

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 8 April 2022**

Case Number: T 1924/15 - 3.4.01

Application Number: 04759383.5

Publication Number: 1621052

IPC: H05H1/28, H05H1/34

Language of the proceedings: EN

Title of invention:

METHOD AND APPARATUS FOR ALIGNMENT OF COMPONENTS OF A PLASMA
ARC TORCH

Patent Proprietor:

Hypertherm, Inc.

Opponents:

Thermacut, k.s
Kjellberg Finsterwalde Plasma und Maschinen GmbH
B&Bartoni, spol. s r.o.

Headword:

Plasma Arc Torch / Hypertherm

Relevant legal provisions:

EPC Art. 105, 100(a), 54(1), 54(2), 100(c), 123(2)
RPBA Art. 12(4)
RPBA 2020 Art. 25(2), 13(1), 13(2)

Keyword:

Intervention of the assumed infringer - admissible (yes)
Novelty (no) - public prior use (yes) - burden of proof
Amendment to appeal case - state of the proceedings

Decisions cited:

G 0001/12, G 0003/97, G 0004/97, T 1002/92, T 1631/15



Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1924/15 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 8 April 2022

Appellant: Hypertherm, Inc.
(Patent Proprietor) Etna Road
P.O. Box 5010
Hanover, NH 03755 (US)

Representative: Barker Brettell LLP
100 Hagley Road
Edgbaston
Birmingham B16 8QQ (GB)

Respondent: ThermoCut, k.s.
(Opponent 1) Sokolovská 574
68601 Uherské Hradiste (CZ)

Representative: Riebling, Peter
Patentanwalt
Postfach 31 60
88113 Lindau (DE)

Respondent: Kjellberg Finsterwalde Plasma und Maschinen GmbH
(Opponent 2) Leipziger Strasse 82
03238 Finsterwalde (DE)

Representative: Manasse, Uwe
Boehmert & Boehmert
Anwaltspartnerschaft mbB
Pettenkoferstrasse 22
80336 München (DE)

Respondent: B&Bartoni, spol. s r.o.
(Opponent 3) Doubravicka 18
294 30 Dolní Cetno (CZ)

Representative: Lachmannová, Eva
Sindelka & Lachmannová, advokati

Slavetinska 1146/39
190 14 Praha - Klánovice (CZ)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 17 July 2015
revoking European patent No. 1621052 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman P. Scriven
Members: T. Zinke
 C. Almborg
 T. Petelski
 R. Winkelhofer

Summary of Facts and Submissions

- I. Two oppositions were filed against the European Patent EP 1 621 052. Opponent 1 (Thermacut, k.s., previously Thermacut s.r.o., further previously Holma AG Laser & Plasma Consumables) based their opposition on Articles 100(a) (lack of novelty and lack of inventive step), 100(b), and 100(c) EPC. Opponent 2 (Kjellberg Finsterwalde Plasma und Maschinen GmbH) based their opposition on Article 100(a) EPC (lack of novelty and lack of inventive step).
- II. With their notice of opposition, opponent 2 provided, inter alia, evidence for public prior use of a plasma arc torch PB50.1-H:
- E2: A technical drawing nr. 0828801 - 1000 00, dated 22.06.1987 with modifications dated 29.07.1988
- E3: A technical drawing nr. 0829801 - 0000 00/3, dated 20.07.1987 with 3 modifications, the latest dated 11.04.1990
- E4: A technical drawing nr. 0829801 - 000 100/4, dated 17.06.1987
- E5: A technical drawing nr. 0829801 - 000 005/4, dated 11.04.1990
- E6: A technical drawing nr. 0829801 - 000 101 /3, dated 16.07.1987

E7: A technical drawing nr. 0828801 - 1100 00, dated 18.06.1987 with 2 modifications, the latest dated 19.07.1989

E8: A technical drawing nr. 0828801 - 111 000/3, dated 26.07.1988

E9: A list of components of plasma torch PB50.1-H, dated 15.06.1990

E10 ERP-system's screen shot of data sheets for coolant tube (Art.-Nr. .12.54470)

E11 ERP-system's screen shot of data sheets for cathode K2 air (Art.-Nr. .12.40870)

E12 Invoice of cooling tube dated 17.06.1994

E13A Letter of order of 19.05.1998

E13B-D Delivery notes of E13A

E14A Letter of order of 31.08.1998

E14B Delivery note of E14A dated 03.09.1998

E15A Letter of order of 04.11.1998

E15B Delivery note of E15A dated 05.11.1998

E16A Letter of order of 29.01.1999

E16B-C Delivery notes of E16A

E17A Letter of order of 02.03.1998

E17B Delivery note of E17A

III. During opposition proceedings, opponent 2 filed further documents, which the Opposition Division admitted:

E18A,B: copies, in better quality, of document E8

E19 ERP-System's screen shot of data sheet for cathode PB 50.1-H (Art.-Nr. .12.51370)

