



Hot Runner Monitor
Hot-runner leak detector

HRM – with optimal mould hot runner protection for sustainable cost savings

Leaks often occur in complex moulds with hot runner technology. The moulding material flows through a defect in the hot runner system into the rear mould technology. The causes of this are diverse and difficult to determine in advance.

We produce a technically high value, internationally patented simple functioning device which is helpful for determining the causes and considerably reduces consequential costs.

The HRM (Hot Runner Monitor) is convincing with its low investment costs and cost-effective low-maintenance operation.

The HRM improves efficiency with clearly lower repair costs, faster mould availability in production and checks of repair success in the production operation.

Applications

- Moulds with hot runner or simple nozzle systems
- reduction monitoring
- Checks of repair success
- Early detection of developing leakage
- Recognition and automated machine deactivation

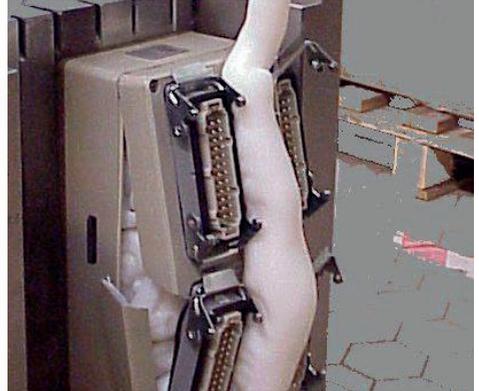
Functionality

- Compressed air supply 3...10 bar
- Leak discovery by differential pressure measurement
- Monitoring lines in the injection
- Simple operation and setting
- Mould- and machine-independent working method
- Retrofitting of injection moulds is possible at any time.





Mould: Container
Defect: Transfer heating beam nozzle
Cause: Nozzle torn off
Downtime: 3 days
Repair costs: 8,500 Euro



Mould: Covers
Defect: Nozzle tip
Cause: Slow leak
Downtime: 30 days
Repair costs: 45,000 Euro

Causes of hot-runner leaks

The causes of hot-runner leaks are diverse. The increasingly complex injection moulding moulds have increased demands to the construction. The hot-runner manufacturers and tool constructors are facing special tasks. Use and maintenance also require greatest efforts.

Correction of construction errors is very elaborate and connected to high costs. The Hot Runner Monitor permits recognition of the leaks when they occur and to remove errors.

- Construction errors
- Production errors
- Operating errors
- Repair errors
- Maintenance errors



