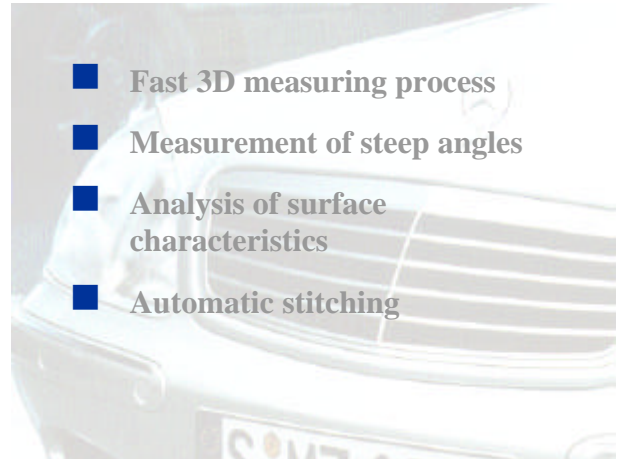


- Fast 3D measuring process
- Measurement of steep angles
- Analysis of surface characteristics
- Automatic stitching



## Task

In the automotive industry the quality of car body sheet metal depends on the surface topography and it is of great importance to measure and characterise the textured surface in order to optimise the forming process

## Solution - $\mu$ Surf and WinSam

To measure textured surfaces like Pretex or EBT by optical measurement systems it is important to collect data points along steep flanks. The ideal system for this task is the confocal  $\mu$ Surf with its parallel multi-pinhole technique which has a high signal to noise ratio even if the surface point is located on flanks at more than 40°. For surface analysis especially the characterisation of voids the WinSam software is the first one which is able to determine the functional behaviour of textured surfaces by an area ratio diagram of open and closed void volume.

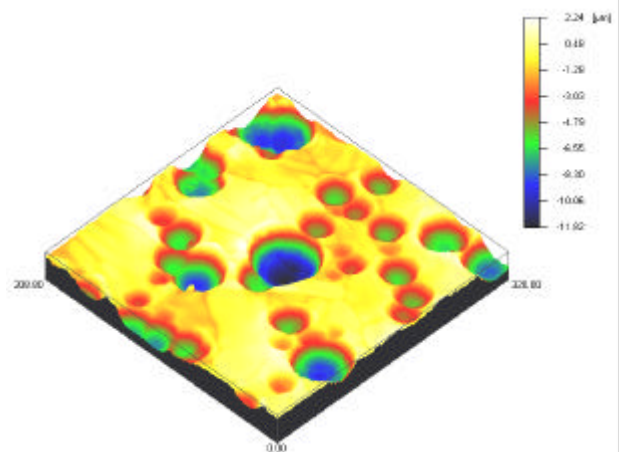


Fig.1 3D measurement with 50x optic module

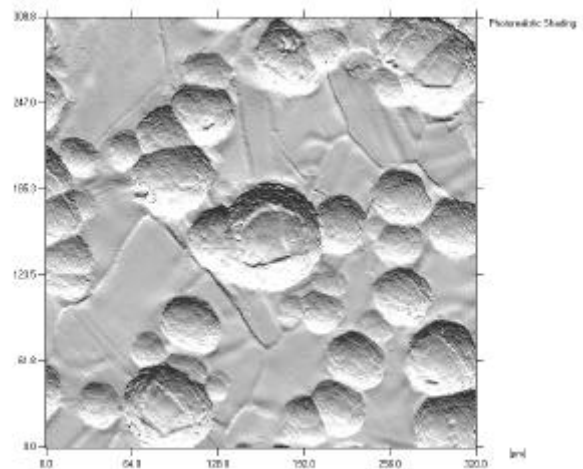


Fig.2 Photorealistic 3D measurement representation

## Profile evaluation

The red line, right, marks a profile section and shows, left, the unfiltered profile of the surface structures. At selected point of interests the profile angles are calculated : 18°, 39°, 23° and 57°. These non ideal surfaces, of more than 35° flank angle, reflect only small amounts of incident light. Due to the high signal to noise ratio of the NanoFocus confocal measuring technique, the system can get surface signals from weak intensities

## Data point quality

A zoom of the right-hand end of the profile showing each measuring data point is shown in Fig 4. Even at the flank with 57° there are original data points without “interpolation”.