E20 ERP-System's screen shot of data sheet for a flexible tube ("Schlauch") (Art.-Nr. .12.51320)

E2.1 DIN A3-copy of E2 without handwritten amendments

E2.2 DIN A4-copy E2 without handwritten amendments

E2.3 enlarged part of drawing E2

E5.1 enlarged part of drawing E5 with coloured area of coolant tube, which touches the cathode

E6.1 enlarged part of drawing E6 with coloured area of of cathode that touches coolant tube

E7.1 DIN A3-copy of E7 without handwritten amendments

E7.2 DIN A4-copy of E7 without handwritten amendments

E8.1 DIN A3-copy of E8 in good quality

E8.2 DIN A4-copy of E8 in good quality

E18: DDR-Standard for Permissible Deviations of Dimensions without Indications of Tolerances

E27A Letter of order of 1 October 1998

E27B Delivery note of E27A

E27C Invoice of E27A dated 14 October 1998

E28 ERP-System's screen shot of data sheet for plasma arc torch PB 50.1 WH/L (Art.-Nr. .12.51271)

E29 A technical drawing nr. 0828801 - 0000 00

E30A Letter of order of 09 December 1999

E30B Delivery note of E30A

E31A Letter of order of 8 June 1999

E31B Delivery note of E31A

E31C Invoice of E31A dated 28 June 1999;

IV. Furthermore, the Opposition Division ordered the taking of evidence by inspection of the torch PB50.1-H (shown in document E22), and by hearing a party and a witness, offered by opponent 2 during two oral proceedings.

V. The Opposition Division revoked the patent. It considered (cf. decision, section 5 "Conclusion"):
- the main request (maintenance of the patent as granted, i.e. rejection of the oppositions) as not allowable for added subject-matter (Article 100(c) in conjunction with Article 123(2) EPC);

- auxiliary requests 1 and 2 as not allowable for lack of novelty (Article 100(a) in conjunction with Article 54(1) and (2) EPC);
- auxiliary request 3 as not allowable for lack of novelty (Article 100(a) in conjunction with Article 54(1) and (2) EPC), and for added subject-matter (Article 100(c) in conjunction with Article 123(2) EPC);
- auxiliary request 4 as not allowable for added subject-matter (Article 100(c) in conjunction with Article 123(2) EPC).

Auxiliary request 5 was not admitted.

- VI. The proprietor appealed the decision.
- VII. With the statement setting out the grounds of appeal, the proprietor requested that the decision be set aside and that the oppositions be dismissed, i.e. that the patent be maintained as granted (main request). Subsidiarily, the proprietor requested that the patent be maintained as amended on the basis of one of thirteen auxiliary requests submitted with the statement of grounds. The first and second auxiliary requests were identical to the first and second auxiliary requests underlying the appealed decision.
- VIII. The proprietor also submitted a "further Declaration of Zheng Duan dated November 2015" ("the further declaration").

- IX. In reply, opponents 1 and 2 requested dismissal of the appeal. Opponent 1 also requested that the further declaration be disregarded. Opponent 2 submitted further documents E32 to E41, and offered three witnesses. Documents E40 and E41 describe an experiment performed by opponent 2 on plasma arc torch PB50.1-H ("the torch experiment"), the torch being considered as prior art in the decision under appeal.
- X. With a submission dated 12 December 2017, an intervention under Article 105 EPC was filed by B&Bartoni, spol s r.o. ("opponent 3"), who provided evidence that the proprietor had instituted "proceedings for the infringement of the European Patent No. 1 621 052" in the Czech Republic. Opponent 3 raised objections under Article 123(2) EPC against all of the proprietor's requests, and requested dismissal of the appeal.
- XI. All opponents argued that the proprietor's auxiliary requests should be disregarded.
- XII. The Board arranged to hold oral proceedings and issued its preliminary opinion under Article 15(1) RPBA 2020.
- XIII. At oral proceedings, the proprietor submitted a claim set as a fourteenth auxiliary request.
- XIV. The proprietor's final formulation of their requests was that the decision under appeal be set aside and that the opposition be rejected, i.e. that the patent

be maintained as granted (main request), or that the patent be maintained according to one of the first to fourteenth auxiliary requests.

XV. The opponents' final requests were that the appeal be dismissed.

XVI. The independent claims of the main request (the patent as granted) read:

1. A coolant tube (136) for a plasma arc torch, the coolant tube comprising: an elongated body (152) having a first end (154), a second end (156), and a coolant passage (141) extending therethrough; and a surface (160) located on an exterior portion (162) of the elongated body; characterised in that: the surface located on the exterior portion of the elongated body is adapted to mate and align with an electrode along a direction of a longitudinal axis (146) of the elongated body, and the elongated body is not rigidly attachable to a torch body or the electrode during operation of the torch, so that the tube is generally free to move along the direction of the longitudinal axis of the torch, and the electrode and the surface (160) located on the exterior portion (162) of the elongated body of the coolant tube can be biased into contact with each other so as to mate and align along a direction of a longitudinal axis of the electrode.

