**. Even if the claimed colours are relevant to the method, the use of only one of them is

sufficient to anticipate the method. Therefore the argument based on multiple choices from lists fails.

The feature that the **inks are aqueous** is not distinguishing because in paragraph [0030] of document D1 such inks are said to be preferred. This feature would at least have been obvious to the skilled person. Paragraph [0030] advises against the use of solvent based inks. There is a clear focus on aqueous or water based inks. If only printing on paper is considered, the fact that UV-curable inks can be used on other substrates is not relevant. Claim 1 is limited to printing on paper.

When asked by the board what the technical effect of inks that are not necessarily used for printing might be, the respondent answered that there was no effect other than the fact that the inks were available in case they were needed. The appellant's assertion that the set of inks resulted in improved metamerism was unfounded.

Document D1 does not disclose an **ink receiving layer** (feature 7). UV-curable inks are more viscous than aqueous inks and do not sink into porous paper. They do not require an ink receiving layer. However, the skilled person would have known that such a layer is needed when aqueous inks are used.

The corresponding objective technical problem is the provision of a method allowing aqueous inks to be used in an efficient manner in decorative panel printing.

Documents E3 and E27 provide the solution to this problem. The expression "Farbstoffe" in paragraph [0008] of document E27 should not be translated as

"dyes" because the document contains many references to pigments. Both documents E3 and E27 teach the use of an ink receiving layer. Consequently, this feature would have been obvious to the skilled person. Document E27 does not mention any other solution, such as the use of partially impregnated layers. Moreover, there may be several obvious solutions to a problem.

There cannot be any **polymer latex binder** in document D1 because its examples concern radiation curable inks, whereas latex is a polymer dispersion in water. If there is no water, there cannot be any latex.

There is no apparent technical effect related to the absence of latex binder. The inks of document D1 cannot contain any latex. But even if the variant of document D1 involving aqueous inks is considered, the choice of the binder (casein or latex) is arbitrary. Paragraph [0007] of the patent mentions latency improvements due to the inclusion of latex or specific humectants in single pass printing. The patent does not provide any evidence for an improvement caused by the exclusion of latex. Moreover, there is no synergy between features 7 and 13. The use of aqueous inks without latex binder was known at the filing date of the patent, as can be seen from documents E29, E12 and E26.

Feature 13 is a negative feature, which makes claim 1 very broad. The patent does not explain what is to be used instead of the latex binder. The appellant has not established that any ink without latex binder has improved latency etc.

There is a catch to the appellant's arguments with respect to latency. Paragraph [0007] of the patent states that improvements in latency have been obtained

by including a block polymer and a polymer latex, not by polymer latex alone. The effect demonstrated in Table 8 of the patent is not due to the pigment. Table 6 shows that one and the same dispersant (Edaplan) was used for all the pigments. Documents E6 to E8 show that each pigment has an appropriate dispersant. The effect in Table 8 could be related to the fact that Edaplan was not a suitable dispersant for all the pigments. Table 8 only shows for which pigments it is a suitable dispersant.

(ii) Appellant (patent proprietor)

The technical effect of the claimed **set of inks** consists in high printing reliability and productivity, and also to a certain extent, if all the inks are used, excellent metamerism (see paragraphs [0011] and [0012] of the patent). The printing reliability is demonstrated in the examples. Latency is a very important factor for printing reliability. Table 8 of the patent shows that some of the pigments are capable of a latency of more than 30 or 60 minutes. Short latency times may result from the use of pigments other than the claimed pigments. With the claimed inks, the print head may remain idle for more than 30 minutes. In addition, the four pigments claimed show good metamerism. Paragraph [0227] gives a comparison of ink sets CR1YK (pigment PR254) and CR2YK (pigment PR122). CR1YK proved superior not only with respect to metamerism but also with respect to the colour gamut and the amount of ink lay-down for wood colour patterns. Thus productivity is improved. The respondent's objection that the same dispersant was used is not persuasive: when the same dispersant is used, the pigments as such are compared.

