CLAIMS:

1. A method for producing contact lenses, comprising:

a) providing a mold including a male mold half having a first molding surface and a female mold half having a second molding surface, wherein the male and female mold halves are configured to receive each other such that a mold cavity is formed between the first and second molding surfaces when the mold is closed;

b) dispensing an amount of a silicone hydrogel lens-forming material into the female mold halves;

c) mating the male and female mold halves to close the mold;

d) curing thermally or actinically the silicone hydrogel lens-forming material located in the mold cavity, thereby forming a silicone hydrogel contact lens within the lens mold;

e) separating the mold into the male and female mold halves, with the molded silicone hydrogel contact lens adhered on a lens-adhered mold half which is one of the male and female mold halves;

f) cooling the lens–adhere mold half with the molded silicone hydrogel contact lens adhered thereon to a temperature between minus five degree Celsius and fifteen degree Celsius and provided that a liquid nitrogen, liquid helium or solid carbon dioxide is not used to cool the lens–adhere mold half;

wherein the cooling the lens–adhere mold half with a cold horn to directly contacting the non-optical side of the lens–adhere mold half;

g) bringing a shaped ultrasonic horn in direct contact with at least one area of a non-optical surface of the cooled lens-adhered mold half with the molded silicone hydrogel contact lens attached thereon;

h) applying a ultrasonic vibrational energy to the at least one area of the non-optical surface of the lens-adhered mold half having the molded silicone hydrogel contact lens attached thereon so as to release the molded silicone hydrogel contact lens from the lens-adhered mold half.

2. The method of claim 1, wherein the shaped ultrasonic horn is a flat ultrasonic horn.

3. The method of claim 1, wherein the shaped ultrasonic horn is a convex ultrasonic horn.

4. The method of claim 1, wherein the shaped ultrasonic horn is a concave ultrasonic

horn.

5. The method of claim 1, wherein applying an ultrasonic vibrational energy is operated with a Generator Frequency between 15 kHz to 50 kHz.

6. The method of claim 1, wherein applying an ultrasonic vibrational energy is triggered by a force between 1.0 N to 150N.

7. The method of claim 1, wherein applying an ultrasonic vibrational energy produces a vertical displacement of the ultrasonic horn ranging from 20 to 160 micron.

8. The method of claim 1, wherein curing step is thermally curing.

9. The method of claim 1, wherein the cooling the lens–adhere mold half with a cold air blower to blow a cold air onto the non-optical side of the lens–adhere mold half.

10. The method of claim 1, wherein the cooling device is the cold horn.

11. The method of claim 1, wherein cooling the lens–adhere mold half to a temperature between minus zero degree Celsius and twelve degree Celsius.

12. The method of claim 11, wherein the cooling the lens–adhere mold half to a temperature between two degree Celsius and ten degree Celsius.

13. The method of claim 12, wherein the cooling the lens–adhere mold half to a temperature between three degree and eight degree.

14. An apparatus for delensing a hydrogel contact lens from the lens adhering mold half, separating a molded hydrogel contact lens from a female mold half or a male mold half attached thereon, the apparatus comprising:

means for holding the female mold half or the male mold half having hydrogel contact lens attached thereon stationary,
means for cooling the lens–adhere mold half with the silicone hydrogel contact lens adhered thereon;

an ultrasonic energy horn is shaped to direct contact with at least one area of a non-optical surface of the female mold half or the male mold half having the molded hydrogel contact lens attached thereon,

a power supply, a converter and a booster coupled to the horn to form a ultrasonic welding system for generating ultrasonic energy of a frequency and amplitude, and for a duration necessary to separate the molded hydrogel contact lens from the female mold half or the male mold half attached thereon.