8. An electrode (110) for a plasma arc torch, the electrode comprising:
a hollow elongated body (112) having an open end and a closed end; and
a surface (164) located on an interior portion (138) of the elongated body;
characterised in that:
the surface located on the interior portion of the elongated body is adapted to mate and align with a coolant tube along a direction of a longitudinal axis of the coolant tube, and the coolant tube is not rigidly attachable to a torch body or the electrode during operation of the torch, so that the tube is generally free to move along the direction of the longitudinal axis of the torch, and the coolant tube and the surface (164) located on the interior portion (138) of the elongated body of the electrode can be biased into contact with each other so as to mate and align along a direction of a longitudinal axis of the electrode.

13. A plasma arc torch (180) comprising:
a torch body (182);
a coolant tube (136), the tube comprising an elongated body (152) having a first end (154), a second end (156), and a coolant passage (141) extending therethrough, and a surface (160) located on an exterior portion (162) of the elongated body; and
an electrode (110) supported by the torch body, the electrode comprising a hollow elongated body (112) having an open end and a closed end, and a surface (164) located

on an interior portion (138) of the elongated body;

characterised in that:

the surface located on the interior portion of the elongated electrode body is adapted to mate and align with the coolant tube along a direction of a longitudinal axis of the coolant tube, and the elongated body of the coolant tube is not rigidly attachable to a torch body or the electrode during operation of the torch, so that the tube is generally free to move along the direction of the longitudinal axis of the torch, and the coolant tube (136) and the surface (164) located on the interior portion (138) of the elongated body of the electrode can be biased into contact with each other so as to mate and align along a direction of longitudinal axis of the electrode.

19. A method of locating a coolant tube (136) relative to an electrode (110) in a plasma arc torch comprising the steps of: providing mating contact surfaces (160, 164) on the electrode and the coolant tube; and biasing the electrode and the coolant tube into contact, wherein a second end of the coolant tube does not contact an inner surface of the electrode wall, characterised in that the coolant tube is not rigidly attachable to a torch body or the electrode during operation of the torch, so that the tube is generally free to move along the direction of the longitudinal axis of the torch, and the

electrode (110) and the surface (160) located on the exterior portion (162) of the elongated body of the coolant tube can be biased into contact with each other so as to mate and align along a direction of a longitudinal axis of the electrode.

23. A plasma arc torch (180) comprising:
a torch body (182);
an electrode (110) supported by the torch body, the electrode comprising a hollow elongated body (112) having an open end and a closed end;
a coolant tube (136), the tube comprising an elongated body (152) having a first end (154), a second end (156), and a coolant passage (141) extending therethrough; and means for aligning mating surfaces (160, 164) of the coolant tube and the electrode along a direction of a longitudinal axis of the tube, characterised in that:
the means for aligning comprises a mating surface on the inner surface of the coolant tube; and
the elongated body of the coolant tube is not rigidly attachable to the torch body or the electrode during operation of the torch, so that the tube is generally free to move along the direction of the longitudinal axis of the torch, and
the electrode and the surface (160) located on the exterior portion (162) of the elongated body of the coolant tube can be biased into contact with each other so as to mate and align along a direction of a longitudinal axis of the electrode.

25. A coolant tube for a plasma arc torch, the coolant tube comprising:
an elongated body having a first end, a second end, an interior surface and a coolant passage extending therethrough, characterised in that
the elongated body is not rigidly attachable to a torch body or an electrode during operation of the torch; and the interior surface of the elongated body is adapted to mate and align with the electrode along a direction of a longitudinal axis of the electrode, so that the tube is generally free to move along the direction of the longitudinal axis of the torch, and the electrode and the surface located on the interior portion of the elongated body can be biased into contact with each other so as to mate and align along a direction of a longitudinal axis of the electrode.

XVII. For all auxiliary requests, the proprietor requests replacement of Figure 11 of the patent as granted with Figure 11 of the application as originally filed.

XVIII. The claims of the first auxiliary request are identical to those of the main request.

XIX. In the claim set of the second auxiliary request, the independent and dependent claims defining a coolant tube, and an electrode, are absent. The remaining claims (i.e. claims 13 - 24 and 32 of the main request)

are renumbered, but are otherwise identical to the claims of the main and first auxiliary requests.

XX. The claim set of the third auxiliary request is identical to that of the second auxiliary request, except that the claims defining a plasma arc torch, as in claim 23 of the main request, are absent, so that only the claims defining a plasma arc torch, and a method of locating a coolant tube remain.

