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**Datasheet for the decision  
of 27 October 2009**

**Case Number:** T 0193/08 - 3.2.02

**Application Number:** 01939887.4

**Publication Number:** 1286625

**IPC:** A61B 18/14

**Language of the proceedings:** EN

**Title of invention:**

Multipolar electrode system for radiofrequency ablation

**Applicant:**

WISCONSIN ALUMNI RESEARCH FOUNDATION

**Opponent:**

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**Headword:**

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**Relevant legal provisions:**

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**Relevant legal provisions (EPC 1973):**

EPC Art. 52(1), 56

**Keyword:**

"Inventive step (yes, after amendment)"

**Decisions cited:**

-

**Catchword:**

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Case Number: T 0193/08 - 3.2.02

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.02  
of 27 October 2009

**Appellant:** WISCONSIN ALUMNI RESEARCH FOUNDATION  
614 North Walnut Street  
Madison, WI 53705 (US)

**Representative:** Price, Nigel John King  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 12 July 2007  
refusing European application No. 01939887.4  
pursuant to Article 97(1) EPC 1973.

**Composition of the Board:**

**Chairman:** M. Noël  
**Members:** S. Chowdhury  
A. Pignatelli

## Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division dated 12 July 2007 to refuse European patent application No. 01 939 887.4.

The grounds of refusal were that the subject-matter of claim 1 of the main request then on file lacked an inventive step having regard to document D1 (US-A-5 735 847), and claim 1 of the auxiliary requests then on file lacked an inventive step having regard to document D3 (US-A-5 855 576).

- II. On 3 September 2007 the appellant lodged an appeal against the decision and paid the prescribed fee on the same day. On 16 November 2007 a statement of grounds of appeal was filed.

The appellant requests that the decision be set aside and a patent be granted on the basis of the claims 1 to 6 of the main request filed by telefax dated 22 October 2009, or claims 1 to 6 of the auxiliary request filed with the grounds of appeal.

- III. Independent claim 1 of the main request reads as follows:

"An electrode assembly (40) for ablating tumours in a patient, the assembly comprising:

(a) a support shaft (18c) sized for percutaneous placement, said shaft having an outer surface and a distal tip;

(b) first and second wire electrode sets (22a, 22b) extensible radially from the shaft (18c) to an

extension radius, the first wire electrode set (22a) being positionable at a first location adjacent to a tumour volume and offset axially along the support shaft from the second wire electrode set (22b), which second wire electrode set is positionable at a second location offset from the first location about the tumour volume, the first and second electrode sets each comprising at least three wires (32) positionable at angularly offset radial points around the support shaft; and

(c) a power supply (28) connectable between the first and second electrode sets (22a, 22b) to induce a current flow between the first and second electrode sets whereby to concentrate current induced heating in the tumour volume;

wherein the support shaft has an electrically insulating cover (46) on the outer surface between the first and second locations, said cover extending to the distal tip of the support shaft.

Claims 2 to 6 are dependent claims.

## **Reasons for the Decision**

1. The appeal is admissible.
2. *Amendments*

Claim 1 is based on claim 15 of the application (WO 01/93769) as originally filed, and amplified in order to define the arrangement between the two sets of extensible electrodes and the insulating cover, which enables the present technical problem to be solved

(see point 4 below). The claim is properly based on the application as originally filed.

3. *Novelty*

Novelty of the claimed subject-matter was not questioned by the examining division and the Board sees no reason to disagree on this.

4. *Inventive step - main request*

D1 describes ablation apparatus comprising RF antennas which can be operated in monopolar or bipolar manner. A primary antenna 14 (Figure 3) accommodates secondary antennas 16 and a current between the two defines ablation areas therebetween as shown in Figure 3. In order to define an ablation volume the antenna 14 must be rotated and moved axially (see D1: end of column 4). An insulation sleeve 18 is provided about each of the primary and secondary antennas.

In Figure 5 there are shown two secondary antennas 16 which can be operated in the monopolar or bipolar mode by passing current between one secondary antenna 16 and the primary antenna 14, or between the two secondary antennas 16, respectively. In this embodiment too a cylindrical ablation volume (see Figure 5) may be created by rotation of the primary antenna 14 (column 9, lines 1-10).

