

PRAFS – for maximum efficiency,
flexibility, operating comfort & time savings in
component qualification

PROTOS-3D
METROLOGY



PATENTED

Leading technology combined in perfection

In 2019, ZEISS presented Virtual Clamping (VC) for the first time as a new way to qualify components without specific, physical clamping fixtures. An innovation that convinced us to invest in the manual VC version in the same year.

Virtual Clamping, a product of Carl Zeiss GOM Metrology GmbH, is a combination of the ZEISS software with a universal pneumatic device. Virtual Clamping is performed using innovative algorithms within the software. The pneumatic holding devices allow sheet metal components (300 – 2,000 mm) to be supported in a tension free position and be prepared for measurement. This eliminates the cost of additional part-specific fixtures and reduces operator influence. With PRAFS, the manual positioning of pneumatic devices is replaced by a robot-assisted holding technology from PROTOS-3D – PRAFS can be integrated into existing ScanBoxes from SB6135 onwards. Due to the high repeatability of the robots, depending on the set temperature delta and a defined time interval, usually only one photogrammetry per measuring day and component type is necessary. Basically, the measuring system decides whether photogrammetry or calibration is necessary and starts it automatically.

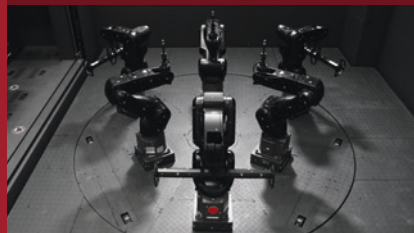
ZEISS ScanBox



Fast, automated measurement

The ZEISS ScanBox provides fully automated surface deviations between the nominal and actual data in the production and manufacturing process.

PRAFS from P3D



One measuring fixture for many components

Six robots form the basis of the fully flexible, programmable PRAFS component fixture – component-specific measuring fixtures are no longer required.

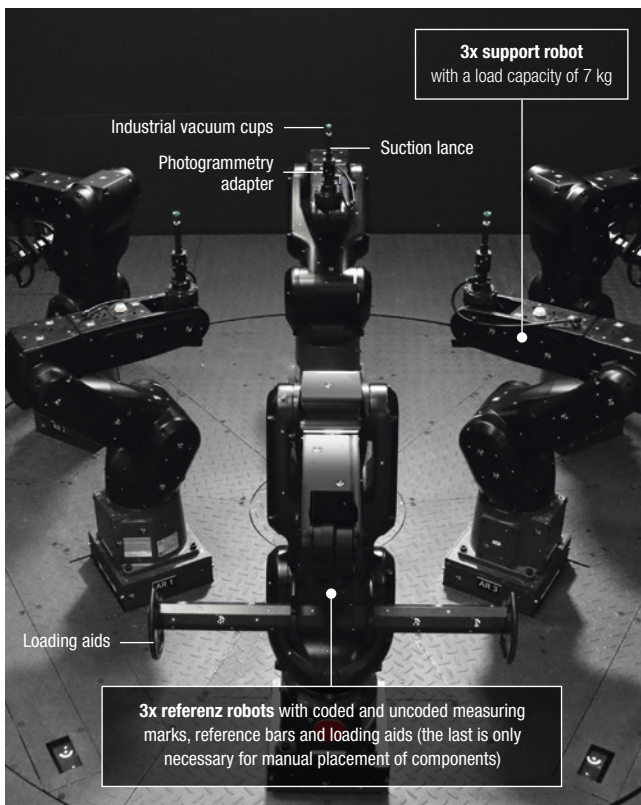
Virtual Clamping (VC)



Virtual clamping of components

VC replaces physical clamping and calculates the surface and feature-based deviation between nominal and actual data, which can be provided in different formats.

