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Datasheet for the decision of 16 September 2015

Case Number: T 0631/11 - 3.5.07

Application Number: 02759368.0

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Language of the proceedings: EN

Title of invention:
System and method for managing electronic transmission of color data

Applicant:
Sun Chemical Corporation

Headword:
Colour data transmission/SUN CHEMICAL

Relevant legal provisions:
EPC Art. 56
RPBA Art. 13(1), 13(3)

Keyword:
Inventive step - main request (no) - auxiliary requests 1 to 3 and 5 to 7 (no)
Late-filed request - admitted (no) - auxiliary request 4, amendments after arrangement of oral proceedings, change of subject-matter, shift of invention

Decisions cited:
G 0003/08, T 0258/03, T 0154/04

Catchword:

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Case Number: T 0631/11 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 16 September 2015

Appellant: (Applicant)	Sun Chemical Corporation 35 Waterview Boulevard Parsippany, NJ 07054-1285 (US)
Representative:	Vossius & Partner Patentanwälte Rechtsanwälte mbB Siebertstrasse 3 81675 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 11 January 2011 refusing European patent application No. 02759368.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Moufang
Members:	P. San-Bento Furtado
	M. Rognoni

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division to refuse European patent application No. 02759368.0, which was filed as international application PCT/US02/25902 published as WO 03/017144. The application concerns the electronic transmission of colour data, in particular for the development of a colour product.

II. The application was refused for lack of inventive step (Articles 52(1) and 56 EPC) of the subject-matter of the claims of both requests then on file, a main and an auxiliary request, over prior art document D5 in combination with the common general knowledge or document D6:
D5: WO-A-01/28231, published on 19 April 2001;
D6: US-A-5 889 932, published on 30 March 1999.

III. In the statement of grounds of appeal, the appellant resubmitted, as main request and auxiliary request 1, respectively, the claims of the main and auxiliary requests considered in the appealed decision, and filed the claims of an auxiliary request 2. The appellant requested that the decision be set aside and that a patent be granted on the basis of the main request or of one of the auxiliary requests 1 and 2.

IV. In a communication accompanying a summons to oral proceedings, the Board expressed its preliminary opinion that none of the requests was allowable. In particular, interpreted in the light of the description, the subject-matter of independent claim 1 of each of the requests did not appear to involve an inventive step (Article 56 EPC).

V. With a letter of reply dated 13 August 2015, the appellant submitted new requests, as main request and auxiliary requests 1 to 4, and maintained its previous main request and first and second auxiliary requests as auxiliary requests 5 to 7, respectively.

VI. Oral proceedings were held on 16 September 2015. During the oral proceedings the appellant maintained the main request and auxiliary requests 1 to 7. At the end of the oral proceedings, the chairman pronounced the Board's decision.

VII. The appellant's final request was that the contested decision be set aside and that a patent be granted on the basis of the main request or, alternatively, of one of auxiliary requests 1 to 4, all these requests having been filed with the letter dated 13 August 2015, or of one of auxiliary requests 5 to 7 filed with the statement of grounds as main request and auxiliary requests 1 and 2, respectively.

VIII. Claim 1 of the main request reads as follows:
"A method for developing a color product, said method comprising:
(a) creating a set of color product data containing a plurality of data records incorporating multiple color characteristics, substrate characteristics, printing method characteristics, and hardware and device characteristics, each of which, alone or in combination, constitute color product development information;
(b) storing the color product development information in relatable and retrievable database tables (24-34);

(c) electronically specifying first color information, said first color information including at least a first color (S1OO);
(d) evaluating the at least first color and determining whether restrictions exist for said at least first color by referencing the stored database tables (S102);
(e) notifying a user of restrictions after determining restrictions exist (S104);
(f) halting production of the color product when the product cannot be developed (S106) and modifying a design of the color product (S108), wherein if no modification is made, ending development of the color product (S130);
(g) selecting a substrate for the at least first color (S110);
(h) determining whether the selected substrate is compatible with the at least first color (S112) by referencing the stored database tables (S112);
(i) notifying the user when the selected substrate and the at least first color are incompatible (S114);
(j) halting production of the color product when the product cannot be developed (S116) and modifying the design of the color product (S118), wherein if no modification is made, ending development of the color product (S130);
(k) selecting a printing method (S120);
(1) determining whether the selected printing method is compatible with the at least first color and the selected substrate by referencing the stored database tables (S122);
(m) notifying the user when the at least first color, selected substrate and selected printing method are incompatible (S124);
(n) halting production of the color product when the product cannot be developed (S126) and modifying

the design of the color product (S128), wherein if no modification is made, ending development of the color product (S130);

(o) continuing development of the color product (S132); and

(p) completing development of the color product."

IX. Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the text of features (a) and (b) reads as follows:

"(a) relating records in a plurality of tables to one or more records in a color table (24), wherein the tables are retrievable database tables,

(b) storing color product development information in a database, said color development information including characteristics related to development of a plurality of color products, wherein at least one characteristic includes a color characteristic, a substrate characteristic and a printing methods characteristic;".

Furthermore, the text "by referencing the stored database tables" was deleted from steps (d) and (l), and the text "by referencing the stored database tables (S112)" from step (h).

X. Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that the text describing steps (a) and (b) was replaced by the following text:

"(a) containing records regarding creation of a color in a color table (24);

(b) containing records regarding types of substrates and impact of substrates on color in a substrate table (26);

(c) containing data regarding an ability of a color to resist a plurality of elements in a resistance table (28);
(d) containing data regarding a plurality of color representations in a color format table (30);
(e) containing data regarding a plurality of printing methods in a printing techniques table (32);
(f) containing data regarding a plurality of hardware devices involved in color product development in a hardware devices table (34);
(g) relating each of the records in tables (26-34) to one or more records in the color table (24),
(h) storing the tables in retrievable database tables, the database tables being color product development information;".

As a result of this amendment, references (c) to (h) are - somewhat confusingly - used twice in the claim. Moreover, "when the product cannot be developed" in the previous step (f) (second step (f) in this claim) and in step (j) was replaced by "when the color product cannot be developed", and the reference sign "S112" in the previous step (h) was amended to "S102".

XI. Claim 1 of auxiliary request 3 reads as follows:
"A method for developing a color product, said method comprising:
(a) relating records in a plurality of tables to one or more color records in a color table (24),
wherein the tables are in a database,
wherein the color table (24) contains records regarding creation of color, including spectral data regarding a specific color,
wherein the plurality of database tables consists of a substrate table (26), a resistance table (28) a color format table (30), a

printing methods table (32) and a hardware devices table (34), and

(b) storing color product development information in a database, said color product development information including at least one characteristic related to development of a plurality of color products, wherein the at least one characteristic includes a color characteristic, a substrate characteristic and a printing methods characteristic;

(c) electronically specifying first color information, said first color information including at least a first color (S100);

(d) evaluating the at least first color and determining whether restrictions exist for said specified at least first color (S102);

(e) notifying a user of restrictions after determining restrictions exist for said at least first color (S104);

(f) halting production of the color product when the color product cannot be developed (S106) and modifying a design of the color product (S108), wherein (i) if no modification is made, ending development of the color product (Sl30) or (ii) wherein the design modification is to the color of the at least first color;

(g) selecting a substrate for the modified at least first color of the color product (S11O);

(h) determining whether the selected substrate is compatible with the modified at least first color (S112);

(i) notifying the user when the selected substrate and the modified at least first color are incompatible (S114);

(j) halting production of the color product when the product cannot be developed (S116) and modifying

the design of the color product (S118), wherein (i) if no modification is made, ending development of the color product (S130) or (ii) wherein the design modification is to the modified at least first color and/or to the selected substrate;

(k) selecting a printing method (S120);

(l) determining whether the selected printing method is compatible with the modified at least first color or the modified at least first color modified in step (j), and the selected substrate (S122) or the selected substrate modified in step (j);

(m) notifying the user when the modified at least first color, the modified at least first color modified in step (j), selected substrate and/or the selected substrate modified in step (j) and the selected printing method are incompatible (S124);

(n) halting production of the color product when the product cannot be developed (S126) and modifying the design of the color product (S128), wherein (i) if no modification is made, ending development of the color product (S130) or (i) [sic] wherein the design modification is to the modified at least first color, the selected substrate, the selected substrate modified in step (j) and/or the selected printing method;

(o) continuing development of the design modified color product of step (n) (S132); and

(p) completing development of the color product."

XII. Claim 1 of auxiliary request 4 reads as follows:

"A method for developing a color product, said method comprising:

(a) electronically specifying and measuring a color of the color product (S200);

(b) generating or receiving a data stream containing spectral data;
(c) formatting the spectral data and entering the spectral data into an electronic color palette application (S202);
(d) selecting colors for use on the color product from the electronic color palette, wherein a search is performed for close color or spectral matches;
(e) returning a color match for review by a designer (38);
(f) determining whether the color match is acceptable for a final press run (S204);

wherein if the color match is of an acceptable quality:

(ia) transmitting spectral data and viewable electronic images to a printer/converter (42) for review and/or production (S218); or

wherein if the color match from the electronic color palette is not satisfactory to the designer:

(ib) the designer electronically transmits spectral data to a separator (46) for filtering and proofing (S206);
(iib) the separator sets filtering and plate technology to produce a color proof (S208);
(iic) making printing plates and/or engraving cylinders for a sample color proof (S210);
(iid) measuring and comparing the sample color proof to the electronically specified colors of the color product received in step (a) (S212);
(iie) determining whether the sample color proof is of an acceptable match (S214);

wherein if the sample color proof is not an acceptable match:

making further combinatorial corrections (S216); and
returning to step (ib) (S210) for a repeat of the proofing process; or

wherein if the sample color proof is an acceptable match,

making printing plates and/or engraving cylinders for a sample color proof (S215);

transmitting spectral data and a viewable electronic image corresponding to the sample color proof to a printer/converter (42) for review (S218);

the printer/converter evaluates whether the sample color proof is an acceptable match (S220);

wherein if the sample color proof is an acceptable match,

the printer/converter orders ink (S222);

ink is created according to specifications furnished by the printer/converter and samples received from the separator 46 (S224);

sending to the printer/converter 42 for approval an electronic sample of the ink, including spectral data and a viewable electronic image (S226);

the printer/converter determining whether the electronic sample of the ink is matched (S228)

wherein if the electronic sample of the ink is not acceptable, returning to ink creation step (S226) for appropriate revisions to information regarding the ink;

wherein if the electronic sample of the ink is acceptable,

a formulator (40) outputting a formula; generating a sample from the formula, and further weighing and proofing the sample (S229);

delivering in-process printed materials for comparison to the accepted color (S230); and

delivering data to a color products customer (36) for visual inspection and approval (S232), wherein the data shows respective progress in the production chain."