With respect to the antennas 16 shown in Figure 8 bipolar operation is not mentioned, but even if bipolar operation were to be carried out this would produce the prior art effect as in Figure 4 of the application (see

point 4.4 below) since the insulation 18 on the primary antenna 14 stops at the more proximal set of electrodes as shown in Figure 8 so that the surface of the antenna 14 between the two sets of electrodes 16 is uninsulated. Column 5, lines 52 to 60 states that both antennas 14 and 16 may be insulated, but this passage and column 7, lines 7-11 and 47-50 also make it clear that part of the antenna 14 is left uncovered to provide a current path.

4.1 The closest prior art document is D3. The embodiment described with reference to Figure 5 discloses an arrangement operable as a monopolar ablation apparatus, and Figures 7 and 8 disclose a bipolar ablation apparatus. Only Figure 5 is of interest here since it discloses two sets of axially spaced apart electrodes which define an ablation volume between them.

4.2 D3 discloses (see Figure 5 and the corresponding description in column 8) an electrode assembly for ablating tumours in a patient, comprising a support shaft 127 sized for percutaneous placement, said shaft having an outer surface and a distal tip; first and second wire electrode sets 124, 125 extensible radially from the shaft to an extension radius, the first wire electrode set being positionable at a first location adjacent to a tumour volume and offset axially along the support shaft from the second wire electrode set, which second wire electrode set is positionable at a second location offset from the first location about the tumour volume, the first and second electrode sets each comprising at least three wires positionable at angularly offset radial points around the support shaft; and a power supply 14 connectable between the first and

- second electrode sets to induce a current flow between the first and second electrode sets whereby to concentrate current induced heating in the tumour volume.
- 4.3 Claim 1 of the application defines further features not disclosed in D3, namely that the support shaft has an electrically insulated cover on the outer surface between the first and second locations, said cover extending to the distal tip of the central tubular shaft.
- 4.4 The presence of insulation between the two sets of electrode arrays 22a, 22b and up to the distal tip of the support shaft provides a new technical effect over the prior art, as the application demonstrates with reference to Figure 4 thereof. As explained in paragraphs [0024] and [0025] and the final four lines of paragraph [0047) of the application, the provision of the electrically insulating coating on the support shaft, as defined in claim 1, prevents current leakage paths from the electrode sets through the surrounding tissue to the shaft, so that current is constrained to flow mainly between the two electrode arrays 22a, 22b.
- 4.5 Thus, the object of the invention is to provide a more uniform and larger ablation volume (paragraphs [0010] and [0039]), accordingly. This object is achieved by providing insulation on the support shaft between the two sets of electrodes up to the distal end of the shaft.
- 4.6 This object cannot be achieved by the apparatus of D3. The monopolar electrode arrangement of Figure 5 of D3

would operate in the manner discussed with reference to Figure 4 of the application in that it would produce two smaller lesions (similar to 14a and 14b) rather than a single, larger cylindrical lesion (similar to 14c) produced by the bipolar umbrella electrodes of the application.

- 4.7 In fact, neither of the documents D1 and D3 discusses the problem of providing a more uniform and larger ablation volume in ablation apparatus comprising axially spaced electrode sets, nor do they suggest the present solution which involves providing insulation as defined in claim 1. In the prior art creating an ablation volume involves rotation of the apparatus.
- 4.8 Therefore, the subject-matter of claim 1 involves an inventive step.
5. The description requires extensive revision for consistency with the new claims, for which the Board remits the case to the examining division for it to supervise the revision.



## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of the first instance with the order to grant a patent on the basis of the following application documents:

Claims 1 to 6 filed on 15 November 2007.

Figures 1 to 8 as originally filed.

Description to be adapted to the new claims.

The Registrar

The Chairman

D. Sauter

M. Noël



Case Number: T 0193/08 - 3.2.02

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.02 of 12 May 2010  
correcting an error in the decision of the Technical Board of Appeal 3.2.02  
of 27 October 2009

**Appellant:** WISCONSIN ALUMNI RESEARCH FOUNDATION  
614 North Walnut Street  
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**Representative:** Price, Nigel John King  
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**Composition of the Board:**

**Chairman:** M. Noël  
**Members:** P. L. P. Weber  
A. Pignatelli

Pursuant to Rule 140 EPC, the decision given on 27 October 2009 in case T 0193/08-3.2.02 is hereby corrected so as to read on page 7, under point 2., line 4 of the order:

"Claims 1 to 6 filed on **22 October 2009.**"

The Registrar:

The Chairman:

D. Sauter

M. Noël