PRAFS: The perfect upgrade for your 3D measurement technology

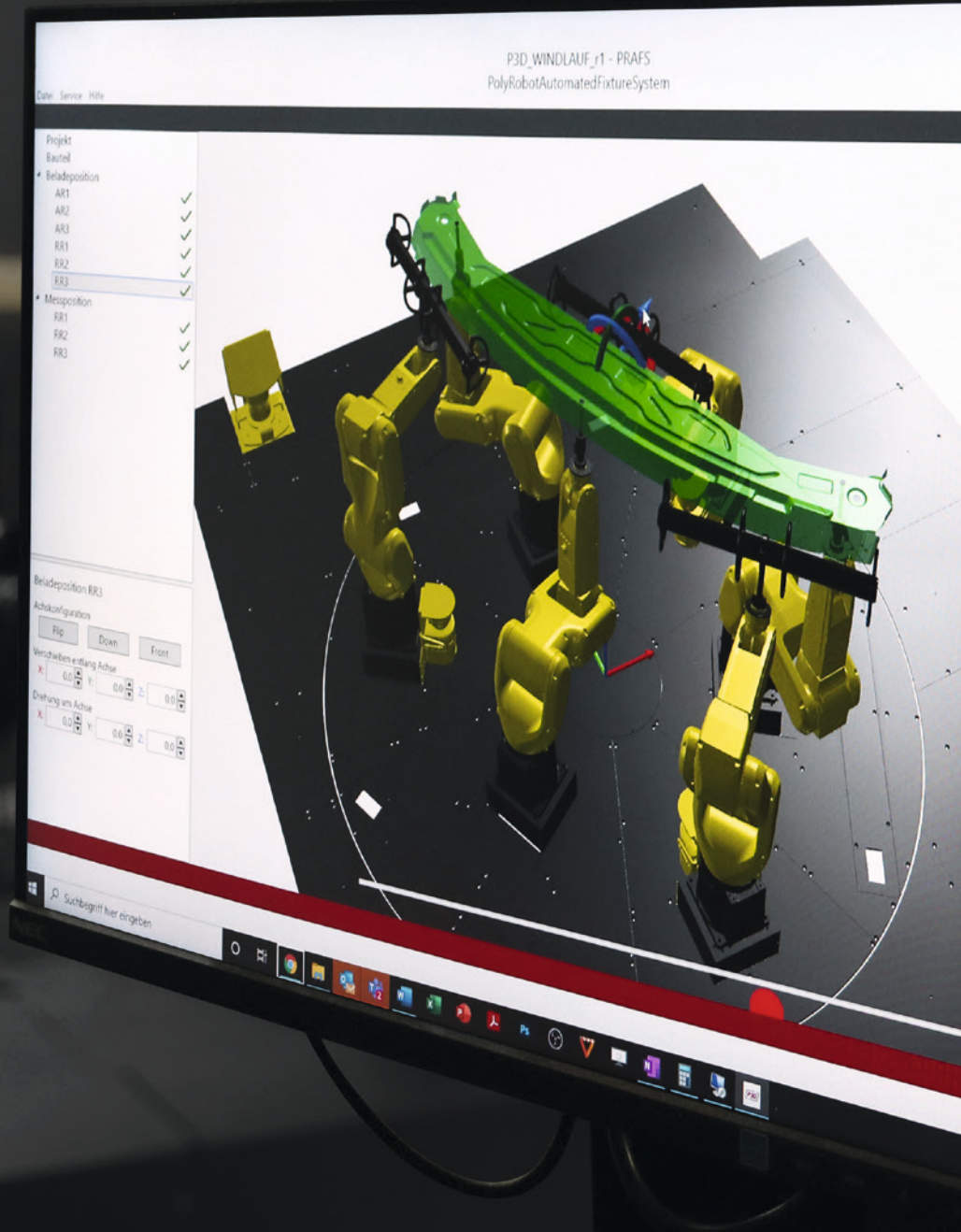


Of course, both VC solutions (mechanical and fully automated) have one thing in common, as they both have freely positionable, pneumatic measuring devices. The costs for the design, manufacture and storage of component-specific, physical measuring devices and the change of measuring fixtures is no longer relevant.

With PRAFS, the degree of automation/digitization and therefore the repeatability can be significantly increased, which has a particular effect on the measuring frequency along a production line, in the measuring room and in tool or prototype construction. But Virtual Clamping in combination with PRAFS offers even more advantages:

- Higher repeatability (reproducibility)
- Higher flexibility and variability
- Enormously short set-up times
- Offline programming of PRAFS setups
- Minimal worker influence
- Measurement by measurement technician or worker
- The operating lifetime is much more effective
- Simple, fast change management
- Storage of several thousand PRAFS setups
- Fully integration in the ZEISS ScanBox

Higher level of digitization equals higher flexibility & process reliability



ScanBox & PRAFS: Two that get along perfectly

The path planning software PRAFS-EMUSIM is the central link between PRAFS-HMI and the ZEISS software. PRAFS-EMUSIM is a virtual PRAFS clone that allows the PRAFS robots to be centrally planned, stored and managed.