XXI. The claim set of the fourth auxiliary request corresponds to that of the third auxiliary request, except that the text is added to independent claim 1 (plasma arc torch) and independent claim 7 (method of locating a coolant tube):

... wherein the coolant tube can be biased toward the closed end of the electrode, into contact with the surface (164) located on the interior portion (138) of the elongated body of the electrode, wherein the biasing is brought about by coolant fluid hydrostatic pressure.

XXII. The claim set of the fifth auxiliary request corresponds to the claim set of the fourth auxiliary request with the additional amendment to independent claims 1 and 7 which defines that the surface located on the interior portion of the elongated electrode body

... comprises a contour, step or flange

XXIII. The claim set of the sixth auxiliary request corresponds to the claim set of the third auxiliary request, but without the claims defining a plasma arc torch. Independent claim 1, defining a method of locating a coolant tube, differs from independent claim 7 of the third auxiliary request in that the feature defining the biasing of the electrode and the surface of the elongated body no longer uses the formulation "*can be biased*", but reads (emphasis added by the Board):

... the electrode (110) and the surface (160) located on the exterior portion (162) of the elongated body of the coolant tube are biased into contact with each other so as to mate and align along a direction of a longitudinal axis of the electrode.

XXIV. The sole claim of the seventh auxiliary request corresponds to claim 1 of the sixth auxiliary request, except for the additional feature:

... wherein the biasing is brought about by coolant fluid hydrostatic pressure.

XXV. The sole claim of the eighth auxiliary request is identical to independent method claim 7 of the fifth auxiliary request.

XXVI. The sole claim of the ninth auxiliary request is identical to independent method claim 7 of the fourth auxiliary request.

XXVII. The sole claim of the tenth auxiliary request defines a method of locating a coolant tube, and reads:

A method of locating a coolant tube (136) relative to an electrode (110) in a plasma arc torch, by biasing the coolant tube (136) into contact with the electrode (110) within the plasma arc torch during operation of the torch, the electrode (110) having an electrode body (112), an open end and a closed end, the method comprising the steps of: providing mating contact surfaces (160, 164) on the electrode and the coolant tube, wherein a mating contact surface (164) is on an inner surface (138) of the electrode body (112) and a mating contact surface (160) is on an exterior surface (162) of the coolant tube (136); and biasing the electrode and the coolant tube into contact, wherein a second end of the coolant tube does not contact the inner surface of the electrode body, characterised in that the coolant tube is not rigidly attachable to a torch body or the electrode during operation of the torch, so that the coolant tube is generally free to move along the direction of the longitudinal axis of the torch during operation of the torch, and the electrode (110) and the surface (160) located on the exterior portion (162) of the elongated body of the coolant tube can be biased into contact with each other so as to mate and align along a direction of a longitudinal axis of the electrode,

wherein the coolant tube is biased into contact with the inner surface of the electrode body in a direction toward the closed end of the electrode by coolant fluid hydrostatic pressure, wherein biasing the coolant tube into contact with the inner surface of the electrode body mates the contact surfaces and aligns the position of the coolant tube along a direction of a longitudinal axis of the electrode, thereby allowing circulation of a coolant flow.

- XXVIII. The claims of the eleventh auxiliary request are identical to claims 1 to 7 of the third auxiliary request, defining a plasma arc torch. The method claims of the third auxiliary request are absent.
- XXIX. The claims of the twelfth auxiliary request are identical to claims 1 to 7 of the fourth auxiliary request defining a plasma arc torch. The method claims of the fourth auxiliary request are absent.
- XXX. The claims of the thirteenth auxiliary request are identical to claims 1 to 7 of the fifth auxiliary request defining a plasma arc torch. The method claims of the fifth auxiliary request are absent.
- XXXI. The sole claim of the fourteenth auxiliary request only differs from that of the eighth auxiliary request in that one of the three alternative properties of the

surface located on the interior portion, the contour, is no longer defined, so that the feature reads:

... the surface located on the interior portion of the elongated electrode body comprises a step or flange

Reasons for the Decision

Intervention of opponent 3

1. The intervention of opponent 3 is admissible under Article 105 EPC. The submission dated 12 December 2017 and filed the day after, provides evidence that the proprietor had instituted "proceedings for the infringement of the European Patent No. 1 621 052" in the Czech Republic against opponent 3 on 14 September 2017. The opposition fee was paid. Hence, the intervention was filed within the three-months time limit in accordance with Rule 89(1) and (2) EPC.

General remarks

2. On the merits, this decision only deals with novelty objections under Article 54 EPC (and the corresponding ground of opposition under Article 100(a) EPC), as they apply to all requests on file. Since the Board finds a lack of novelty in all of the requests on file, other objections raised by the opponents and discussed by the Opposition Division in their decision (for instance,

added subject matter (Articles 100(c), 123(2) and 123(3) EPC) are not relevant to this decision.

