

# Opel: Automated Quality Control in the Press Tool Production for Large Parts

**Location / Country:** Rüsselsheim/Germany

**GOM System:** ATOS ScanBox 7260, GOM Inspect

**Company's field of work:** Automotive industry, construction of prototypes

In future, OPEL press shops will be relying on the ATOS ScanBox 7260: a new, automated 3D coordinate measuring machine for large parts. Sheet metal parts for all new OPEL models will be inspected during ramp-up and production. Convincing features of the GOM system include fast measuring speeds, easy operation, and central programmability via its Virtual Measuring Room.



OPEL combines a sense of history with modern production methods at its Rüsselsheim site: this is where the first sewing machine was manufactured by Adam Opel as early as 1862 – and where the company's first automobile was produced in 1899. Nowadays, OPEL employees produce the Insignia and Zafira at the Rüsselsheim site – both in a standardized produc-

tion system. The operation of a standardized quality process for car body quality of new developments and facelifts – from individual sheet metal parts and welded assemblies through to side panels and body-in-whites – is the responsibility of Central Quality Assurance (ZQS). This department is also responsible for introducing new car body measuring techniques.

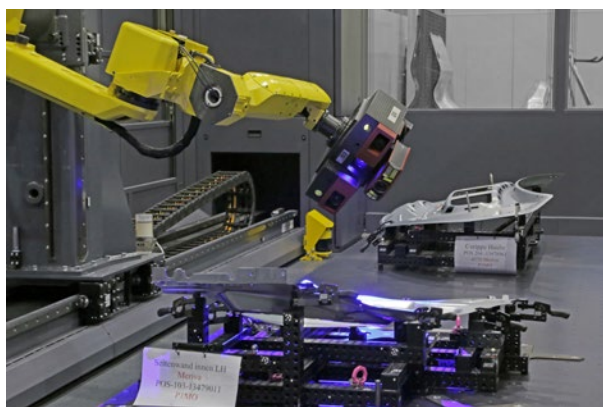
As an international automotive manufacturer, OPEL has production facilities in ten plants throughout Europe, and operates four development and test centers. Right at the start of the 2000s, the increasing requirements, e.g. the rising number of features to be inspected, led to the company introducing technologies for speeding up measuring procedures. The result was the successive introduction of automated optical measuring technology for geometry and shape digitizing of vehicle parts and components.

### New Technologies as Part of Corporate Culture

For OPEL, the strategic orientation towards full-field and non-contact optical measuring technology is one of the key elements of its car body engineering quality assurance. After various systems were compared and assessed using an evaluation matrix, the managers responsible for quality assurance and measuring technology opted for 3D coordinate measuring systems from GOM, Braunschweig. These met OPEL's specific requirements regarding precision, time and cost savings, and above all, easy handling.

### ATOS ScanBox Series 7: Quality Assurance for Large Parts

The newly developed, automated 3D coordinate measuring machine ATOS ScanBox 7260 has been in position in the pressing tool production facility at Rüsselsheim's central workshops since late 2015. The ATOS ScanBox 7260 checks geometry and shape of sheet metal components up to the size of vehicle side panels at its installation site close to production. The necessary tool optimizations are then prompted using the measuring results. In contrast to the previously used tactile 3D coordinate measuring technology



OPEL Meriva side panel is inspected in the ATOS ScanBox 7260



ATOS ScanBox 7260 – optical 3D coordinate measuring machine for large parts

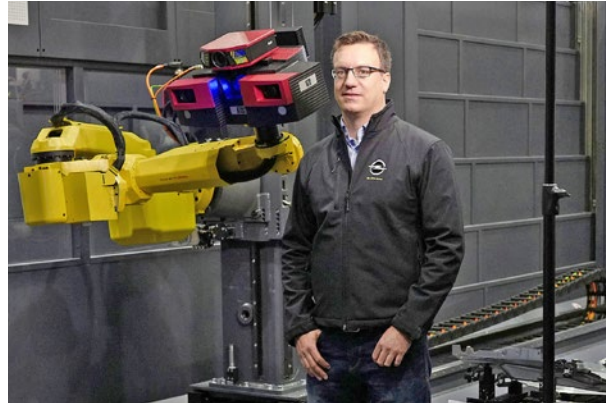
with its time-consuming alignment and positioning requirements, the GOM software automatically aligns the part to be inspected into an optimal position. The new equipment brought about a significant reduction in measuring times and programming work compared with the previous tactile methods. „The measuring procedure has been accelerated by more than 80 percent. In addition, programming efforts have been reduced from one week with the tactile measuring machine to half a day“, confirmed Dirk Kissinger, Project Manager for car body measuring technology.