- No knowledge of robot programming necessary
- Position generation of support and reference robots
- Import of component data from ZEISS into PRAFS-EMUSIM
- Real-time path planning with automatic collision detection
- Data export to PRAFS & ZEISS software for measurement program generation



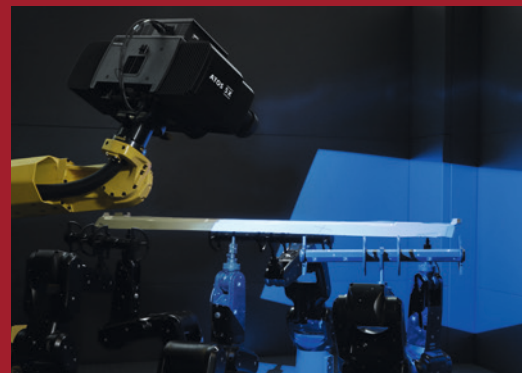
PRAFS-HMI control panel: direct access to all stored PRAFS setups (several thousand possible)

Setup in one minute and immediately ready for the next measurement

Time is money! And the less time spent on setting up the measuring fixture itself, the better.

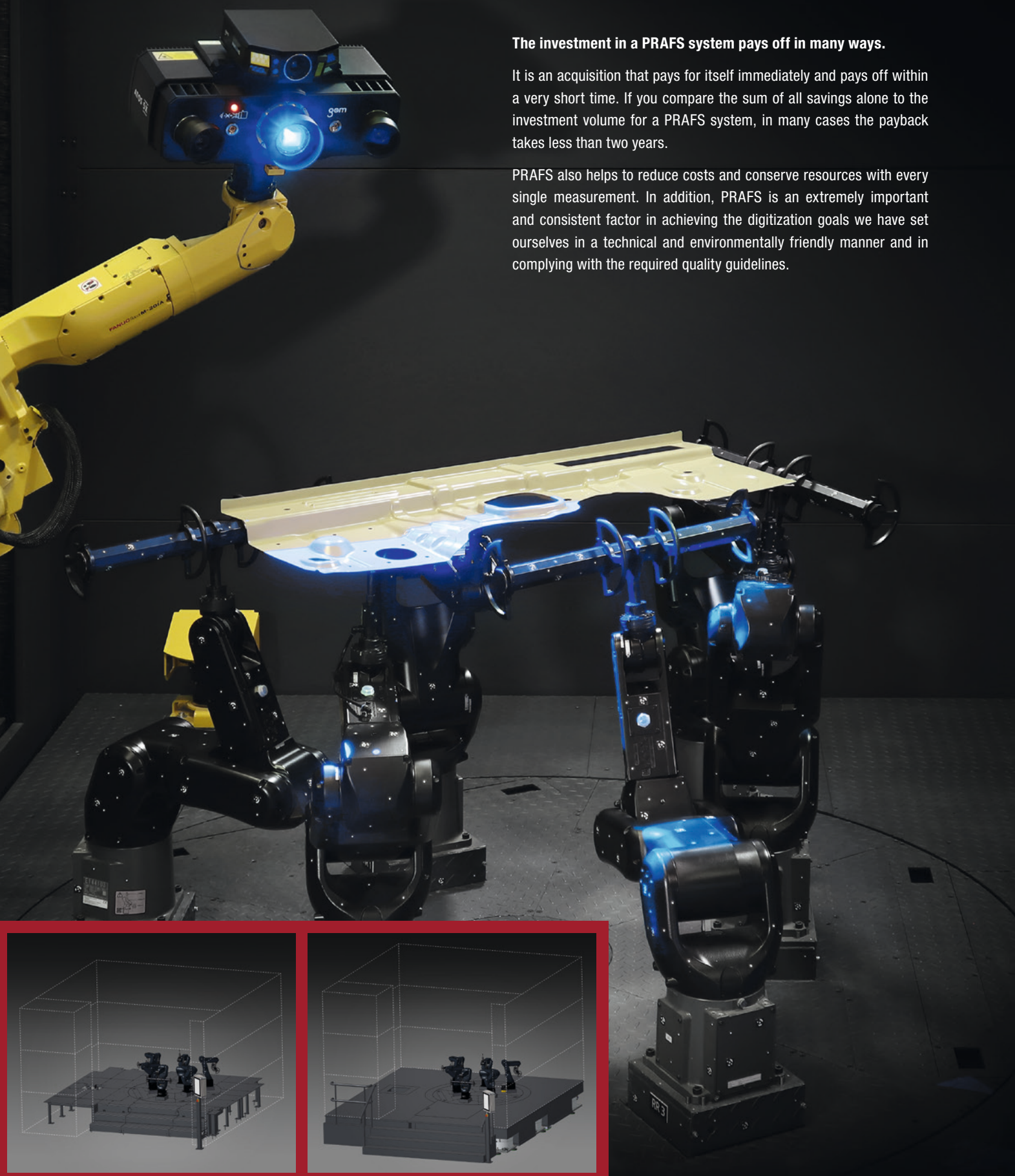
Apart from the fact that the biggest cost factor with classic measuring fixtures is to be found in the manufacture of the numerous clamping fixtures, a large part of the time is spent on provision, set-up and dismantling, retooling and, of course, logistics. With PRAFS, both the costs and the time required for this are reduced to a minimum.