XIII. Claim 1 of auxiliary request 5 reads as follows:

"A method for developing a color product, said method comprising:

(a) storing development information in a database, said development information including characteristics related to development of a plurality of color products;

(b) receiving first color information, said first color information including at least a first color;

(c) identifying first color development information in said database on the basis of said received first color information, said first development information including at least said first color;

(d) receiving data about at least one physical characteristic of said color product; and

(e) determining, using said first development information, whether said at least one physical characteristic is compatible with said first color, this result being used in a process of manufacturing said color product,

and either:

(f) halting development of the color product after any of steps (b) — (e) if a physical characteristic is not compatible with said first color, or

(g) issuing a warning via a user interface after any of steps (b) — (e) if a physical characteristic is not compatible with said first color."

XIV. Claim 1 of auxiliary request 6 differs from claim 1 of auxiliary request 5 in that

- the following text was inserted at the end of step (a): ", wherein said database includes a color table, a substrate table, a resistance table, a color format table, a printing technique table, and an optional hardware table, wherein each of records in said database substrate,

resistance, color format, printing technique, and hardware tables are related to one or more color records in said color table;"

- the words "and either" between steps (e) and (f) were deleted, and
- the word "and" replaced "or" at the end of step (f).

XV. Claim 1 of auxiliary request 7 reads as follows:

"A method for developing a color product comprising integrating disparate methods of color product development into an automated system, said system comprising database tables used to store and manipulate data regarding development of color and color products, said database tables including a color table (24) containing records regarding the creation of a color, a substrate table (26), a resistance table (28), a color format table (30), a printing technique table (32) and a hardware devices table (34), wherein records in database tables (26)-(34) are related to a color record in color table (24); wherein said system:

(A) receives electronic data regarding color products from diverse color production-related hardware devices and software, wherein said data is received from a color measuring device or a sample is created or retrieved on a user terminal;

(B) translates the electronic data into visual spectral data, said spectral data being processed to predict a color formula to reproduce a color; or translates device-related data representing a color from a format of a color representation into visual spectral data, said color representation selected from RBG, CIELAB, CIE XYX [sic] and CMYK;

(C) translates the spectral data into device-dependent format for reception by color product specialists, and

(D) delivers said device-dependent format as electronic images to a plurality of color product specialists;

said method comprising:

(a) a designer designing a color product, wherein the color(s) of the color product are specified and measured (S100);

(b) determining whether restrictions exist for a specified color of said color(s)(S102);

(c) notifying the designer and other color product development specialists of any restrictions for the specified color (S104);

(d) determining whether the designer can proceed with the design, wherein if the color product cannot be developed, production of the color product is halted (S106) and either:

(e) the designer modifies the design (S108) and proceeds to step (g), or

(f) development of the product ends if the designer does not modify the design of the color product (S130); and

wherein if the color product can be developed and production is not halted, proceeding to step (g);

(g) specifying a substrate on which the color(s) will be placed (S110);

(h) determining whether the specified substrate is compatible with the specified color(s) (S112);

(i) notifying the designer and other color product development specialists of any incompatibility for the specified substrate (S114);

(j) determining whether the designer can proceed with the design of the color product, wherein if the color product cannot be developed, production of the color product is halted (S116) and either:

(k) the designer modifies the design (S118) and proceeds to step (m), or

(l) development of the product ends if the designer does not modify the design of the color product (S130); and

wherein if the color product can be developed and production is not halted, proceeding to step (m);

(m) the designer selects a printing method for the color product (S120);

(n) determining whether the selected printing method is compatible with the specified color and substrate (S122);

(o) notifying the designer and other color product development specialists of any incompatibility for the selected printing method (S124);

(p) determining whether the designer can proceed with the design of the color product, wherein if the color product cannot be developed, production of the color product is halted (S126) and either:

(q) the designer modifies the design (S128) and proceeds to step (s), or

(r) development of the product ends if the designer does not modify the design of the color product (S130); and

wherein if the color product can be developed and production is not halted, proceeding to step (s);

(s) continuing development of the colored product (S132); and

(t) completing development of the colored product (S134)."

XVI. The arguments of the appellant, insofar as relevant for the present decision, are explained and dealt with in the reasons.

Reasons for the Decision

1. The appeal complies with the provisions referred to in Rule 101 EPC and is therefore admissible.

The invention

2. The application generally relates to the development of a colour product involving the coordinated efforts of colour product development specialists such as designers, printers, ink manufacturers and material suppliers. The application explains that the development of a colour product requires a great deal of communication between the contributors, frequently comprising physically handling and delivering samples for approval during the several developmental stages in the production chain (see the international publication, page 1, last two full paragraphs).