Document D1 mentions **aqueous inks**. However, the first sentence of paragraph [0030] states that the inks of the inkjet ink set may be solvent based inks, but are preferably aqueous or water based inks, and most preferably radiation curable inks. It is necessary to distinguish water based inks and aqueous inks. The latter comprise water and solvents. All the examples concern curable inks. Paragraphs [0044], [0050], [0055] and [0056] all repeat that such inks are preferred. So document D1 clearly expresses a preference for UV-curable inks. To arrive at the claimed subject-matter, it is necessary to ignore the most-preferred type of ink. Each choice of ink constitutes a further selection from a list. Thus the claimed method is only arrived at if multiple selections are made and latex is avoided.

Document D1 is also silent on **ink receiving layers**. These are also linked to printing reliability because, in the absence of good image quality, the method produces waste. It is not correct that UV-curable inks cannot be used on paper: paragraph [0030] of document D1 only discloses that other substrates are possible. When asked whether the use of ink receiving layers was a natural choice when aqueous inks were used, the appellant explained that several other measures could be taken, such as using partially impregnated decorative paper, in which the liquid rapidly diffuses into the paper but the pigments stay on top. When a latex binder is used, an ink receiving layer is not necessary. Document E27 states that there should be a functional layer for receiving the inks and fixing the dyes (*Farbstoffe*). This disclosure is irrelevant when pigments are considered. Dyes are more mobile and penetrate rapidly into the paper substrate.

The **absence of latex binder** is relevant to the latency of the inks, as can be seen from paragraph [0007] of the patent. The prior art shows that latex has a positive effect on latency. The respondent's argument based on block polymers is not relevant: the dispersant Edaplan is a block polymer (see paragraphs [0061] and [0062] of the patent and documents E6 (schematic representation on page 8) and E7). When asked by the board what the technical effect of negative feature 13 was, the appellant explained that the effect was that no latex was involved in the printing. The existence of a polymeric film could prevent the impregnation of the paper or make it more difficult, resulting in longer impregnation times and reduced productivity. Being able to print without latex was an important factor for productivity in the decorative printing business.

Documents E29 and E12 mention the use of casein, but this does not exclude the presence of latex. When asked by the board whether there was evidence on file that casein and latex binders were used in combination, the appellant's representative was unable to indicate any.

(c) Auxiliary requests 1 to 4: inventive step of the subject-matter of claim 2, in view of document D1

(i) Respondent (opponent)

The appellant is attempting to obtain a patent on the basis of a trivial feature. The additional feature is obvious over documents E50 to E52. All these documents disclose operating temperatures for commercial inkjet printers of between about 10 and 35°C: the claimed domain is conventional. No surprising effect related to the feature was alleged. When aqueous inks are used, the inks freeze at too-low temperatures and evaporate

at too-high temperatures. The skilled person knew that the domain between 10 and 35°C was optimal for aqueous inks. There is no disclosure in documents E50 to E52 that the print head is heated. Even document E53, where the print head is heated, has a clear overlap with the claimed domain. The temperatures mentioned in paragraph [0037] of document D1 are the temperatures at which the viscosity of the inks was measured. This has nothing to do with a jetting temperature.

(ii) Appellant (patent proprietor)

There is a synergy between the jetting temperature of less than 35°C and the existence of an ink receiving layer. Both improve printing reliability. When asked by the board, the appellant admitted that there was no proof of any synergy in the patent.

The operating temperature of the print head is not the same as the jetting temperature. Print heads are controlled by temperature because of its influence on the ink's viscosity. Document E53 discloses that "[a]t ambient temperatures between 10 and 40 °C the conditioning unit keeps the ink temperature and viscosity at a constant level". The ink viscosity is said to be between 6 and 10 mPas at the jetting temperature. The disclosure of "Water based cooling/heating 250 ml/min at 0.3 Bar, between 10 °C and 55 °C" means that the head is kept at a stable temperature. 55°C is well above the claimed upper temperature limit.

Paragraph [0041] of the patent discloses that the preferred jetting temperature is between 10 and 70°C. The advantage of 70°C is that the drying is faster. Most preferably, the jetting temperature is between 25 and 35°C for reasons of printing reliability. Paragraph

[0028] states that the jetting temperature is preferably not more than 35°C. The use of higher temperatures results in latency problems.

