

Claims

1. A contact lens inspection system (100), in particular for soft contact lenses (1), comprising:
 - a light source (20) for illuminating a contact lens to be inspected, said light source (20) being adapted to illuminate said contact lens with collimated light from a front side or the rear side of said contact lens;
 - a camera (40) having an objective lens (41) and an electronic sensor (42), said camera being arranged to produce an electronic orthographic image (10) of said contact lens on said electronic sensor (42), wherein said objective lens (41) has a diameter which is at least as large as a maximum diameter of said contact lens, and wherein said camera(40) is arranged on that side of said contact lens opposite to said side where said light source (20) is arranged;
 - an electronic scanning and evaluation unit (50) adapted for electronically scanning at least one portion of said electronic orthographic image of said contact lens on said electronic sensor (42) in sections (S) of a predetermined size to detect within each of said sections (S) of said electronic orthographic image of said contact lens a line structure (5), and further adapted for counting a total number of detected line structures (5) in said scanned at least one portion of said electronic orthographic image of said contact lens and for comparing said total number of detected line structures (5) with a predetermined threshold value (T) to determine whether or not said contact lens is inverted.
2. A contact lens inspection system according to claim 1, wherein said objective lens (41) comprises a telecentric lens.
3. A contact lens inspection system according to any one of claims 1 or 2, wherein said contact lens is arranged in a container (30) with its front side or its rear side facing towards one end of said container, and wherein said light source (20) is arranged on said one end of said container (30) while said camera (40) is arranged on another end of said container (30) opposite to said one end of said container (30).

4. A contact lens inspection system according to any one of the preceding claims, wherein said electronic scanning and evaluation unit (50) is adapted for electronically scanning said at least one portion of said electronic orthographic image of said contact lens in one of horizontal or vertical scans, or in both horizontal and vertical scans, and wherein said sections (S) are one of horizontal or vertical sections, or both horizontal and vertical sections.

5. A contact lens inspection system according to claim 4, wherein each of said horizontal or vertical sections (S) is of rectangular shape, and wherein said horizontal section (S) has a size of five horizontal pixels and three vertical pixels, of said electronic sensor (42), and wherein said vertical section (S) has a size of three horizontal pixels and five vertical pixels of said electronic sensor (42).

6. A contact lens inspection system according to any one of claims 1 to 3, wherein said electronic scanning and evaluation unit is adapted for electronically scanning said at least one portion of said electronic orthographic image of said contact lens in radially directed scans, and wherein said sections (S) are radially oriented sections.

7. A contact lens inspection system according to claim 6, wherein each of said radially oriented sections (S) is of rectangular shape and has a size of three circumferential pixels and five radial pixels of said electronic sensor (42).

8. A method for inspecting a contact lens, in particular a soft contact lens (1), said method comprising:

illuminating a contact lens to be inspected with collimated light from one of a front side or a rear side of said contact lens;

producing an electronic orthographic image (10,) of said illuminated contact lens on a side opposite to said side from which said contact lens is illuminated;

electronically scanning said electronic orthographic image (10) of said contact lens in at least one portion in sections (S) of a predetermined size and detecting within each of said sections a line structure (5);

counting a total number of detected line structures (5) in said at least one portion of said scanned electronic orthographic image of said contact lens and comparing said counted total number of line structures with a predetermined threshold value (T) to determine whether or not said contact lens is inverted.

9. A method according to claim 8, wherein illuminating said contact lens with collimated light is performed using a light source (20) which is arranged on one side of said front and rear sides of said contact lens, and wherein producing said electronic orthographic image of said illuminated contact lens is performed using a camera (40) arranged on said other side of said front side and said rear side of said contact lens, said camera (40) having an objective lens (41) and an electronic sensor (42), wherein said objective lens (41) has a diameter which is at least as large as the maximum diameter of said contact lens.

10. A method according to claim 9, wherein an objective lens (41) is used comprising a telecentric lens.

11. A method according to any one of claims 8 to 10, wherein electronically scanning said at least one portion of said electronic orthographic image (10) of said contact lens in said sections (S) is performed in one of horizontal or vertical scans, or is performed both in horizontal and vertical scans, and wherein said sections (S) are one of horizontal sections or vertical sections or both, horizontal and vertical sections.

12. A method according to claim 11, wherein each of said horizontal or vertical sections (S) is of rectangular shape, and wherein said horizontal section (S) has a size of five horizontal pixels and three vertical pixels of said electronic sensor (42), and wherein said vertical section (S) has a size of three horizontal pixels and five vertical pixels of said electronic sensor (42).

13. A method according to any one of claims 8 to 10, wherein electronically scanning said electronic orthographic image (10) of said contact lens in said sections (S) is performed in a radial direction, and wherein said sections (S) are radially oriented sections.

14. The method of claim 13, wherein said radially oriented section (S) is of rectangular shape and has a size of three circumferential pixels and five radial pixels of said electronic sensor (42).