

Claims

1. Electrode for an apparatus (1) for electrolytically treating a work-
piece (3), the apparatus (1) being of a type arranged to convey the
workpiece (3) with a surface to be treated past and directed towards a
surface of the electrode,
5 wherein the electrode is divided into segments (23a-e) at at least
this surface of the electrode,
 wherein the segments (23a-e) are arranged next to each other in
a first direction (x),
 wherein adjacent segments (23a-e) are separated from each other
10 along respective segment edges (24a-f) such as to allow adjacent seg-
ments (23a-e) to be maintained at different respective voltages, and
 wherein the segment edges (24a-f) extend at least partly in a
second direction (y) from a common value (y_0) of a co-ordinate in the
second direction (y) to an edge (25,26) of at least an electrically con-
ducting part of the electrode surface, the second direction (y) being
15 transverse to the first direction (x) and corresponding to a direction of
movement of the workpiece, in use **characterised in that**
 the segment edges (24a-f) between at least one pair of adjacent
segments (23a-e) extend along respective paths of which an angle to
20 the electrode surface edge (25,26) decreases from the common
value (y_0) of the co-ordinate to the electrode surface edge (25,26).
2. Electrode according to claim 1,
 wherein, at least within each half of the electrode seen in the
first direction (x), the paths extend in a same one of opposite senses in
25 the first direction (x) from the common value (y_0) of the co-ordinate to
the electrode surface edge (25,26), so that the paths are all inclined in
the same direction, at least within each half of the electrode seen in the
first direction (x).
3. Electrode according to claim 1 or 2,
30 wherein the paths from the common value (y_0) of the co-ordinate
to the electrode surface edge (25,26) are curves.

4. Electrode according to any one of the preceding claims,
wherein at least the electrically conducting part of the electrode surface comprises two halves (28,29), seen in the second direction (y),
wherein respective sections of the segment edges (24a-f) in one
5 half (28,29) are a mirror image of respective sections of the segment edges (24a-f) in the other half (28,29) with respect to a line (27) of symmetry located at the common value (y_0) of the co-ordinate.
5. Electrode according to any one of the preceding claims,
wherein a point at the electrode surface edge (25,26) on a path
10 of a first of the segment edges (24a-f) of each segment (23a-e) is at the same co-ordinate value or removed in the first direction (x) from a point at the common value (y_0) of the co-ordinate on the path of the other of the segment edges (24a-f) of that segment (23a-e).
6. Electrode according to any one of the preceding claims,
15 wherein a width of the segments (23a-e), corresponding to a distance between the edges (24a-h) of a segment (23a-e) at the common value (y_0) of the co-ordinate, increases from segment (23a-e) to segment (23a-e), so that the segments (23a-e) become progressively wider with distance in the first direction (x) from an electrode edge (22), or
20 wherein this condition holds true within each half of the electrode, seen in the first direction (x).
7. Electrode according to any one of the preceding claims,
wherein an angle to the electrode surface edge (25,26) of the
paths of a pair of segment edges (24a-f) between a pair of adjacent
25 segments (23a-e) at the surface edge increases from pair to pair with distance in the first direction (x) from an electrode edge (22), or
wherein this condition holds true within each half of the electrode, seen in the first direction (x).
8. Assembly for forming a cell (2a-e) of an electrolytic processing apparatus (1),
30 wherein the assembly comprises at least one electrode (16) according to any one of the preceding claims.

9. Assembly according to claim 8, further comprising at least one shielding device, extending in the first and second directions (x, y) in front of the electrode surface of one of the at least one electrodes (16).
10. Assembly according to claim 9,
5 wherein the shielding device comprises a plate (19), provided with a multitude of through-going channels pervious to liquid and distributed in the first and second directions (x, y).
11. Electrolytic processing apparatus comprising at least one processing cell (2a-e), the processing cell (2a-e) comprising at least one assembly
10 according to any one of claims 8-10.
12. Method comprising at least a computer-implemented step (34-42) of designing an electrode (16) according to any one of claims 1-7,
 wherein the design step (34-42) includes determining the shapes of the paths.
- 15 13. Method according to claim 12,
 wherein determining the shapes of the paths includes determining (35) respective coefficients of a polynomial, e.g. a second-degree polynomial, of the co-ordinate in the first direction (x), the polynomial representing a co-ordinate in the second direction (y), and
20 wherein, seen in plan view onto the electrode surface, each path from the common value (y_0) of the co-ordinate in the second direction corresponds to the polynomial with a respective set of coefficients, optionally with a superimposed deviation.
14. Method according to claim 13,
25 wherein the coefficients are obtained by calculating a voltage drop-off function, being a function of the co-ordinate in the first direction (x) and representing a voltage change in the first direction (x) along the surface of the workpiece (3).

15. Computer program comprising instructions which, when the program is executed by a computer, cause the computer to carry out the design step (34-42) of a method according to any one of claims 12-14.