Documents E50 to E52 are manuals or brochures and do not express common general knowledge. Moreover, they give no information on jetting temperatures. The temperatures mentioned are environmental temperatures. "Temperature: 15 to 32°C ..., Humidity: 35 to 80%" in document D51 must refer to the ambient conditions.

All the temperatures mentioned in paragraph [0037] of document D1 are 45°C, i.e. above the claimed domain.

When asked whether the use of temperatures below 35°C would have been surprising to the skilled person, the appellant declared that the aim of the invention was high printing reliability and high productivity (see paragraphs [0010] and [0011] of the patent). When aqueous, water based or solvent based inks are used, more energy is required to evaporate the water or solvent at lower temperatures. For the sake of productivity, the skilled person would therefore have considered higher temperatures, between 40 and 70°C. Temperatures of less than 35°C are unexpected for a method that offers good printing reliability.

(d) Auxiliary request 5: inventive step of the subject-matter of claim 1, starting from document D1

(i) Appellant (patent proprietor)

Paragraph [0152] of document D1 discloses one preferred method among others (see paragraphs [0153] to [0156]), not all of which involve heat pressing. As with all the examples of document D1, it relates to UV-curable inks.

To arrive at the claimed subject-matter, the skilled person would have had to make one more selection. The same holds true for paragraph [0133] of document D1.

With regard to synergy, the appellant explained that the latex binder had an influence on the heat pressing by reducing the adhesion between the layers. When there was no latex binder, it could not have a negative influence on the pressing step. Document E1 disclosed that UV-curable inks and oil based inks were not suitable for subsequent impregnation. This indicated that polymers such as the polymer latex binder had a detrimental effect by forming a polymer film obstructing the resin impregnation, thereby reducing productivity. When asked whether there was any disclosure relating to this in the patent, the appellant referred to paragraph [0230], which belongs to the description of Example 2. This paragraph discloses that a CR1YK-printed decorative paper was impregnated with an aqueous solution containing 60 wt% of melamine-formaldehyde based resin and dried to a residual humidity of about 8 g/m². It was found that "homogenous impregnation" was obtained "in a time frame acceptable for industrial manufacturing". As there was no latex binder, the impregnation was not disturbed. Paragraph [0231] adds that the quality of the laminate after the heat pressing was good.

(ii) Respondent (opponent)

Heat pressing step c) is exactly the same for gravure printing and for inkjet printing. This is why in document E12 impregnation and pressing are described in an analogous manner. It was obvious to the skilled person that the product of the method of claim 1 of the patent has to be heat pressed in a further step.

When asked whether there was a synergy between step c) and the absence of latex (feature 13), the respondent explained that this effect was not disclosed in the patent. It amounted to a mere assertion without substantiation that had never been made during the opposition proceedings. The question of whether the presence of latex could give rise to problems could not be easily answered: the answer most certainly depended on the quantities of latex involved. The patent's disclosure with respect to latex is limited to the disclaimer of feature 13. The patent does not disclose any positive effect related to the omission of latex.

(e) Auxiliary request 6: inventive step of the subject-matter of claim 1, starting from document D1

(i) Appellant (patent proprietor)

The added feature increases productivity. To arrive at the subject-matter of claim 1, the skilled person would have had to make a further selection in document D1.

The advantage of single pass printing consists in the higher printing speed that can be obtained.

When asked whether there was a synergy with the other features of claim 1, the appellant referred to paragraphs [0004] and [0007] of the patent. Single pass printing was connected to latency, which is crucial for printing reliability. The skilled person knew that single pass printing worked in the presence of polymer latex binder. The absence of latex could give rise to problems. In document D1, there is no latex binder, but the most preferred ink is UV-curable ink, which does not tend to evaporate. Document D1 does not challenge

the skilled person's common knowledge that aqueous inks should contain latex binder. The inventors have discovered that the latex binder is not needed. Document E59 deals with UV printing, not with printing with aqueous inks. There is no latency problem with UV-cured inks. It cannot be assumed that the conclusions reached in this document also apply to aqueous inks.

(ii) Respondent (opponent)

Document D1 refers to single pass printing as the preferred printing method. Paragraph [0007] of the patent does not disclose an interrelation between single pass printing and the absence of latex binder. The alternative option mentioned in paragraph [0007] (inclusion of humectants) should not be overlooked. The skilled person would have understood from this disclosure that the latex binder is not necessary. The patent as a whole does not mention any synergy.