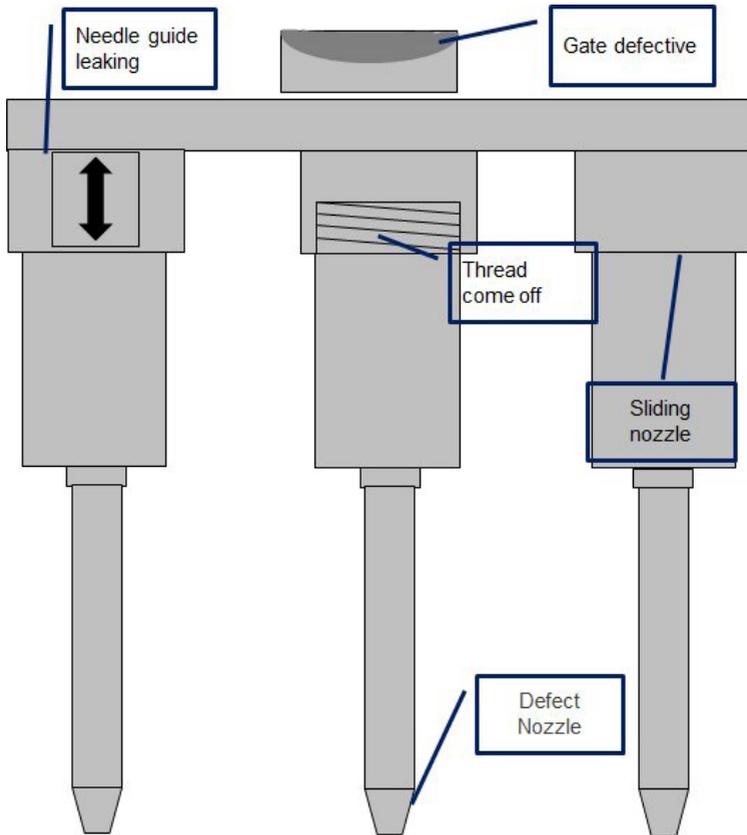
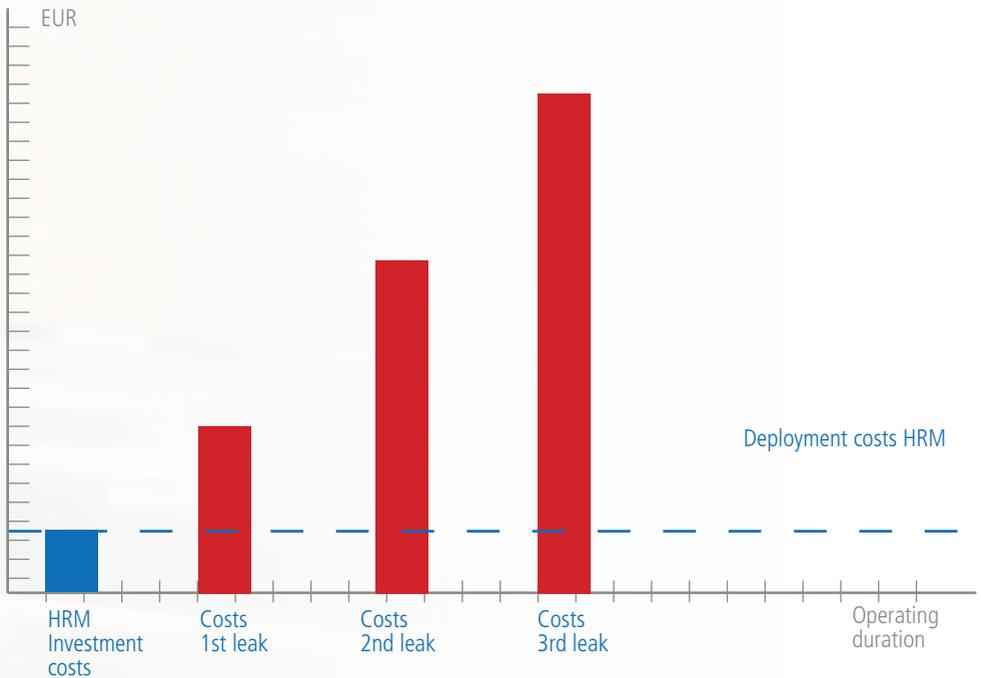
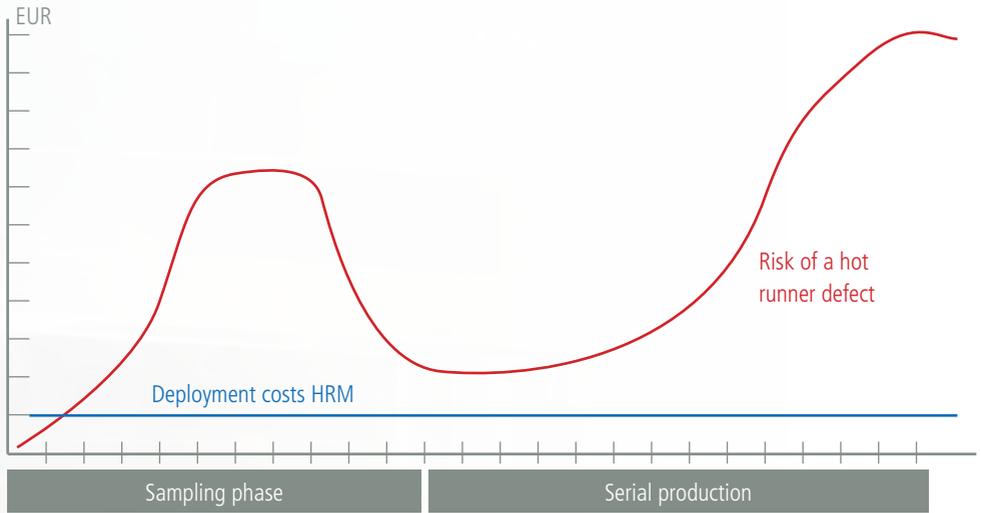


Illustration: Possible error causes



Functionality

In order to use the Hot Runner Monitor in practice, possible leakage points must be specified.

In these areas, the stainless steel tubes through which a very low air flow is routed are placed. The escaping melt closes the tube ends and the leak is recognised early on due to the pressure change in the system.

The stainless steel tubes have an outer diameter of 1.6 mm and are very flexible. Installation of the tubes is easy. They are placed in the cable ducts of the electrical connections. At the hot-runner output, the tubes are combined in an air distributor. From there, an air hose is directly routed to the Hot Runner Monitor or optionally connected via a switch box (distributor service) using a multi coupling.

