

## AutoInspect - Automated inspection for sintered parts by non-destructive techniques for improved quality in production

Sintered parts obtained by the powder metallurgy (PM) process are employed in several industry sectors, in particular the automotive industry. They are typically intricate, complex shaped parts produced in near net shape by compaction of powders into a geometry followed by sintering of the compacts for consolidation, where particles are bonded upon heating.



The proposed concept is a new approach to the problem of performing 100% online inspection of sintered PM/MIM components. In this project, the research organisations will provide research and development capability to the SMEs for the following:

- Microfocus stabilised X-ray source generator and collimator including excitation driving electronics and control software.
- High resolution X-ray detection technology for fast capture of images and acquisition software.
- Software-driven automated defects detection in PM/MIM component radiographs and image processing algorithms.
- Component feeding and manipulator mechanics.

The PM process, by nature, is suited to high volume production and therefore any flaws/defects in the parts can have a significant impact on the production output e.g. loss of material and efficiency, as well as potential failures in later use. Therefore there is a need for automated inspection by non-destructive means, for determining and separating the good and bad batches during production, preferably as early as possible, without having to seek destructive examination carried out manually, which can have a negative impact on the production flow and output. More critically, any faulty part that is overlooked may cause more problems later on such as unexpected premature failures in application. Depending on the component and the criticality of the application, this can have dramatic consequences.

For further information, please visit the project website at [www.autoinspectproject.eu](http://www.autoinspectproject.eu).

### Project objective

A digital radiographic system for online inspection of PM parts will be developed. This technique allows fast inspection and application of image processing for the detection of small cracks, flaws and density variations in-situ. The primary function of the AutoInspect system is to receive sintered parts, inspect them at high throughput, and sentence them as good or bad components accordingly. To ensure maximum throughput the PM/metal injection moulding (MIM) components will be fed continuously via a conveyor.

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