When asked what the advantage of single pass printing was over multi-pass printing, the respondent explained that single pass printing offers greater speed and better quality, as confirmed by document E59.

(f) Auxiliary request 7: inventive step of the subject-matter of claim 1, starting from document D1

(i) Appellant (patent proprietor)

The fact that good metamerism is obtained with UV-cured inks does not allow the conclusion to be drawn that the same effect would have been obtained with aqueous inks containing the same pigments. In Table 9 of document D1, there is a reference to ITX, which initiates polymerisation but also generates a yellowish

degradation product. Not everything is transferable from a UV ink to aqueous inks. Latency also has to be considered. Document D1 does not dwell on this aspect because it concentrates on UV-curable inks. It is not certain what the composition of the aqueous ink would be, i.e. whether or not it would contain latex binder. Paragraph [0227] of the patent compares inkjet ink sets CR1YK (with PR254) and CR2YK (using PR122). CR1YK has not only improved metamerism but also an advantageous colour gamut and reduced ink lay-down. This results in better print reliability and higher productivity. When asked whether claim 1 comprised CR1YK, the appellant stated that the use of PR254 pointed towards CR1YK.

(ii) Respondent (opponent)

The colour effect depends exclusively on the pigments involved. Document D1 does not disclose any yellowish colouration generated by the degradation of the photoinitiator ITX. The appellant has not provided any proof in this respect. All the other ingredients of the inks are selected for their transparency because the colour effect of the pigments should not be disturbed. It would be surprising if the quantity of photoinitiator had not been chosen accordingly. It is not correct that the latency is related to certain pigments. The variation of latency observed is due to the fact that the dispersant used is suitable to a greater or lesser degree for the different pigments. Table 8 of the patent shows that problems arise only for the yellow pigments: all the red, black and cyan pigments have latencies exceeding 30 minutes. Consequently, it has not been shown that any latency problem was solved by the claimed method.

(g) Admittance of auxiliary requests 'bis' and 'bis2'

(i) Respondent (opponent)

The auxiliary requests filed after the respondent's reply to the statement of grounds of appeal should not be admitted. The nature of the impregnation carried out in the APPU was discussed during the oral proceedings before the opposition division (see point 2.2.3 of the reasons for the decision under appeal). Had the appellant wished to react to this discussion, it should have filed the requests with its statement of grounds of appeal. The third party observations were more favourable to the patent proprietor than the opposition division's decision because in paragraph (48) the third party mentioned a distinguishing feature, whereas the opposition division concluded that the subject-matter of claim 1 was not new. Consequently, the third party observations cannot have triggered the filing of the additional auxiliary requests.

(ii) Appellant (patent proprietor)

When asked for the reasons why these auxiliary requests were filed after the respondent's reply to the statement of grounds of appeal, the appellant explained that it had been misled by the opposition division's decision. The opposition division had changed its assessment of the APPU previously given in the preliminary opinion. The new claims required a different method of impregnation from the prior-use method. When asked why the requests had not been filed with the statement of grounds of appeal, the appellant referred to the objections raised for the first time in paragraph (48) of the third party observations filed in

December 2020. The third party observations provided extra arguments and gave a different meaning to the term "impregnation".

Reasons for the Decision

1. Main request
- 1.1 Claim interpretation
- 1.1.1 Precise requirements regarding the inks

Claim 1 defines a method for manufacturing decorative surfaces. The method comprises the step of inkjet printing a colour pattern on a paper substrate "with one or more aqueous inkjet inks of an aqueous inkjet ink set" (feature 4). Feature 8 requires the inkjet ink set to "include" four inks defined in features 9 to 12. The open formulation ("includes" instead of "consists in") has the consequence that the set may comprise more than these four inks, say a fifth and a sixth ink. As method step a) comprises the case in which only one ink of the set is used, this one ink may be an ink other than the four inks defined by features 9 to 12. Thus, to anticipate the subject-matter of claim 1 it is sufficient that the prior art method involves an ink set that includes said four inks. It is not required that they actually be used for printing the image. The inks only have to be available.