Admission and consideration of the claim requests

3. The main request and the first and second auxiliary requests formed part of the basis of the appealed decision, the review of which is the primary object of these appeal proceedings. Therefore, the Board takes account of these requests (Articles 12(1)(a) and (2), and 25(1) RPBA 2020).
4. The claim sets for the third to thirteenth auxiliary requests were filed for the first time with the statement of grounds of appeal, in 2015. In accordance with Article 12(4) RPBA 2007 - which applies under Article 25(2) RPBA 2020 - everything presented in the statement shall be taken into account by the Board, if and to the extent it relates to the case under appeal and meets the requirements in Article 12(2) RPBA 2007. The Board, however, has the power not to admit requests which could and should have been presented or were not admitted in the first instance proceedings.
5. With their intervention, opponent 3 submitted that some of the third to thirteenth auxiliary requests were resubmissions of requests that had been withdrawn before the Opposition Division.
6. However, the withdrawn fifth to tenth auxiliary requests, submitted on 9 March 2015 and withdrawn during oral proceedings on 9 April 2015, are not identical to any of the currently pending auxiliary requests.

7. As to the question of whether the third to thirteenth auxiliary requests could have been presented in the first instance proceedings, the Board cannot identify a procedural abuse of the proprietor in their filing of these requests with the statement of grounds. Apparently, for instance, it was not until the witnesses were heard for a second time, shortly before the decision was issued, that all details about the public prior art use were clearly established. These circumstances speak in favour of the proprietor being given an opportunity to respond to objections in the decision under appeal with amendments filed as early as possible, i.e. with the statement of grounds of appeal.
8. During oral proceedings before the Board, only the admission of the seventh and eighth auxiliary requests were discussed. With regard to the third to sixth auxiliary requests, the proprietor declined to comment, and for the ninth to thirteenth auxiliary requests, the proprietor merely referred to their written submissions.
9. The seventh and eighth auxiliary requests are to be taken into account in the appeal proceedings, since they were presented for the first time with the statement of grounds of appeal and there was no reason to think that they should have been filed before the Opposition Division (Article 12(4) RPBA 2007, see also the general observation in point 7 above). The additional features amending the independent claims were a genuine attempt at defining novel and inventive subject-matter.
10. The results with regard to novelty of the seventh and eighth auxiliary requests can be easily transferred to the third to sixth auxiliary requests and to the ninth

to thirteenth auxiliary request filed with the statement of grounds of appeal. Hence, the Board also takes account of those auxiliary requests, since it is procedurally economical to deal with them on the merits and since they were filed at the beginning of the appeal proceedings, giving the Board and the other parties enough time to consider them thoroughly.

Public prior use of plasma arc torch PB50.1-H - Evidence

11. The proprietor objects to opponent 2's evidence of public prior use of the plasma arc torch PB50.1-H.
12. Basically, two issues are raised: first, much of the evidence submitted by opponent 2 was "late-filed", surprising, and inequitably admitted into the opposition proceedings (documents E27A to E31C, witnesses Krink and Laurisch, torch-sample); second, either with or without the late-filed evidence, there was insufficient evidence to satisfy the standard of proof "beyond reasonable doubt", i.e. "up to the hilt". This was the standard of proof that should be used in cases like the present one, in which all the submitted evidence lay within the control of opponent 2.
13. As to the question whether some evidence that was "late-filed" in opposition proceedings should be disregarded in appeal proceedings, it is established jurisprudence that the Board should only overrule a discretionary decision by the Opposition Division if the latter did not apply the correct principles, or exercised its discretion unreasonably.
14. As is apparent from the minutes of the oral proceedings and from the decision under appeal, the Opposition

Division found, *prima facie*, the evidence to be of "evident high relevance"; and it explained why the proprietor could not have been surprised by it (minutes of the oral proceedings on 9 April 2015, page 6; appealed decision, points 4.1 and 4.2). *Prima facie* relevance is a well-established criterion for the admission of late-filed evidence (Case Law of the Boards of Appeal, 10th ed., 2022, "CLBA", section IV.C.4.5.3, and T 1002/92 *Queuing System*, OJ 1995, 605, headnote 1).

15. Hence, the Opposition Division's decision to admit this evidence into the proceedings should not be overruled.

16. Neither in the EPC nor in the case law of the Boards of Appeal are formal rules laid down for the evaluation of evidence. The Enlarged Board of Appeal has stated that proceedings before the EPO are conducted in accordance with the principle of the free evaluation of evidence (G 1/12, OJ 2014, A114, point 31 of the Reasons, citing G 3/97 *Einspruch in fremdem Auftrag/INDUPACK*, OJ 1999, 245, point 5 of the Reasons; and G 4/97 *Opposition on behalf of a third party/GENENTECH*, OJ 1999, 270, point 5 of the Reasons). Under the EPC, decisions on questions of fact are taken on the basis of evidence adduced and the degree to which it supports or undermines alleged facts. The deciding body makes this assessment in the view of the particular circumstances of the case before it (see CLBA III.G.4.1).