3. The colour management system described in the application is directed to enabling electronic communication, coordination and dissemination of colour-related designs, specifications and products between the parties involved (paragraph bridging pages 3 and 4). It includes one or more site processors coupled with user terminals across a communication network (paragraph bridging pages 6 and 7). The system provides, preferably in the site processor(s), databases to store data regarding development of colours and colour products. The user terminals provide user access to the site processors for receiving and providing such data (page 7, first full paragraph, page 8, second full paragraph, page 12, second full paragraph).

4. In a preferred embodiment, the database includes six tables. The colour table contains records regarding the creation of a colour, for example spectral data for a specific colour. The substrate table stores data about specific substrates and their relative impact on colour. The resistance table contains data regarding a colour's ability to resist e.g. water, solvent, acid, alkali, temperature, humidity, abrasion, light and ultraviolet radiation. The colour format table contains data for different colour representations (e.g. RGB, CMYK and CIE XYZ) used by the various devices. The printing technique table stores data about printing methods, for example offset and gravure printing. The hardware devices table contains data regarding hardware devices involved in colour product development, for example monitors, printers and scanners (Figure 3, page 12, second paragraph to page 13, first full paragraph).

5. The first independent claims of most of the requests are directed to the embodiment of Figure 5, described on page 20, penultimate line to page 22, last full paragraph. According to the description, that embodiment illustrates how the colour management system is used by a designer of a new cereal box. The method essentially consists of an iterative process with three similar phases in which, in each successive phase, one of the parameters colour, substrate and printing method is specified. After the specification of each of these parameters, the colour management system checks for restrictions. If there are no restrictions, the method proceeds to the next phase. Otherwise, it performs further steps which are mainly directed to checking whether "the choices selected by the designer 38 are such that the product cannot be developed" and, if the product cannot be developed, to letting the designer

choose to either change the design or to end the development of the product.

Main request

6. Independent claim 1 of the main request defines a "method for developing a color product" comprising steps which mainly create colour product data incorporating colour, substrate, and hardware and device characteristics (step (a)), store this data in database tables (step (b)), and perform method steps as illustrated in Figure 5 (steps (c) to (p) of the claim).

Interpretation of the claim

7. The Board understands claim 1 as describing steps of a human design process to arrive at a colour product having a desired colour given specific substrate and printing restrictions, the process being supported by a computer system. Most of the method steps, for instance the steps of creating a set of colour product data (step (a)), specifying first colour information (step (c)), selecting a substrate and a printing method (steps (g) and (k)), and modifying the design of the colour product (steps (f), (j) and (n)) are essentially performed by the user.

On a normal reading of the claim, the modification of the design can be interpreted as covering the modification of the first colour selection. The Board follows this interpretation, further noting that it is supported by the description on page 22, first full paragraph, and that it is at the basis of the explicitly recited features of auxiliary request 3.

Inventive step

8. In the design process of the claim the choice of a colour may involve aesthetic considerations, but taking into account whether a particular colour is achievable for a specific substrate and printing method involves technical considerations.

On the other hand, it is well established by the jurisprudence of the boards of appeal that design, even if it involves technical considerations, "is a process which at least initially can take place in the designer's mind, i.e. it can be a mental act and to the extent that it is a mental act would be excluded from patentability" (see G 3/08, OJ EPO 2011, 10, reasons 13.3).

In the present case, the design process is supported by a computer system, including some automatic steps. The Board therefore considers that the claimed method defines a mix of technical and non-technical features. In such a case it has to be established whether the technical features of the claim, in combination with those non-technical features which interact with the technical subject-matter of the claim for solving a technical problem, provide an inventive contribution to the prior art (T 154/04, OJ EPO 2008, 46, reasons 5(F)). This can be done by reference to a document disclosing similar subject-matter.

9. In the decision the Examining Division used document D5 as the closest prior art. The Board agrees that document D5 is a suitable starting point for the analysis of inventive step, as it describes a similar system to that of the application, used for the same purpose of development of colour products.

In particular, document D5 discloses "an interactive system for color approval by communication with remote locations and supplying printing inks to remote locations for printing uniform colors" (page 1, lines 4 to 9). The interactive system is directed to supporting the combined and complementary work of groups separated geographically but working together to meet the customer's needs for closest possible match in colour and quality for printed materials (page 1, line 11 to page 2). Matching print colours should be obtained, "even when the inks are manufactured at different locations and the materials are printed by different printing companies and at distant locations, and even when the printing is done using different printing processes" (page 3, lines 1 to 10).

10. Document D5 describes two methods which can be followed as two phases of a process.

In the first method, colour matching is performed to obtain an ink formulation for a printed colour as close as possible to a desired colour, taking into account other input data such as resistance (see, for example, page 3, line 11 to page 4, line 5, page 9, line 14 to page 10, line 17, page 14, line 20 to page 21, line 16).

The second method modifies an existing ink formulation according to additional information input by the user such as printing method and substrate characteristics (see e.g. page 10, line 18 to page 11, page 21, line 16 to page 22, line 23). The system modifies the ink formulation to match as closest as possible the desired colour, taking into account the additional information (page 21, lines 16 to 23, page 22, lines 2 to 13).