The appellant's argument that, in view of the patent as a whole, the skilled person would have interpreted claim 1 such that at least one of the four inks defined in features 9 to 12 is used for printing cannot be accepted. The drafter of the patent deliberately

drafted claim 1 in a very open manner. It would have been easy to draft the claim such that one of the four inks mentioned above has to be used. Having decided to draft a much broader claim, the appellant cannot now read limiting features disclosed in the description into claim 1. As stated in decision T 1646/12 (see point 2.1 of the reasons for the decision), it is not permissible to regard the claims and the description as "communicating vessels" in this respect, for example, by reading into the claims limiting features that are described in the description but not present in the claims.

1.1.2 Meaning of feature 13

Feature 13 is negative. It requires that the aqueous inkjet inks do not include a polymer latex binder. There is no technical effect that can be linked to this very general feature, the only purpose of which is to exclude certain embodiments. In this respect, the feature is comparable to what the Enlarged Board of Appeal called a "disclaimer" in its decision G 1/03, namely

"an amendment to a claim resulting in the incorporation therein of a "negative" technical feature, typically excluding from a general feature specific embodiments or areas" (see point 2 of the reasons for the decision, reaffirmed in decision G 2/10, point 2.2 of the decision)

1.2 Inventive step of the subject-matter of claim 1, starting from document D1

Document D1 relates to industrial ink printing methods used for reproducing wood colours and patterns

on various substrates (see paragraph [0001]). Paragraph [0152] discloses a preferred embodiment in which a colour pattern is produced by inkjet printing on a paper substrate to produce a decorative paper (features 1 to 3), which is then impregnated with a resin such as melamine (features 5 and 6). The inkjet inks are preferably aqueous (paragraph [0030]; feature 4).

1.2.1 Distinguishing features

It is undisputed that document D1 does not disclose that the paper substrate includes at least one ink receiving layer for improving the image quality (feature 7).

The specific combination of pigments according to features 8 to 12 is not disclosed in document D1, although C.I Pigment Red 254 is disclosed in paragraph [0047] and black ink containing carbon black pigments in paragraph [0057]. In view of its interpretation of claim 1 (see point 1.1.1 above), the board cannot endorse the respondent's argument that the combination of features is disclosed just because several of the claimed inks are being used.

Finally, although document D1 discloses radiation curable inks, which do not comprise a latex binder, it does not disclose that the aqueous inkjet inks referred to in paragraph [0030] do not include such a binder.

It follows that the subject-matter of claim 1 differs from the disclosure of document D1 in features 7 to 13.

1.2.2 Technical effects

(a) Feature 7

Paragraph [0104] of the patent states:

"The paper for the decorative layer includes one or more ink receiving layers for improving the image quality of the aqueous inkjet inks jetted thereon."

This is credible because the ink receiving layers hinder the ink from penetrating into the paper substrate. Consequently, the final colour pattern is less blurred and the image quality is improved.

(b) Features 8 to 12

The technical effect asserted by the appellant (improvement of metamerism) presupposes that the claimed inks are actually used for printing. As explained above (see point 1.1.1), claim 1 does not require this to be the case. Therefore the examination of inventive step cannot be based on this effect. The mere provision of the claimed inks in the inkjet set that is being used in the method only has the effect that at least one of these inks can be used if need be. However, this is also the case in the method of document D1. Therefore no technical effect can be ascribed to these features. Since it is not required that the claimed inks are actually used for printing the image, features 8 to 12 cannot contribute to the inventive step involved in the method of claim 1.

(c) Feature 13

Feature 13 acts as a disclaimer the purpose of which is merely to exclude specific embodiments of the prior art (see point 1.1.2 above). It does not provide any specific technical contribution to the subject-matter of claim 1 and has no identifiable technical effect.

The appellant's assertion that the existence of a polymeric film generated by the latex could prevent the impregnation of the paper or make it more difficult, resulting in longer impregnation times and reduced productivity, is not supported by any evidence. It is not plausible that the use of any binder other than a polymer latex binder would improve productivity, in particular if the disclosure of paragraph [0007] of the patent (that the presence of latex has a positive effect on latency) is taken seriously.