At the Hot Runner Monitor, an air supply of 3...10 bar is set; then the system is ready for operation. A potential-free contact triggers the machine control in order to interrupt the injection moulding process if the detector triggers.

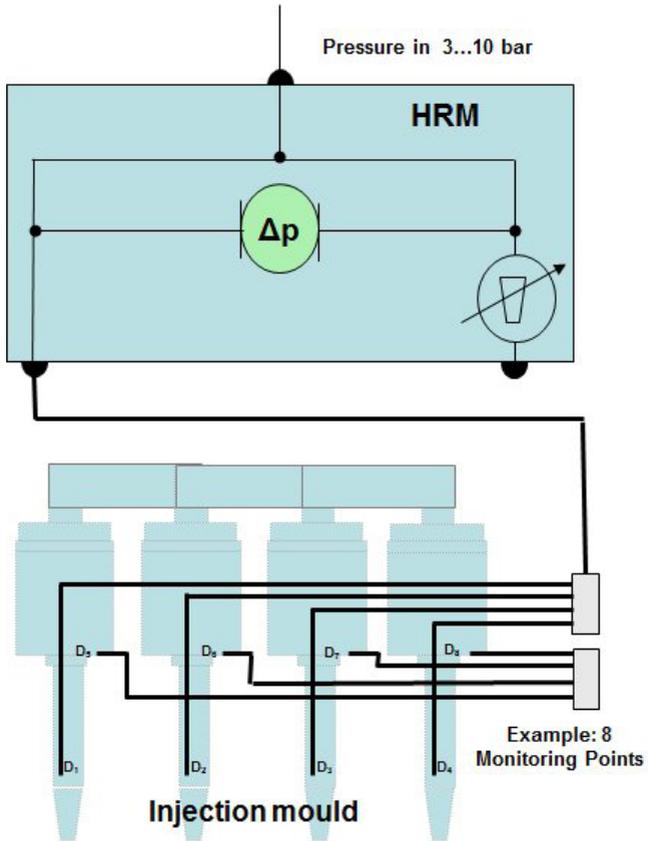
- Compressed air supply 3...10 bar
- Leak recognition by pressure measurement
- Monitoring lines in the injection moulding tool
- Flexible stainless steel tubes with an outer diameter of 1.6 mm bundled on the outside with 4-fold distributor
- Simple setting
- Tool- and machine-independent working method
- The upgrading of injection moulds is possible at any time.

Execution of the HRM

The HRM is available in different designs with a different number of measuring points:

- 8-way
- 16-way
- 32-way





HRM – Installation and assembly notes

The Hot Runner Monitor can be used in different tools and machines and is aligned with the respective tool.

Using stainless steel tubes usually permits installation of the injection moulding tool without any tool changes. At first, the monitoring points in the injection moulding tool are specified where leaks are most likely to occur or where electrical connections and lines must be protected.

These preferably are the injection nozzle, hot-runner beams and hot-runner nozzles. Then, stainless steel tubes are installed in this area (figures 1 and 2). The stainless steel tubes have an outer diameter of only 1.6 mm. They are very flexible and can be installed easily with their variable bending angles. They are placed in cable ducts for electrical connections or temperature sensors. The stainless steel tubes are screwed to a special air distributor block (figure 3) with a cutting ring technique.

This distributor is connected to the Hot Runner Monitor with a commercial $D = 6$ mm air hose (PUR). Optionally, a Switch box can be used in conjunction with a multi-coupling.

When the stainless steel tubes are clogged by leaking material, the system will recognise the leak via a differential pressure change. An interface with the machine stops it immediately.



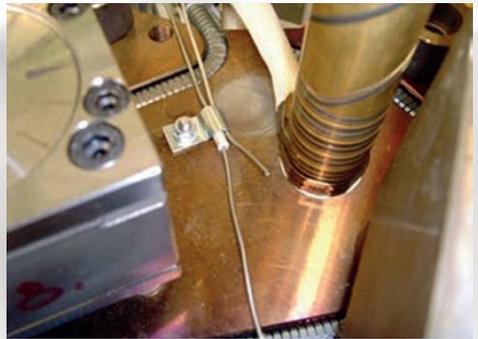
Possible monitoring points

1



Stainless steel tube installation

2



Stainless steel fastening

3



Switch box attachment (optional)

4



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HRM *Mini*





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