Industrial image processing in the quality management of the plastics processing industry
Industrial image processing is being applied increasingly in the quality management of plastic products manufacturing. It is an excellent instrument for making tests and doing monitoring.

The benefit of industrial image processing is in its non-destructive testing process, meaning that all objects of the test are scanned and evaluated without contact.

We would like to illustrate what demands and diverse testing problems are required of industrial image processing using the example of the disposable syringes shown here.

Syringes with small, hardly visible damages such as small cracks or moulds not correctly squirted can no longer be used in human medicine. The same applies to inclusions from soiling or assembly defects such as missing or double seals. Furthermore, printing or engraving for scales or units have to be completely unambiguous because a mistake here could have disastrous consequences. All of the disposable syringes have to be checked to guarantee their functionality. And industrial image processing is the ideal instrument to make a very fast and precise test in production because inspection with the human eye is not possible or economical in many cases.

Industrial image processing essentially consists of two components:

1. recording the image and 2. evaluating the image.

The image recording building block is responsible for gathering data. For instance, one camera records such things as shape, colour and size.

The image evaluation building block is digital processing for the data in a computer to get a precise statement on whether the object of the test can be classified with regard to shape, colour and size or not.

If a plastic component is going to be assessed for its qualitative features using an industrial image processing system, it is necessary to deposit good and bad, large or small, the correct dimensions, imprint and colour coding in the system with the corresponding parameters. Apart from these parameters, the correct components such as the cameras, lenses, lighting, electronic components for the evaluation, interfaces and evaluation programs (software) have an important role to play.

The software is generally adapted to the customer’s specific testing needs. This means that it is not only necessary to have the right hardware, but core competence in software development.

Asentics industrial image processing means great expertise and know-how in assessing plastic products.

The test of disposable syringes shown here is only one example of the requirements made of industrial image processing. On the next pages we will be showing you various testing problems for various plastic components that Asentics has successfully solved.

Asentics offers industrial image processing systems with all of the necessary components for complex testing requirements. Asentics is also capable of mastering the appropriate integration of feeds or special machines in existing plants.
Some example of testing problems

**Mobile phone covers**
- Surface inspection
- Testing for: colour, soiling, scratches and damage
- Checking for shape

**Socket outlets**
- Housing inspection
- Testing for: size and shape, break-outs, moulding defects and inclusions

**Automatic safety devices**
- Housing inspection
- Testing for: size and shape, break-outs, moulding defects and inclusions

**Deep-drawn components for food**
- Printing check
- Testing for: colour, completeness, size, legibility and precision details

**Cosmetic bottles**
- Printing check
- Testing for: colour, completeness, size, legibility and precision details

**Precision components for measuring instruments**
- Dimensional accuracy check
- Testing for: distance, diameter of drill holes, size, damage and inclusion

**Phone covers**
- Surface inspection
- Testing for: soiling, scratches, damage, moulding defects and inclusions

**Disposable syringes**
- Completeness inspection
- Testing for: correct assembly, completeness, writing, damage and colour
Applications with the industrial image processing system from Asentics vision technology

Checking disposable syringes

Quality assurance is extremely important in human medicine because mistakes could have disastrous consequences.

Disposable syringes are checked in final inspection for potential production and assembly errors using four cameras, two different types of lighting and standard lenses.

The first step is to check the printed scale on each individual disposable syringe for completeness and proper positioning. The second step is for two cameras to simultaneously check up to 20 disposable syringes in their blister packaging for correct assembly, completeness, potential soiling and content. Here they have to take more than 100 variations into account.

Asentics equipment for the testing problem:
- **computer**: 2 Videolab G6M
- **cameras**: 4 standard cameras
- **optical equipment**: standard lenses
- **lighting**: light projector and diffuse banks of lamps
- **software modules**: Measure, Verify, Logic Editor, Detect

**testing duration**: 200 ms

Testing cosmetic bottles

First-class cosmetic articles and the customer’s demand for quality require high-quality and flawless packaging.

A total of six cameras with special optical equipment are used in two testing procedures to monitor the individual phases of production in manufacturing and printing.