It follows that feature 13 cannot contribute to inventive step. Consequently, the feature is not taken into account in the examination of inventive step.

1.2.3 Objective technical problem

The objective technical problem solved by feature 7 consists in improving the print quality.

1.2.4 Obviousness to the skilled person

The question to be answered by the board is whether the skilled person starting from the method of document D1 and wishing to improve the print quality would have been led by the state of the art to provide ink receiving layers.

Document E3 discloses improvements of inkjet printable decorative paper. Paragraph 9 on page 2 discloses that the purpose of document E3 is to make a decorative base paper printable with good printing properties such as low ink consumption as well as good image sharpness and high colour density. In view of this disclosure, those skilled in the art would have taken the teaching of document E3 into account. In doing so, they would have realised that the core solution taught by document E3 is to provide an ink receiving layer. This can be seen, for instance, from claim 1 of document E3:

"1. Dekorropapier für dekorative Beschichtungswerkstoffe, dadurch gekennzeichnet, daß es eine Tintenaufnahmeschicht enthält."

It follows that the skilled person starting from the method of document D1 and wishing to improve the print quality would have been led by document E3 to provide ink receiving layers, as required by feature 7.

Thus the only distinguishing feature of claim 1 of the patent that actually provides an identifiable technical effect does not involve an inventive step.

Therefore the subject-matter of claim 1 of the patent is not inventive over the state of the art in view of the combination of documents D1 and E3.

Consequently, the ground for opposition pursuant to Article 100(a) EPC in combination with Article 56 EPC prejudices maintenance of the patent as granted, and the appellant's main request has to be dismissed.

2. Auxiliary requests 1 to 4: inventive step

Claim 2 of auxiliary requests 1 to 4 differs from claim 1 of the main request in that the aqueous inkjet inks are "jetted at a jetting temperature of not more than 35°C" (feature 15).

There is no evidence on file that this feature has any synergy with feature 7. It is therefore legitimate to examine whether feature 15 as such can justify the existence of an inventive step.

Document D1 does not disclose the jetting temperature at which the ink is jetted. The appellant's reference to the temperature of 45°C in paragraph [0037] is irrelevant as this is the temperature at which the viscosity of the ink is determined. It does not allow conclusions to be drawn as to the actual jetting temperature.

The skilled person trying to reproduce the teaching of document D1 would have used a conventional inkjet print head such as the ones exemplified in documents E50 to E52, which are typically operated at room temperature, i.e. temperatures between 15 and 30°C. There is no indication that such print heads are heated, nor is there evidence before the board that such a print head heats to and beyond 35°C when operated. Even if a heated print head such as the one disclosed in document E53 were used, the skilled person would have been led to use jetting temperatures "between 10 and 55 °C". The lower limit explicitly discloses a value falling within the claimed range of not more than 35°C.

Thus feature 15 as such cannot be said to involve an inventive step. Consequently, claim 2 does not meet the requirements of Article 56 EPC.

It follows that it is not possible to maintain the patent in amended form on the basis of auxiliary requests 1 to 4. These requests must be dismissed.

3. Auxiliary request 5: inventive step

Claim 1 of auxiliary request 5 differs from claim 1 of the main request in that the method comprises the step of heat pressing the thermosetting paper carrying the colour pattern into a decorative panel "selected from the group consisting of flooring, kitchen, furniture and wall panels".

Paragraph [0133] of document D1 discloses that the "decorative panel including an inkjet printed colour pattern is preferably selected from the group consisting of flooring, kitchen, furniture and wall panels".

That the method disclosed in document D1 comprises a step of heat pressing can be seen in paragraph [0152].

The appellant's arguments in favour of inventive step may be summarised as follows:

- Paragraph [0152] was limited to UV-curable inks.
- To arrive at the claimed subject-matter, the skilled person would have had to choose from among a series of preferred methods in paragraph [0152] and among several options in paragraph [0133].

- There is a synergy in the claimed subject-matter between feature 13 (absence of latex binder) and heat pressing step c).

The board finds these arguments unpersuasive for the following reasons:

The method of paragraph [0152] is the starting point for examining inventive step. Choosing this point of departure cannot be said to involve a further selection. The context is not restricted to UV-curable inks.