10.1 The appellant argued that the main focus of document D5 was the production of an ink or ink formulation. The system did not deal with colours but with inks. The process of document D5 was performed in the last phase of the ink production, when the colour product had already been designed. It was not directed to achieving a desired colour, as the invention in the present application was.

The Board, on the contrary, finds that the system of document D5 is intended to obtain a desired colour, which is input using different methods, for example using a spectrophotometer or a library of colours (page 12, lines 8 to 25). It is clear from different passages of document D5 that an important aim of the invention is to achieve the desired colour as closest as possible (page 17, lines 11 to 22, page 19, line 12 to page 20, line 4). This aim is present in the second as well as the first phase (see also point 10 above). It is true that the method of document D5 attempts to match the colour, which may lead to a different colour being obtained than the desired one. However, the skilled person would interpret this feature as optional (for example, the skilled reader would deduce from page 9, line 14 to page 10, line 7, that the user could set the parameter specifying the accepted maximum distance to the desired colour to zero) so that the feature can be seen as an automatic suggestion of a modification of the design of the colour product.

Furthermore, in the present invention the desired colour is not always obtained either, as a result of the claimed method, since a modification of the originally desired first colour may be necessary in case of incompatibility.

In the opinion of the Board, ink formulas are also in the background of the claimed invention. The claim does not describe any technical details of how the colour and other parameters are taken into account in the restrictions and compatibility checks. However, the colours managed by the system correspond to real colours which are achievable within given restrictions. The description mentions that ink and ink formulators play a role in the development of the colour product (see page 20, last full paragraph, page 21, last full paragraph of the present application). The skilled person therefore assumes that the colour product or colour development information of the claim is related to ink data.

10.2 The first method of D5, as described for instance on page 3, line 11 to page 4, line 5, is used to identify a desired ink colour and obtain a "formulation for a matching ink color based upon a given set of available ink base colors" (page 3, lines 11 to 15). The desired ink colour is identified using spectral data or other data. An interface is provided for "comparing the color standard with the selected color for the customer's approval". The system also provides a "procedure for adjusting the ink color (and the formulation for the ink color) based upon input from the customer" (page 3, lines 15 to 22). The ink can be made by mixing the colour bases of the formulation, for example by a dispensing apparatus having the ink base colours and linked to the system (page 3, lines 11 to 25).

Furthermore, according to the description on page 9, line 14 to page 10, line 7, the software package of the system "includes a database of color information for the ink base color set that will be used to manufacture

the ink" (see also Figure 1). It "uses the database information to select an ink formulation that will produce a printed ink having the closest color match to the desired color, within any other parameters specified". Other parameters include, for instance, a least expensive formulation having no more than a specified colour difference compared to the desired colour, or a given chemical resistance. In the opinion of the Board, the colour and other parameters are part of the design of a colour product.

Therefore, document D5 discloses a method for developing a colour product, similar to the claimed method, which comprises steps for (a) creating a set of colour product data, (b) storing the colour product data in a database (page 9, lines 1 to 5 and lines 14 to 20, page 14, line 22 to page 15, line 22), and (c) specifying a desired first colour and other parameters (page 3, lines 15 to 25, page 9, line 16 to page 10, line 7, page 14, line 22 to page 15, line 3).

The system of document D5 displays the colour matching result (page 3, lines 15 to 25, page 18, lines 8 to 24, page 19, lines 12 to 17). In the Board's view, this allows the user to become aware of incompatibilities between the first colour and the input parameters, similar to step (e). The system allows the user to change the design of the product (for example the colour, as disclosed on page 20, lines 5 to 9), as claimed in step (f).

The database of document D5 also stores the resulting ink formulations and associated information (page 21, lines 10 to 15) to be used in the second phase of the process.

10.3 After obtaining a first ink formulation in the system of D5, the user may choose to adapt it to other characteristics of the design, for example substrate and printing method. As described on page 21, line 24 to page 22, line 23, in this phase the program that determines the matching formulation can take into account additional information to "assure color match and ink performance for the specific printing job". Substrate and printing techniques are mentioned as examples of such additional information (see also claims 1 and 6 of document D5). Document D5 also discloses displaying the result of the selected ink formulation to the user (claims 1 and 6, or claims 1 and 7).

Therefore, the method of document D5 also includes steps for selecting a substrate and a printing method, as in steps (g) and (k). However, instead of determining compatibilities directly, the method of document D5 determines how those characteristics affect the colour, and calculates a modified formulation to compensate for the effect on the colour.

At the end of the process of document D5, the development of the colour product is further continued and completed (see, for example, page 22, line 24 to page 23, line 11) as in steps (o) and (p) of the claim.

10.4 Therefore, the claimed subject-matter differs from the process of document D5 essentially in that

(i) the database also stores substrate characteristics, printing method characteristics, and hardware and device characteristics,

(ii) the database includes relatable and retrievable tables,

(iii) the method includes a particular sequence of steps (a) to (n) consisting of three similar phases, each phase including, after the step of selecting, steps for
- determining incompatibilities or restrictions,
- notifying the user of incompatibilities or restrictions, and
- halting production when the product cannot be developed, and either modifying the design or ending the development.