17. It is also established jurisprudence that each party bears the burden of proof for the facts they allege. Here, since opponent 2 relies on the public prior use of the plasma arc torch, it is opponent 2's task to prove this use. In cases like the present one, where the evidence for such a public prior use lies within

the sphere of only one party (the opponent) the case law has often tended toward expecting that the public prior use be proved "beyond any reasonable doubt", i.e. "up to the hilt" (cf. CLBA, section III.G.4.3.2 b), with references to decisions). In the Board's view, this properly refers to the strength of the evidence required.

18. The Opposition Division heard witnesses and considered written evidence, and came to the conclusion that the opponent had proved their case. They have given clear reasons why they were persuaded of the public prior use (appealed decision, section 4.3, in particular page 14, third and fourth paragraphs).
19. On appeal, the proprietor has not shown that the Opposition Division was not entitled to reach the conclusion it did. The Board, therefore, concurs with the Opposition Division's position: the drawings, delivery slips, invoices, torch sample, and witness testimonies provide enough evidence to establish the public prior use of the PB50.1-H torch.
20. The controversial document, E12, is neither necessary as evidence for the prior public use nor raises doubts about the credibility of the other evidence.
21. With the statement of grounds of appeal, the proprietor filed the further declaration as additional evidence dealing with the question of the direction of movement of the coolant tube in PB50.1-H.
22. With the reply to the statement of grounds of appeal, in response to the filing of said declaration, opponent 2 filed further documents, E40 and E41, describing the torch experiment.

23. The admission of the further declaration and of E40 and E41 was not questioned by the parties. Apparently, they all considered details about the functioning of the prior art torch to be highly relevant for the outcome of the case. The Board agrees and sees no reason to disregard it.

Novelty - Interpretation

24. In all independent claims of all requests, a combination of features defines that a) the coolant tube is not rigidly attachable to a torch body or the electrode during operation of the torch, so that the tube is generally free to move along the direction of the longitudinal axis of the torch and b) the coolant tube and the electrode (or their respective surfaces) can be biased into contact with each other so as to mate and align along a direction of a longitudinal axis of the electrode.
25. This combination of "*not rigidly fixed*" and "*can be biased into contact*" is discussed in the patent specification only in paragraph [0069], the first half of which reads:

In operation, because the coolant tube 136 is not rigidly fixed to the cathode block 180 in this embodiment of the invention, the flow or hydrostatic pressure of coolant fluid acts to bias the tube 136 towards a bottom end 124 of the electrode 110. Alternatively, a spring element (e.g., linear spring or leaf spring) may be used to bias the tube 136 towards the electrode 110. Alternatively, the electrode 110 may

be threaded into the torch body until the surfaces 160 and 164 of the tube 136 and electrode 110, respectively, mate with each other, thereby biasing the surfaces 160 and 164 together.

26. This passage contradicts the wording of the claims, because, due to the biasing, the tube is not generally free to move along the direction of the longitudinal axis of the torch during operation.
27. Free movement is, in particular, not provided in the last alternative mentioned in paragraph [0069]. Threading the electrode into the torch body so that the surfaces 160 (i.e. the surface of the coolant tube) and the surface 164 (i.e. the surface located on the interior surface of the electrode) mate with each other, thereby biasing these surfaces together, implies that the coolant tube cannot move along the direction of the longitudinal axis of the torch during operation.
28. The proprietor pointed out that the wording of the claim means that this last alternative was not meant to be covered by the claim (response to preliminary opinion, page 3, second paragraph), and that, generally, the feature was to be understood as in a ball-pen: a spring biases two surfaces to maintain contact while still allowing one part to move freely.
29. The combination of the other alternatives mentioned in paragraph [0069] (i.e. biasing by a flow or hydrostatic pressure of coolant fluid or by a spring), lacks novelty (see below). Therefore, there is no need to consider whether the screw alternative is covered.

30. A further issue is that the functional features describing the surfaces of the coolant tube and the electrode might have been intended to imply certain structural limitations. According to the description and figures, the surfaces that were intended include "mating components" along their "longitudinal parts", i.e. "a contour, flange, taper, varying diameters" (cf. for instance figures 4A to 9B) that work together to achieve a certain, undefined connection between the surfaces.
31. Such structural limitations, however, are not defined by the independent claims, which encompass cylindrical electrodes and coolant tubes with no particular contour along their longitudinal parts, but which are dimensioned so as to fit one into the other. The feature "can be biased" can be simply achieved by a closed end for the "outer" cylinder.

Novelty - Disclosure of public prior art torch PB50.1-H

32. With regard to the question of the subject-matter disclosed by the plasma arc torch PB50.1-H, there are two issues in dispute: a) the question of whether the coolant tube and the surface located on the interior portion of the elongated body of the electrode can be biased into contact with each other so as to mate and align along the direction of a longitudinal axis of the electrode and b) whether the disclosure of a plasma arc torch - being a device - is also a disclosure of a "method for locating a coolant tube relative to an electrode" as claimed in claims 19 to 22 of the granted patent.