Paragraph [0133] discloses the claimed type of panels. The optional features mentioned in this paragraph (high pressure laminates, support layer, abrasive overlay) are not mentioned in claim 1 and are irrelevant for examining inventive step.

The patent does not disclose any synergy between feature 13 and step c) of the method. Paragraphs [0230] and [0231] of the patent do not provide any such teaching. The fact that the panel quality was good in the absence of latex binder does not allow the conclusion that the quality would have been less satisfactory in the presence of a polymer latex binder.

The subject-matter of claim 1 of the main request is rendered obvious by a combination of documents D1 and E3 (see point 1.2.4). For the reasons set out above, the additional feature of claim 1 of auxiliary request 5 is already suggested in document D1.

Consequently, claim 1 of auxiliary request 5 does not meet the requirements of Article 56 EPC.

Thus it is not possible to maintain the patent in amended form on the basis of auxiliary request 5, which must be dismissed.

4. Auxiliary request 6: inventive step

Claim 1 of auxiliary request 6 differs from claim 1 of auxiliary request 5 in that a single pass printing process is used (feature 14).

Paragraph [0141] of document D1 discloses a single pass printing process as a preferred printing method.

This disclosure is part of a passage dealing with inkjet printing devices (paragraphs [0138] to [0141]). The passage contains no reference to specific types of ink such as UV-curable inks. Therefore the board cannot endorse the argument that the skilled person trying to implement the method of document D1 with aqueous inks would have disregarded the suggestion to use single pass printing.

Thus document D1 suggests the subject-matter of feature 14 of claim 1 of auxiliary request 6. Taking into account the conclusion on claim 1 of auxiliary request 5 (see point 3.), claim 1 of auxiliary request 6 does not meet the requirements of Article 56 EPC in view of a combination of documents D1 and E3.

In view of this, it is not possible to maintain the patent in amended form on the basis of auxiliary request 6, which must be dismissed.

5. Auxiliary request 7: inventive step

Claim 1 of auxiliary request 7 differs from claim 1 of auxiliary request 5 in that the printing step is carried out with a red aqueous inkjet ink containing a pigment C.I Pigment Red 254 (or a mixed crystal thereof), and one or more aqueous inkjet inks selected from a cyan aqueous inkjet ink containing a copper phthalocyanine pigment, a yellow aqueous inkjet ink containing a pigment C.I Pigment Yellow 151 (or a mixed crystal thereof) and a black aqueous inkjet ink containing a carbon black pigment.

Document D1 discloses such combinations of inks. Paragraphs [0190], [0198] and [0204] disclose combinations of red ink using pigment PR254 and black ink using carbon black pigment PB7 for printing wood patterns with improved metamerism. However, these inks are UV-curable inks, and not aqueous inks as required by claim 1 of auxiliary request 7.

There is a reference to aqueous inks in paragraph [0030] of document D1. However, it was argued that the effect disclosed in paragraph [0204] is only obtained with UV-curable inks.

Paragraph [0011] of document D1, which defines the overall purpose of the invention, states:

"It is desirable to have an inkjet printing process not requiring a complex inkjet printer and image processing software to use an extended set of inkjet inks for a true reproduction of wood colours having minimal metamerism."

This statement is not limited to UV-curable inks. All the examples of document D1 are based on the most preferred UV-curable inks, but this does not alter the more general scope and purpose of its teaching.

Thus the skilled person would have expected the change from UV-curable inks to aqueous inks comprising the same pigments not to have a significant effect on the metamerism of the printed colour pattern. There is nothing in document D1 that might have led the skilled person to believe that there might be such an effect. If the skilled person wanted to use inks other than UV-curable inks, for whatever reason, paragraph [0030] of document D1 suggests that aqueous inks would be the second-best choice. By applying this to the inks disclosed in paragraph [0190] of document D1, the skilled person would have obtained a method falling within the scope of claim 1.

It is possible that the presence of photoinitiator ITX would have had a detrimental effect on the outcome, but document D1 does not contain any warning to this effect, which is purely speculative. Therefore the argument based on the presence of ITX in the inks of Table 9 of document D1 fails.