In the opinion of the Board, these distinguishing features do not involve an inventive step.

10.5 Regarding features (i) and (ii), the process of document D5 uses a database containing colour data, which also stores ink formulation together with order information and other information (page 21, lines 10 to 15). It uses information regarding the impact of the substrate and printing method on ink colour. However, document D5 does not say where this information is stored. In the opinion of the Board, it would be obvious for the skilled person to store the necessary information regarding substrate and printing method, together with any other colour product data, in tables in a relational database. At the time of priority of the present application, relational database management systems, including a few successful commercial products, were widely known and used for storing data. It was standard practice to store data in database tables in relational databases in those systems. Therefore, features (i) and (ii) do not involve an inventive step.

10.6 Features (iii) are steps performed by the system and the user which correspond to steps of a design process

followed by a designer of a colour product. The claim describes the design steps in rather conceptual terms. Regarding those steps which are performed by, or with the assistance of, the computer, the claim provides very few details of the technical implementation. According to established case law (see point 8 above), design is a non-technical activity.

The appellant argued that the technical advantage of the invention over the prior art was the enhanced flexibility of being able to change the design at different stages, that incompatibilities were detected earlier and that the design was modified or the development was automatically stopped as soon as an incompatibility was detected. As a consequence, the method avoided print samples at an early stage, saving time and reducing production costs. In the system of document D5, samples had to be made early in the development because the system did not preview the resulting colour and the design could not be changed without beginning again.

In the opinion of the Board, the method of document D5 also avoids the production of samples (see page 23, lines 17 to 25). However, the Board recognises that, under some circumstances, features (iii) further accentuate this effect and give more flexibility.

The advantage is achieved by a modification of the semi-automated design process. In the opinion of the Board, it is standard practice in many industrial processes to check development at each step, and allow either modification of the design or interrupt development in case of incompatibilities. Independently of that, the modification of the sequence of steps of, or the introduction of further design checks in, a non-

technical design process, does not contribute to a technical character and cannot therefore be taken into account for assessing inventive step (see also T 258/03, OJ EPO 2004, 575, reasons 5.7).

The Board is therefore of the view that features (iii) amount to a mere semi-automation of a non-technical design procedure followed by a designer of a colour product. It would be obvious for the skilled person to implement this design process in the system of document D5, especially because the latter provides all the necessary technical means and already implements a similar process for the same purpose.

11. The subject-matter of claim 1 of the main request hence lacks an inventive step (Articles 52(1) and 56 EPC).

Auxiliary request 1

12. Independent claim 1 of auxiliary request 1 differs from claim 1 of the main request essentially in that steps (a) and (b) of creating the data and storing it in the database were amended to steps of (a) "relating records in a plurality of tables to one or more records in a color table ..." and (b) storing the data in a database. In steps (d), (h) and (l), the sentence "by referencing the stored database tables" was deleted (see section IX above).

Inventive step

13. At the oral proceedings, the appellant said that its arguments in favour of inventive step for the auxiliary requests were the same as for the main request.

14. In the opinion of the Board the amendments do not significantly change the subject-matter claimed. The Board's reasons given in points 8 to 10.6 above for the main request apply also to auxiliary request 1. The amendments to features (a) and (b) do not change the interpretation of those features by the Board. The deletion of the sentence "by referencing the stored database tables" actually broadens the subject-matter of the claim without solving any particular technical problem.

Therefore, the subject-matter of claim 1 of auxiliary request 1 is not inventive (Articles 52(1) and 56 EPC).

Auxiliary request 2

15. Claim 1 of auxiliary request 2 differs from claim 1 of the main request mainly in that steps (a) and (b) were replaced by steps (a) to (h) (leading to a repetition of the step references (c) to (h)) defining in detail the creation and population of each of the six tables for data regarding colour, substrate, resistance, colour format, printing techniques and hardware devices (see also section X and point 4 above).

Inventive step

16. The Board's reasons given in points 8 to 10.6 above for the main request apply also to the corresponding features of auxiliary request 2.

17. Regarding the additional features defining the database tables in auxiliary request 2, the Board notes that document D5 already discloses storing colour information in a database, and using each one of the types of data mentioned in the claim. In particular, it

describes or suggests using data about colours and substrates (page 11, last paragraph), resistance (page 9, line 14 to page 10, line 7), colour formats (page 12, lines 8 to 22), printing techniques and hardware devices (page 11, lines 14 to 25).

As explained for the main request, the storage of data regarding substrates and printing methods is not inventive. Furthermore, claim 1 of auxiliary request 2 does not define, beyond the feature "by referencing the stored database tables", how the additional types of data, concerning resistance, colour formats and hardware devices are used in the claimed method. In the opinion of the Board, it is obvious for the skilled person to extend the stored information to also include further parameters that might be taken into account in the design of the colour product.

The Board notes that the definition of the data tables can be seen as data modelling, an activity which as such is not considered to be a technical activity contributing to an inventive step. Independently of that, the particular choice of database tables in the present case corresponds to a conventional relational schema. The database includes one table per type of data, the records of each of the other tables being related to one or more records of the colour table. This is the traditional way of defining tables in a database, for example, employing the well-known standard normal forms for relational database design.

