Claims

1. Injection molding hot runner system adapted for leak detection during injection molding, wherein the hot runner system comprises a manifold and a housing surrounding the manifold, wherein the manifold and the housing are spaced apart defining one or more pockets, the manifold comprises one or more junction points establishing a connection to a component attached to the manifold, wherein at the at least one junction point area a sensor is located in the pocket, wherein the sensor is configured to indicate a leak, upon contact with the molten plastic due to a leak at the junction point;

wherein the sensor is a temperature sensor that is insulated to reduce the temperature influence of the housing or manifold; and

wherein the temperature sensor is located between an upper and a lower insulation.

2. The injection molding hot runner system, according to claim 1 wherein the junction point is one or more of the following: a bore or thread in the manifold to mount an inlet or an injection nozzle, a manifold joint connecting two manifold sections, a bore in the manifold through which a hydraulic, electric or pneumatic actuator extends to drive the injection nozzle.

3. The injection molding hot runner system according to claim 1, wherein an injection nozzle extends from the manifold through a bore of the housing, wherein the bore of the housing is in communication with the pocket, so that due to a leak at the injection nozzle, molten plastic extends into the pocket, detectable by the sensor located in the pocket at the bore.

4. The injection molding hot runner system according to claim 2, wherein the sensor is connected to the support spacing apart from the manifold and the housing.

5. The injection molding hot runner system according to claim 1, wherein the housing comprises several plates defining the housing.

6. The injection molding hot runner system according to claim 1, wherein the sensor is one or more of the following: a temperature sensor, a mechanical switch, temperature coil, a contact

sensor, optical sensor, pressure sensor, inductive sensor, capacitive sensor, resistance sensor, and piezo sensor.

7. The injection molding hot runner system according to claim 1, wherein the sensor is a temperature sensor connected to an upper wall of the pocket and extends downwards into the channel.

8. The injection molding manifold assembly according to claim 1, wherein the temperature sensor is insulated by a ceramic.

9. The injection molding hot runner system according to claim 1, wherein the insulation is surrounding the support and the temperature sensor is attached to the insulation.

10. The injection molding hot runner system according to claim 6, wherein the sensor is a temperature sensor configured to detect a temperature deviation upon contact with molten plastic passing through the leak.

11. The injection molding hot runner system according to claim 2, wherein the injection nozzle comprises a nozzle shank being fastened into or onto the manifold, and wherein a temperature sensor is located at the vicinity of the lower or upper end of the manifold close to the nozzle shank or inlet nozzle.

12. An injection molding hot runner system adapted for leak detection during injection molding, wherein the hot runner system comprises a manifold and a housing surrounding the manifold, wherein the manifold and the housing are spaced apart defining one or more pockets, wherein a nozzle assembly extends from the manifold via the pocket through a bore of the housing, the nozzle assembly comprises a nozzle heater located in the bore, wherein a sensor is located in the bore in which the nozzle heater extends to detect leaking plastic pressed through the bore; and

wherein the sensor is located on/in the nozzle heater or at the upper end of the nozzle heater.

13. The injection molding hot runner system according to claim 12, wherein the sensor is a temperature sensor configured to detect a temperature deviation upon contact with molten plastic passing through the leak.

14. An injection molding hot runner system adapted for leak detection during injection molding, wherein the hot runner system comprises a manifold and a housing surrounding the manifold, wherein the manifold and the housing are spaced apart defining one or more pockets, wherein a nozzle assembly extends from the manifold via the pocket through a bore of the housing, the nozzle assembly comprises a nozzle heater located in the bore, wherein a sensor is located in the bore in which the nozzle heater extends to detect leaking plastic pressed through the bore; and

wherein the sensor is located in a groove on an outer shell of the nozzle heater.

15. The injection molding hot runner system according to claim 12, wherein a heating coil of the nozzle heater is used as a sensor indicating the leak when the current used to drive the heating coil passes a preset threshold value.

16. The injection molding hot runner system according to claim 12, wherein the sensor is a mechanical sensor upon contact with the molten plastic is configured to indicate a leak.

17. The injection molding hot runner system according to claim 16, wherein the mechanical sensor is a switch configured to close or open upon contact with the molten plastic.

18. An injection molding hot runner system adapted for leak detection during injection molding, wherein the hot runner system comprises a manifold and a housing surrounding the manifold, wherein the manifold and the housing are spaced apart defining one or more pockets, wherein a nozzle assembly extends from the manifold via the pocket through a bore of the housing, the nozzle assembly comprises a nozzle heater located in the bore, wherein a sensor is located in the bore in which the nozzle heater extends to detect leaking plastic pressed through the bore;

wherein the sensor is a mechanical sensor upon contact with the molten plastic is configured to indicate a leak; and

wherein the mechanical sensor is a wire configured to break upon contact with the molten plastic.

19. An injection molding hot runner system adapted for leak detection during injection molding, wherein the hot runner system comprises a manifold and a housing surrounding the manifold, wherein the manifold and the housing are spaced apart defining one or more pockets, wherein a nozzle assembly extends from the manifold via the pocket through a bore of the housing, the nozzle assembly comprises a nozzle heater located in the bore, wherein a sensor is located in the bore in which the nozzle heater extends to detect leaking plastic pressed through the bore;

wherein the sensor is a mechanical sensor upon contact with the molten plastic is configured to indicate a leak; and

wherein the mechanical sensor has the form of a tube located around the nozzle assembly, configured to get pushed by molten plastic and configured to indicate a relocation.

20. An injection molding hot runner system adapted for leak detection during injection molding, wherein the hot runner system comprises a manifold and a housing surrounding the manifold, wherein the manifold and the housing are spaced apart defining one or more pockets, wherein a nozzle assembly extends from the manifold via the pocket through a bore of the housing, the nozzle assembly comprises a nozzle heater located in the bore, wherein a sensor is located in the bore in which the nozzle heater extends to detect leaking plastic pressed through the bore; and

wherein the sensor is a mesh around the nozzle assembly changing electrical or mechanical or optical behavior upon contact with molten plastic.

21. An injection molding hot runner system adapted for leak detection during injection molding, wherein the hot runner system comprises a manifold and a housing surrounding the manifold, wherein the manifold and the housing are spaced apart defining one or more pockets, wherein a nozzle assembly extends from the manifold via the pocket through a bore of the housing, the nozzle assembly comprises a nozzle heater located in the bore, wherein a sensor is located in the bore in which the nozzle heater extends to detect leaking plastic pressed through the bore; and

wherein the sensor is an optical sensor comprising a fibre optic having grooves, which when covered by molten plastic interrupt or reduce light passing through the fibre optic.