### Auto Teaching Reduces Programming Effort

Auto Teaching significantly reduces programming effort. This new software feature, which forms part of the Virtual Measuring Room (VMR), simplifies the programming of the automated measuring procedure. The key function is the automated path generation: the GOM software generates individual measuring sequences, which the sensor has to carry out as part of the complete measuring procedure, with no manual interaction. Appropriate sensor positions for each feature to be measured are computed on the CAD using the inspection points. This results in an optimized and efficient path of motion for the robot, including the optimal sequence and number of single scans required. Furthermore, the ATOS ScanBox integrates the entire measuring task into the calculation. It automatically allows for any suitable intermediate steps, in case there is a collision risk for the robot, e.g. with the ATOS ScanBox housing or the part to be measured. Auto Teaching thus results



The entire measuring procedure in the ATOS ScanBox can be controlled by production staff via a simplified user interface



Dirk Kissinger, Project Manager for car body measuring technology at OPEL's Central Quality Assurance in Rüsselsheim

in a clear shortening of the overall measuring procedure. By automating the programming of robots, user influence is continuously reduced, which in turn increases process security and reliability.

### **Optical Measuring Technology Replaces Tactile Methods**

The introduction of the ATOS ScanBox 7260 represents the next logical step in OPEL's restructuring of its measuring technology. In 2003, the automotive manufacturer bought its first mobile measuring system from GOM for full-field optical 3D coordinate measurement: the ATOS 3D scanner. Existing measurement plans are scanned into the GOM software and processed. The results are automatically fed into OPEL's own quality assurance systems via an interface. Today, 27 mobile and automated optical 3D coordinate measuring machines from GOM are in use throughout Europe.

In order to make processes even more time and cost-efficient and to further increase flexibility, the company intends to automate optical measurement, based on its experiences with GOM's 3D measuring technology. The first automated project cell with an integrated ATOS Triple Scan was introduced to Rüsselsheim ZQS in 2011, and subsequently rolled out as a standard measuring cell for attached parts (hood, doors, trunk lid) in all of OPEL's European body-in-white plants. The effort involved, particularly for project management and support, was relatively large for Central Quality Assurance. „We took over the complete

management of the project right through to the plant construction. Every agreement between the body shop, the plant engineers and GOM went through us. ZQS was also responsible for ensuring that the occupational safety requirements were met, and we were additionally in charge of support, training and offline programming", commented Dirk Kissinger. A need thus arose at OPEL for a standardized solution for automated 3D coordinate measuring technology. It is particularly important to OPEL that one single point of contact is provided by GOM for planning, setup, training and support. Even the otherwise work-intensive safety acceptance testing is considerably simplified by the standardized setup of the ATOS ScanBox.

### **Automated Inspection at Multiple Sites**

The Europe-wide rollout of the ATOS ScanBox 7260 is scheduled for 2016. By mid-2017, the company's four press shops in Saragossa, Gliwice, Rüsselsheim and Ellesmere Port will be using the ATOS ScanBox 7260 to check the quality of large sheet metal parts. Even with the automated optical 3D coordinate measuring machines being used at various different sites, OPEL can control quality management centrally from Rüsselsheim, as the standardized measuring and inspection processes are programmed centrally and loaded into the Virtual Measuring Room of the respective ATOS ScanBox. This means that their application at different sites is simultaneously guaranteed – the entire quality assurance is transparent and traceable.

## Opel

Opel is one of Europe's largest automakers. It was founded by Adam Opel in 1862 in Rüsselsheim, Germany. Opel and its British sister brand Vauxhall sell over one million vehicles annually. In 2014 this made it the third-largest passenger car brand in the European Union.

Headquartered in Rüsselsheim, the company has 12 plants and four development and test centers in eight European countries. Opel employs around 34,500 people in Europe, with more than 16,500 in Germany.

## GOM – Precise Industrial 3D Metrology

GOM develops, produces and distributes machines, software and systems for 3D coordinate measuring technology and 3D testing based on latest research results and innovative technologies. With more than 60 sites and more than 1,000 metrology specialists, GOM guarantees profound advice as well as professional support and service. More than 10,000 system installations improve the product quality and manufacturing processes in the automotive, aerospace and consumer goods industries.

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