The Board is hence convinced that the features relating to the storage of colour product data in the six database tables as defined in auxiliary request 2 are not inventive.

18. From the above, it follows that claim 1 of auxiliary request 2 does not involve an inventive step (Articles 52(1) and 56 EPC).

Auxiliary request 3

19. Claim 1 of auxiliary request 3 (see section XI above) differs from claim 1 of auxiliary request 1 essentially in that it defines the six database tables (features (a) and (b)), and in that the steps of modifying the design are performed only with regard to those parameters, among colour, substrate and printing method, which have been already treated in previous steps (steps (f), (j) and (n)). Furthermore, it recites in feature (a) that the records in the colour table include spectral data regarding a specific colour. The other amendments (to features (e), (g) to (i), (l) and (m)) are mainly directed to clarifying that the determination also takes into account the modified parameters.

Inventive step

20. In the opinion of the Board, the amendments constitute minor changes to the subject-matter of previous requests and do not establish an inventive step.

20.1 Since the system of document D5 also takes into account spectral data for the matching process (page 15, line 17 to page 16, line 5), it would be obvious to store such data in the database. The other features of the invention related to the database tables have been discussed for auxiliary request 2. Therefore, the reasoning given in point 17 above applies also to features (a) and (b) of claim 1 of auxiliary request 3, which do not involve an inventive step.

20.2 In the opinion of the Board, limiting the modification of the design of the colour product to specific parameters in steps (f), (j) and (n) is a minor change to the design process which, especially in the absence of technical details of its implementation, does not involve an inventive step.

20.3 The remaining amendments, made for features (e), (g) to (i), (l), and (m) for clarity reasons, do not change the way the Board interprets those features. The Board assumes for each of the requests that the determination takes into account the most recent, possibly modified, value of the parameters colour, substrate, or printing method.

20.4 From the above it follows that the reasoning given in points 10 and 14 above for features (c) to (p) of previous requests applies also to claim 1 of auxiliary request 3.

20.5 The subject-matter of claim 1 of auxiliary request 3 therefore does not involve an inventive step (Articles 52(1) and 56 EPC).

Auxiliary request 4

21. Claim 1 of auxiliary request 4 (see section XII above) is essentially directed to a method for developing a colour product involving several parties, including a designer, a separator, a printer/converter and a formulator, in which a designer inputs the spectral data for a desired colour and the parties work together in order to arrive at an acceptable match, create samples, determine whether samples are matched, order and create ink, create formulas, deliver in-process

printed materials, and at the end deliver data to a colour product customer for visual inspection and approval. The system assists the parties in this process by, for instance, generating a colour match, facilitating the communication between parties, providing access to data, and supporting the transmission of spectral data and viewable images of samples between parties.

Admission of the request

22. Auxiliary request 4 is directed to a different embodiment than the previous requests. As put forward by the appellant, the method of claim 1 corresponds to the method of Figure 6, described on page 22, last paragraph to page 24, first full paragraph. In the Board's view, auxiliary request 4 involves a complete redrafting of claim 1 to a new claim reciting a rather complex method.

23. Since auxiliary request 4 was submitted after filing of the grounds of appeal, it constitutes amendments to the case in the sense of Article 13(1) of the Rules of Procedure of the Boards of Appeal (RPBA). Under that article the Board has discretion in admitting and considering such amendments. The article further stipulates that this discretion "shall be exercised in view of *inter alia* the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy". Furthermore, Article 13(3) RPBA also establishes that amendments after oral proceedings have been arranged shall not be admitted if they raise issues which the Board cannot reasonably be expected to deal with without adjournment of the oral proceedings. One relevant factor is whether the requests converge, for example by increasingly

limiting the subject-matter of the independent claim, in the same direction (Case Law of the Boards of Appeal of the EPO, 7th edition, 2013, IV.E.4.4.1).

24. With the grounds of appeal, the appellant filed three sets of claims. In reaction to the Board's communication accompanying the summons to oral proceedings the appellant filed a main request and four auxiliary requests, maintaining the previous requests as further lower-ranking auxiliary requests. All those requests, with the exception of auxiliary request 4, are directed to the embodiment of Figure 5 or to a generalisation of it, i.e. to the method for developing a colour product in three phases for specifying the colour, the substrate and the printing method and, in each phase, determining restrictions, notifying the user, and halting the process or letting the user modify the design (see the description on page 20, last full paragraph to page 22, last full paragraph).

The method of claim 1 of auxiliary request 4, or that of Figure 6, is only vaguely related to the method of Figure 5 which served as the basis for the first independent claims of the other seven requests. In particular, claim 1 of auxiliary request 4 no longer specifies any of the features of the method of Figure 5. The Board therefore considers that the subject-matter of auxiliary request 4 strongly diverges from that of previous requests.

25. Another important criterion to take into account in admitting a request is whether the subject-matter has been searched. At the oral proceedings the appellant argued that the subject-matter of auxiliary request 4 had been covered by the initial search because it corresponded to the subject-matter of original claim 35

and subsequent claims. The Board, on the contrary, finds that, even though those claims define features related to the contribution of colour development specialists to the colour development process, none of the original claims, nor the claims of the other seven requests treated in the appeal proceedings, describe in detail the specific processes of Figure 6 followed by the separator, printer/converter and formulator, as does claim 1 of auxiliary request 4. It can thus not be assumed that the subject-matter of auxiliary request 4 has been searched.