It is also possible that the use of the claimed inks leads to further advantages such as improved latency etc., but such advantages constitute at best what in the jurisprudence of the boards is called a "bonus effect", which cannot alone justify the presence of an inventive step (see "Case Law of the Boards of Appeal of the EPO", 10th edition, 2022, I.D.10.8).

Thus document D1 would have led the skilled person to the subject-matter of claim 1 in an obvious way.

Therefore claim 1 does not meet the requirements of Article 56 EPC in view of a combination of documents D1 and E3.

Consequently, it is not possible to maintain the patent in amended form on the basis of auxiliary request 7, which must be dismissed.

6. Admittance of auxiliary requests 'bis' and 'bis2'
- 6.1 The twelve auxiliary requests "Main-bis" to "Aux7-bis" and "Aux1-bis2" to "Aux4-bis2", indicated in the following as "bis" and "bis2", were filed by the appellant by letter of 19 March 2021, and thus after its grounds of appeal and the respondent's reply thereto had been filed.
- 6.2 As it is undisputed between the parties that the filing of these auxiliary requests represents an amendment of the appellant's appeal case, their admittance is subject to the board exercising its discretion pursuant to Article 13(1) RPBA.
- 6.3 Under this provision, the board exercises its discretion in view of, *inter alia*, the state of the proceedings, whether the amendment is detrimental to procedural economy, and whether the party has demonstrated that any such amendment, *prima facie*, overcomes the issues raised by another party in the appeal proceedings or by the board and does not give rise to new objections.
- 6.4 The appellant justified the late filing of auxiliary requests 'bis' and 'bis2' as a reaction to the third party observations submitted on 9 December 2020, i.e. after the filing of the statement of grounds of appeal,

and to the decision of the opposition division. The amendments introduced addressed the need to clarify step b) of the claimed method "impregnating the paper substrate with a thermosetting resin", in view of the inconsistent interpretation of the nature of such step given by the opposition division. They also addressed the meaning given by the third party observations, which did regard the (liquid) impregnation with thermosetting resin as a distinguishing feature with regard to the APPU.

- 6.5 The board decided not to admit auxiliary requests 'bis' and 'bis2' into the proceedings for the following reasons:
 - 6.5.1 As argued by the respondent, the new claim requests were not responsive to the third party observations. These observations had actually identified a distinguishing feature between claim 1 and the APPU, i.e. the liquid nature of the impregnating step (see point (48) of the third party observations), which thus did not negatively affect the appellant's position.
 - 6.5.2 The amendments introduced rather appear to be a reaction to the opposition division's final decision, which had considered the claim to be silent about the impregnation method and thus adopted a literal interpretation of the impregnation step b), including both wet and dry impregnation (see section 2.2.4.2 of the reasons for the decision). By contrast, in its preliminary opinion (see section 2.2.3.3.), the opposition division had given an interpretation of step b) in the sense of liquid impregnation.
 - 6.5.3 Under these circumstances, it must be concluded that the appellant actually had good reason to react by

filing the present amendments earlier in the proceedings, i.e. at least with the filing of the statement of grounds of appeal, and that their filing could not have been triggered by the third party observations.

6.5.4 This conclusion is further confirmed by the appellant's arguments in support of admittance that the amendments would not come as a surprise to the respondent, since they had been argued throughout the opposition proceedings and originally even considered as a distinguishing feature in the preliminary opinion by the opposition division.

6.5.5 The board also concurs with the respondent's view that the new claim requests do not *prima facie* overcome the issues of inventive step found with respect to the higher-ranking requests. The appellant has not provided reasons why the amended features contribute to an inventive step over documents D1 and E3, beyond the mere statement that they meet the requirements of clear allowability.

6.6 For these reasons the board exercised its discretion under Article 13(1) RPBA not to admit auxiliary requests 'bis' and 'bis2' into the appeal proceedings.

7. Outcome of the appeal

In view of the board's conclusion that neither the main request nor auxiliary requests 1 to 7 are allowable, and the board's decision not to admit the auxiliary requests 'bis' and 'bis2' into the appeal proceedings, none of the appellant's requests can be granted.

Consequently, the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



D. Hampe

P. Lanz

Decision electronically authenticated