

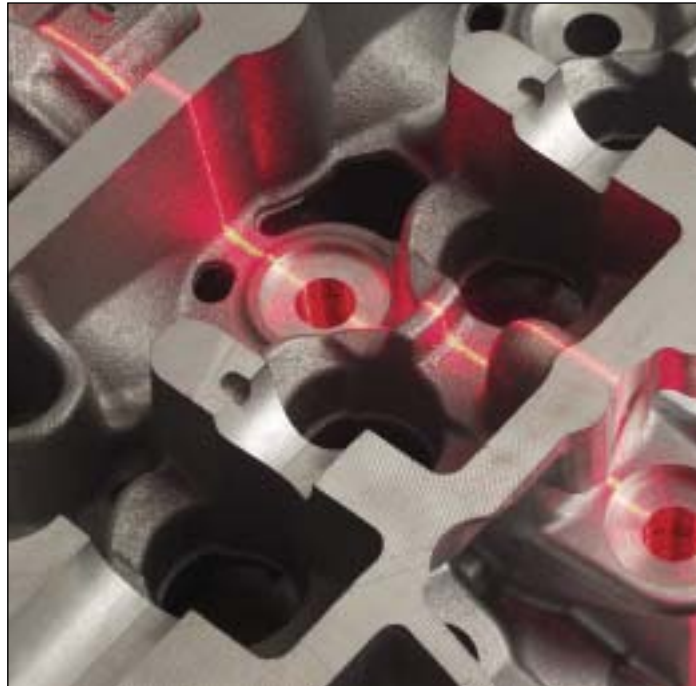
QualiLine-C

In-line casting inspection systems

QualiLine-C is used for for 100% inspection of a variety of cast and machined components in the automotive industry, including cylinder heads, engine blocks, transmission systems and brake parts.

Key features:

- 100% inspection
- Fully integrated into production line
- Non-contact inspection
- Cycle time matched to production line speed
- Real-time statistical process data and feedback



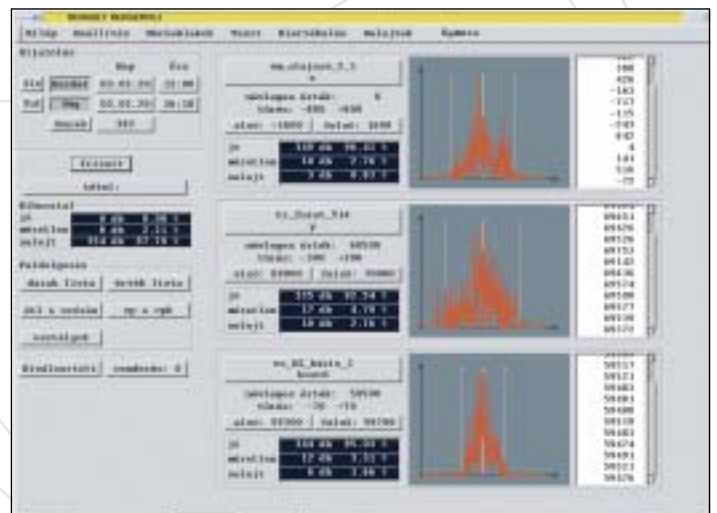
QualiLine-C is used to check complex casting products such as cylinder heads, engine blocks, transmission systems, suspension and brake parts during production. The system can be used on mechanical or raw castings. QualiLine-C makes a huge variety of direct measurements and analyses hundreds of different parameters using image processing techniques. Images are captured using multiple cameras and illumination sources. Laser stripe illumination is used for measurements on curved surfaces. Size, shape, position, depth and direction measurements can all be readily performed on contours, bores, openings and surfaces and summary results can be written directly onto each component using an ink-jet printer or laser engraving system.

Benefits

QualiLine-C systems greatly improve manufacturing quality control through their objectivity, reproducibility and speed. In addition to making hundreds of complex measurements in real-time, they can also be used to eliminate previously unrecognised defects. By using QualiLine-C as a final inspection tool, products leave the production line with zero defects. Installing QualiLine-C at intermediate production stages makes early identification of problems a practical reality, thereby reducing overall production costs.

Measurement parameters

- Shape
- Position
- Depth
- Area
- Surface quality



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Statistical process control

Data from each measurement on each piece examined by QualiLine-C can be collated to provide feedback on the production process. Statistical analysis allows early identification of core wear or other mould failures in the casting process or errors in machining caused, for example, by premature tool wear. Statistical analysis can also provide vital information to help identify flaws in a particular mould when multiple moulds are being used.



Measured parameters

- Open die defects
- Dimension of multiple inlet and outlet channels
- Position and dimension of threaded and/or smooth bores
- Position and dimension of valves
- Depth and planarity of any surface on any side of the casting
- Depth of combustion chambers
- Channel continuity

SPECIFICATION*

| Measurement | Parameters | Tolerances |
|--------------------------|------------|------------|
| Cast contours | Shape | ±0.3 mm |
| Machined contours, bores | Shape | ±0.06 mm |
| Index bores | Shape | ±0.014 mm |
| Cast depths | Depth | ±0.3 mm |
| Machined depths | Depth | ±0.2 mm |
| Openings | Area | ±1.0% |
| Openings | Position | ±0.3% |

* Typical values for 3 or 4-cylinder heads after primary machining and washing.
Dimensions: length: 300–550mm, width: 200–350mm, height 120–150mm.



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