26. The Board is aware that it raised new issues under Articles 84 and 123(2) EPC in the appeal proceedings, a fact which could in principle speak for the admission of new requests. However, the appellant had attempted to address those issues by amended claims of the main request and auxiliary requests 1 to 3, all directed to the same embodiment as the requests submitted with the grounds of appeal. The amendments of auxiliary request 4 cannot therefore be seen as being directed to addressing those new concerns.

27. In summary, auxiliary request 4 introduces for the first time new subject-matter which represents a major shift in the subject-matter under discussion at the appeal proceedings and after oral proceedings have been arranged. Furthermore, it cannot be assumed that the new subject-matter was covered by the search. The Board could therefore not be expected to address the issues raised by these amendments without adjournment of the oral proceedings.

28. In light of the above, the Board, exercising its discretion under Articles 13(1) and 13(3) EPC, decided not to admit auxiliary request 4 into the proceedings.

Auxiliary request 5

29. Auxiliary request 5 (see section XIII above) claims a method for developing a colour product which essentially stores in a database "development information" including characteristics related to the development of a plurality of colour products, receives data related to a first colour and at least one physical characteristic of a colour product, and determines whether the at least one physical characteristic is compatible with the first colour, the result of the determination being used in the process of manufacturing the colour product. In case of incompatibility the method either halts the development of the colour product or issues a warning via a user interface.

Inventive step

30. In the opinion of the Board, the subject-matter of claim 1 of auxiliary request 5 is broader than that of the main request and the auxiliary requests 1 to 3. Some steps, for example that of modifying the design of the colour product, are no longer specified, and those which are recited correspond to an abstraction of corresponding steps of the methods of the above-mentioned higher-ranking requests. In particular, the feature "physical characteristic" of claim 1 of auxiliary request 5 is a generalisation of the colour, substrate and printing method of these requests.

31. Therefore, for the same reasons as given for higher-ranking requests regarding inventive step, for example in point 10 above, claim 1 of auxiliary request 5 is not inventive (Articles 52(1) and 56 EPC).

Auxiliary request 6

32. Claim 1 of auxiliary request 6 differs from that of the previous request essentially in that it describes the database in terms of the tables it includes and how the records of the tables are related. Furthermore, the claim specifies that both steps (f) of halting the development and (g) of issuing a warning are performed (see section XIV above).

Inventive step

33. The features related to the database tables are not inventive, as discussed in point 17 above.

In the opinion of the Board, changing the method of the main request to include both steps (f) and (g), instead of having them as alternative steps, is a minor obvious modification.

As regards the remaining features of the claimed method, the reasons given previously for higher-ranking requests with respect to inventive step (see point 10 above) apply also to claim 1 of auxiliary request 6.

Therefore, auxiliary request 6 does not fulfil the requirements of Articles 52(1) and 56 EPC, for lack of inventive step of claim 1.

Auxiliary request 7

34. Claim 1 of auxiliary request 7 (see section XV above) defines a "method for developing a color product comprising integrating disparate methods of color

product development into an automated system, said system comprising database tables used to store and manipulate data regarding development of color and color products", the database tables being defined essentially as in claim 1 of auxiliary requests 2, 3 and 6.

35. The claim then defines that the system performs steps (A) to (D), the steps being related to (A) receiving "electronic data regarding color products from diverse color production-related hardware devices and software", (B) translating the electronic data into visual spectral data, (C) translating the spectral data into device-dependent format, and (D) delivering said device-dependent format as electronic images to a plurality of colour product specialists.

36. The method is further defined in the claim as comprising steps (a) to (t) essentially corresponding to the steps of Figure 5.

Inventive step

37. The features related to the database tables are not inventive for the reasons discussed in point 17 above.

38. Regarding features (A) to (D), document D5 also discloses receiving colour data from a spectrophotometer, a scanner, or other devices (page 6, lines 4 to 14, Figure 1, page 12, lines 8 to 22, page 13, lines 19 to 24) and converting it to different formats for internal processing or for visualising (page 4, lines 6 to 12, page 9, lines 9 to 13). The system of document D5 is to be used by several colour product specialists (page 3, page 5, line 10 to page 6,

line 3). Therefore, features (A) to (D) do not involve an inventive step over the disclosure of D5.

39. Features (a) to (t) correspond to features (c) to (p) previously discussed for higher-ranking requests, for example the main request. As explained for those requests, the method comprising features (c) to (p) is not inventive (see point 10 above).

40. The Board cannot identify any unexpected synergistic effect from combining the three sets of features of claim 1 discussed in the preceding points 37 to 39.

41. It follows from the foregoing that the subject-matter of claim 1 of auxiliary request 7 does not involve an inventive step either (Article 56 EPC).

Conclusion

42. Since auxiliary request 4 was not admitted into the proceedings and none of the other requests on file is allowable, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

N. Schneider R. Moufang

Decision electronically authenticated