33. From the further declaration and from the torch experiment, it is apparent that the effect of the coolant flow depends on the structure of the coolant tube in relation to the electrode. The movement of the coolant tube depends, among other things, on the geometry of the surfaces in contact with the coolant. The experimental results provided by document E40 clearly show that, in the PB50.1-H torch, the geometrical dimensions of its coolant tube were such that the coolant tube was biased towards, and in contact with, the closed end of the electrode and not away from it. The "mating and aligning along a direction of a longitudinal axis of the electrode", in the sense of the independent claims of all requests, is then automatically achieved by the geometry of two cylinders (coolant tube and electrode). The end faces of the spread parts of the coolant tube depicted in E5.1 contact the inner rounded parts (given the radii with "R1" and "R0,5") of the electrode depicted in E6.1.
34. This effect is not surprising, since, even in Figures 5A and 5B of the patent, a coolant tube with apertures ("slots 232") quite similar to the coolant tube of the torch PB50.1-H is depicted and described in paragraph [0061] of the patent publication:

In an alternative embodiment of the invention, as illustrated in FIGS. 5A and 5B, the surface 160 of the coolant tube 136 has a plurality of slots 210 located at the second end 156 of tube 136. The slots 232 are adapted to permit coolant to flow out of the passage 141. In this embodiment, the second end 156 of the tube 136 contacts an inner surface of an electrode wall, such as

the inner surface 218 of the electrode 110 of FIG. 3. The slots 232 permit adequate coolant flow across the interior surface 140 of the electrode 110.

35. The proprietor confirmed that the claimed methods are actually methods of use, and not methods of manufacture. Hence, the plasma arc torch PB50.1-H, as a device, implicitly discloses - when in use - a method of locating a coolant tube as claimed.
36. The method of locating the coolant tube and the electrode is immediately apparent when opening the PB50.1-H torch, and it is used every time, when the coolant is flowing. There is no doubt that, based on the provided evidence, the torches in question were actually used by customers and also - due to frequent replacement of the electrodes - the method of locating the electrode and the coolant tube was apparent. As indicated, for instance, by Mr. Laurisch in his first testimony on 25 November 2014 (last paragraph on page 42/69), the issue of the coolant tube falling out of the plasma arc torch PB50.1-H, when replacing the electrode, was a well-known problem for the customers.

Novelty - Conclusion for main request, first and second auxiliary requests

37. Hence, independent claims 1, 8, 13, and 19 of the main request, and identical independent claims 1, 8, 13, and 19 of the first auxiliary request, and independent claims 1 and 7 of the second auxiliary request lack novelty (Articles 100(a) and 54(1), (2) EPC) due to disclosure by the PB50.1-H plasma arc torch. None of these requests is therefore allowable.

Third to thirteenth auxiliary requests - general remarks

38. As with the issue of admission and consideration (see points 8 and 10, above) the issue of allowability was discussed during oral proceedings only in respect of the seventh and eighth auxiliary requests. With regard to the third to sixth auxiliary requests, the proprietor declined to comment, and for the ninth to thirteenth auxiliary requests, the proprietor merely referred to their written submissions.
39. Since the results with regard to the seventh and eighth auxiliary requests can be transferred to the other auxiliary requests filed with the statement of grounds of appeal, in the following the seventh and eighth auxiliary requests are addressed first.

Seventh auxiliary request

40. As evidenced by documents E40 and E41, in the PB50.1-H torch, the biasing between the coolant tube and the electrode is also achieved by the coolant hydrostatic pressure, which is evident from the pictures ("Bild 5" and "Bild 6") shown in E40, wherein it is clearly visible that the coolant tube moves in the direction of the electrode, when a flow of water (the coolant) is switched on.
41. Consequently, the sole independent claim of the seventh auxiliary request is not novel.

Eighth auxiliary request

42. As evidenced by the figure in document E6.1 depicting the electrode of the PB50.1-H torch, the inner surface of the electrode in the region against which the coolant tube is biased, is rounded (given the radii with "R1" and "R0,5"), which qualifies, at least, as a "contour".

43. Consequently, the subject-matter of the sole claim of the eighth auxiliary request is not novel.

Third to sixth auxiliary requests and ninth to thirteenth auxiliary requests

44. None of the third to sixth and ninth to thirteenth auxiliary requests overcomes the novelty objections based on the PB50.1-H torch.

Third auxiliary request

45. The independent claims of the third auxiliary request are identical to claims 13 and 19 of the main request, which lack novelty, as discussed above.

Fourth auxiliary request

46. Independent claim 7 of the fourth auxiliary request is similar to independent claim 1 of the seventh auxiliary request, with the exception that the former defines that the coolant tube and the electrode *can be biased*

into contact (instead of *are biased* into contact) and that it includes the additional feature

... wherein the coolant tube can be biased toward the closed end of the electrode, into contact with the surface (164) located on the interior portion (138) of the elongated body of the electrode.