## 3D Analysis with WinSam

Besides the more or less standardised parameters Sa, Sq and many others, the WinSam software allows the calculation of void volumes which has much higher relevance to the function of the surface in terms of the dynamic behaviour during forming process.

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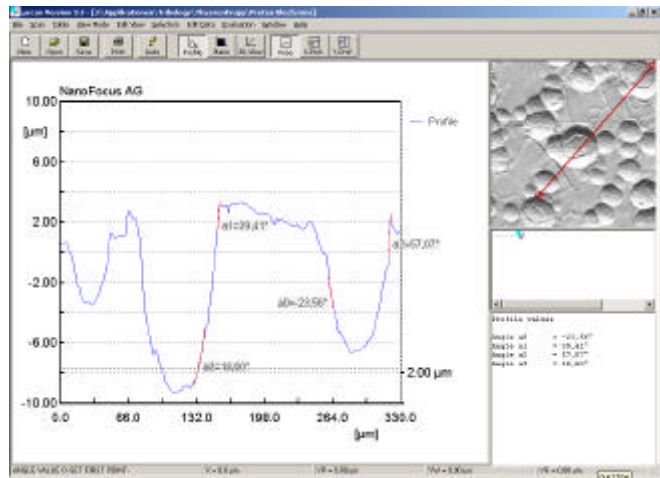


Fig 3 Profile of a textured surface

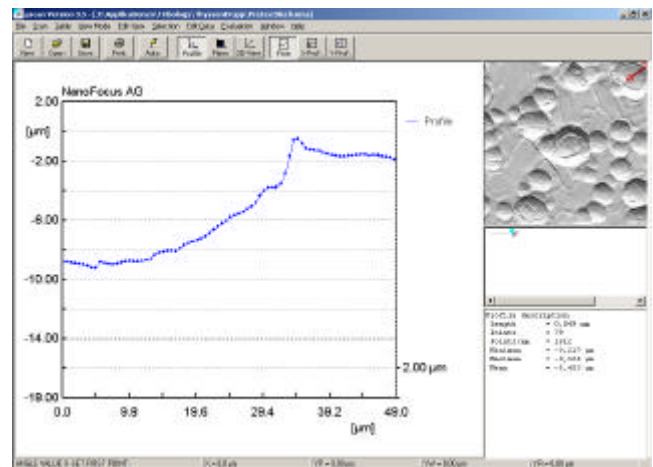


Fig 4 Zoom showing the original data points

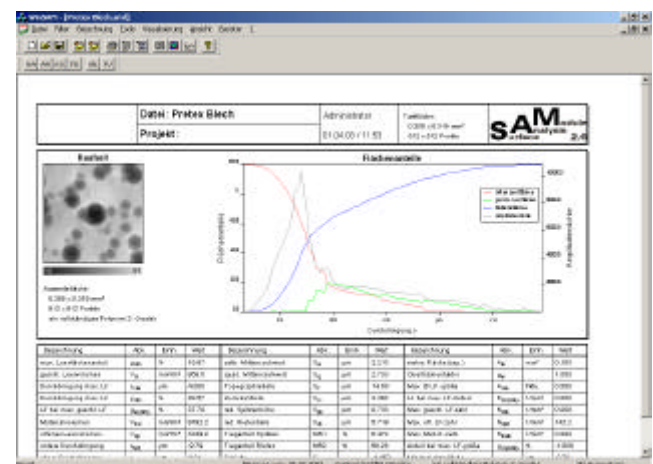


Fig 5 Evaluation with WinSam 3D Analysis software