The cosmetic bottle goes through two testing processes. First, it assures that moulding was flawless (shape and inclusion). Then the pressure form and embossing are checked. The bottle is automatically removed if it identifies improper squirts, printing or embossing.

Asentics equipment for the testing problem:
- **computer**: 2 Videolab G6M
- **cameras**: 6 standard cameras
- **optical equipment**: standard optical equipment with a high focal distance
- **lighting**: highly diffuse banks of lamps
- **software modules**: Measure, Verify, Logic Editor, Detect, Blob

**testing duration**: 350 ms
Checking margarine tubs
Flawless food packaging has a major effect upon the customer's decision to buy.

We check the dimensional accuracy and printing layout from the top with a camera, special lens and conventional illumination.

Tubs and covers with improper printing or with dimensions exceeding the tolerance values are removed from the production process in flow.

Asentics equipment for the testing problem:
- computer: Videolab G6M
- cameras: 1 standard camera
- optical equipment: telecentric measuring lens
- lighting: conventional HF tube lighting
- software modules: Measure, Verify, Logic Editor,

testing duration: 300 ms

Checking socket-outlets
Only products with flawless and high-quality surfaces and functionality can be sold to the final customer

We check the dimensional accuracy and examine the surface for inclusion and defects. Four cameras are used equipped with standard lenses and conventional LED lighting.

The goal is to examine the socket-outlets for defects immediately after moulding and to reject them if necessary before they are mounted and packaged. The front and back sides are checked from various perspectives.

Asentics equipment for the testing problem:
- computer: Videolab G6M
- cameras: 4 standard cameras
- optical equipment: 4x 50 mm with great working distance
- lighting: halogen projector with polarised light
- software modules: Measure, Logic Editor, Detect, Blob

testing duration: 180 ms
What benefit does Asentics industrial image processing bring the customer in the plastics processing industry?

**Inspections, optimising processes and quality management**

**Having your employees do visual inspection** has become uneconomical in many cases because the defect rates are no longer acceptable. This generally comes from a lack of concentration, improper optical assessment, mistakes or fatigue.

**In contrast**, Asentics industrial image processing records every defect, be it ever so sporadic. It assesses every testing object completely objectively without fatiguing, without a lack of concentration and day for day, around the clock without taking a break.

**Our systems** are also capable of solving various testing problems at the same time with 8 cameras per computer (for instance, geometric or dimensional checks). Incidentally, using several cameras also allows you to increase the cycle rates significantly.

**Integrating** our industrial image processing systems and the knowledge gained from this make it possible to control and accelerate a number of internal processes.

A precise check and assessment of plastic products is increasingly becoming the prerequisite for optimising other processes. They can be designed more efficiently and automated using Asentics industrial image processing so that manual interference by your employees becomes superfluous.

**Quality management systems** are absolutely necessary these days to be able to measure up to customer requirements. Depending upon the direction of your company’s production, there not only are national, but also international directives that you have to satisfy.

For instance, DIN ISO 9000 – 9004 prescribes a complete testing certification. If you are lacking a certificate or if it is incomplete, your competitors will have the edge on you.

Asentics industrial image processing offers you an almost perfect solution to documenting these testing or individual certificates.

**The benefits of Asentics industrial image processing**

Asentics industrial image processing is extremely compact and built modularly.

At the customer’s request, our system can be reconfigured according to requirements again and again.

Furthermore, our system can be excellently adapted to the customer’s convenient specific operating interfaces.

Asentics offers you all-round one-source applications in quality testing and quality assurance for plastic products.

We also offer comprehensive service and excellent detailed consultation either ahead of time and as a follow-up service.

**Your benefits when using Asentics industrial image processing**

**What using industrial image processing specifically means to you:**

**We ensure** the quality requirements of your customers for you.

**We solve** your problems.

**We help** you avoid rejects.

**We offer** you 100% control.

**We help** you to reduce costs.

**We help** you increase your production rates.

**We help** you to utilise your human resources in a more useful fashion.

**This means that you save money!**
Asentics industrial image processing systems are extremely efficient tools to comply with even the highest quality demands for your products.

Take advantage of our know-how
Have our staff give you detailed advice without obligation

Challenge us!
We’re looking forward to it.

Your team from Asentics vision technology