47. As discussed above, the PB50.1-H torch disclosed both "are biased into contact" and "can be biased into contact". The additional feature defines the same way of contact behaviour between electrode and coolant tube as the PB50.1-H torch (cf. e.g. documents E40 and E41). Hence, claim 7 of the fourth auxiliary request is not novel.

Fifth auxiliary request

48. Independent claim 7 of the fifth auxiliary request is identical to claim 1 of the eighth auxiliary, which lacks novelty, as discussed above.

Sixth auxiliary request

49. Independent claim 1 of the sixth auxiliary request is identical to independent claim 19 of the main request, with the amendment that the coolant tube and the electrode *can be biased* into contact (instead of *are biased* into contact), which cannot establish novelty over the PB50.1-H torch, as discussed above.

Ninth auxiliary request

50. Independent claim 1 of the ninth auxiliary request is identical to independent claim 7 of the fourth auxiliary request, which is not novel, as discussed above.

Tenth auxiliary request

51. Independent method claim 1 of the tenth auxiliary request corresponds to method claim 7 of the fourth auxiliary request except that it is reformulated and includes the additional feature that the biasing is done "allowing circulation of the coolant flow". However, it is inherent in all plasma arc torches (including the PB50.1-H torch) that the coolant flow can circulate. Hence, this feature does not confer novelty.

Eleventh auxiliary request

52. Independent claim 1 of the eleventh auxiliary request is identical to independent claim 1 of the third auxiliary request defining a plasma arc torch and is identical to independent claim 13 of the main request, which is not novel, as discussed above.

Twelfth auxiliary request

53. Independent device claim 1 of the twelfth auxiliary request is amended as compared with independent claims 1 of the third and the eleventh auxiliary request by the features

... wherein the coolant tube can be biased toward the closed end of the electrode, into contact with the surface (164) located on the interior portion (138) of the elongated body of the electrode, wherein the biasing is brought about by coolant fluid hydrostatic pressure.

54. As discussed above for the correspondingly amended method claims in the fourth and seventh auxiliary requests, these features cannot establish novelty over the PB50.1-H torch.

Thirteenth auxiliary request

55. Independent device claim 1 of the thirteenth auxiliary request is amended as compared to claim 1 of the twelfth auxiliary request with the additional feature that

... the surface located on the interior portion of the elongated electrode body comprises a contour, step of flange

56. As discussed above with regard to the eighth auxiliary request, this additional feature does not establish novelty over the PB50.1-H torch.

Fourteenth auxiliary request

57. The fourteenth auxiliary request was filed towards the end of the oral proceedings before the Board, after discussions regarding the eighth auxiliary request.

This was well after notification of the summons and the admission is, therefore, governed by Article 13(2) RPBA 2020.

58. Claim 1 had been amended with respect to claim 8 of the eighth auxiliary request by deletion of the alternative "contour" from the list "*the surface located on the interior portion of the elongated electrode body as comprising a contour, step or flange*", so that only "*step or flange*" remains.
59. The proprietor argued that it became evident only during oral proceedings that the figure in document E6.1 would be interpreted as comprising a contour. Hence, the amendment was made in order to overcome an objection that only became clear to the proprietor during oral proceedings. The admission of this auxiliary request was, therefore, justified.
60. The Board is not persuaded.
61. Article 13(2) RPBA 2020 lays down that amendments filed at such a late stage of the proceedings shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.
62. Further detailed discussions, and conclusions arrived at by the Board at oral proceedings, about matters debated throughout the whole proceedings, do not qualify as exceptional circumstances, but are established practice in appeal proceedings (cf. T 1631/15 *Transcranial magnetic stimulation / University of Texas*, points 16 and 17 of the Reasons, concerning further detailing of an objection first

raised with the Board's summons).

63. The suitability of the additional feature "the surface located on the interior portion of the elongated electrode body comprises a contour, step or flange to establish inventive subject-matter" had previously been discussed, inter alia, in opponent 2's reply to the appeal, page 21, section f, and in the Board's preliminary opinion, point 49.
64. Admitting the late reaction in form of the fourteenth auxiliary request to an objection that has been only confirmed and further detailed, not newly raised, during oral proceedings would also go against procedural economy, since it would prolong the proceedings and open the possibility for an endless back and forth between additional amendments and negative conclusions.
65. Hence, the proprietor failed to provide cogent reasons justifying exceptional circumstances.
66. For this reason alone, the fourteenth auxiliary request could not be admitted into the appeal proceedings.

Conclusion

67. Since neither the main request nor any of the first to thirteenth auxiliary requests is allowable, and since the fourteenth auxiliary request could not be admitted, the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



D. Meyfarth

P. Scriven

Decision electronically authenticated