When the component data is called up on the PRAFS HMI, the reference and support robots are automatically moved to the pre-programmed position. The part is then placed by the measuring technician or removed again after the measuring process. All this takes place at a working height that is easy on the operator's body and strength.



Quick and easy component change: Remove already measured component, call up new component data, place component and start measurement!

Saves costs sustainably and has paid for itself in a very short time



The investment in a PRAFS system pays off in many ways.

It is an acquisition that pays for itself immediately and pays off within a very short time. If you compare the sum of all savings alone to the investment volume for a PRAFS system, in many cases the payback takes less than two years.

PRAFS also helps to reduce costs and conserve resources with every single measurement. In addition, PRAFS is an extremely important and consistent factor in achieving the digitization goals we have set ourselves in a technical and environmentally friendly manner and in complying with the required quality guidelines.

For measuring rooms and on the line, the standard PRAFS solution (Pic. left) can be used. For press shops, a vibration-decoupled PRAFS system is available (Pic. right).

PROTOS-3D: Innovation, technology and service from professionals for professionals

We combine many years of experience with a high level of innovation. We have built up our know-how in the field of measurement technology in various sectors. These include OEM's and suppliers to the automotive industry, mold and tool making, the aerospace sector and the consumer sector. PROTOS-3D is not only DIN ISO 9001 certified and DIN EN ISO/IEC 17025:2018 accredited, but also a certified Carl Zeiss GOM Automation Service Provider with passion and enthusiasm for metrology. Our highly qualified specialists have detailed knowledge and an understanding of technology. This combination is essential for the further development of innovative high-tech solutions. PRAFS is a product developed by PROTOS-3D and a reflection of the main topics of our daily work – paired with your ZEISS ScanBox a perfect team.

QUALITY

With over 40 years of experience in industrial metrology, we know how important quality is – in every aspect. That's why we have developed PRAFS, an upgrade for new and existing ZEISS metrology that meets the highest quality standards and offers real benefits.

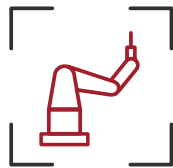
FLEXIBILITY

We know the daily production routine. In many cases, problems arise suddenly and have to be discovered, analyzed and solved quickly. Then every minute counts to avoid downtime. With PRAFS, we offer you a solution that gives you maximum flexibility and short response times.

SUSTAINABILITY

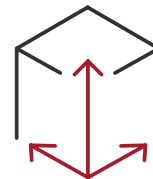
Sustainable solutions are to a high degree intelligent, progressive, durable, innovative, resource-saving (time, money, personnel and material) and usually digital. They simplify processes, offer security, increase the degree of automation and this is exactly what PRAFS from PROTOS-3D guarantees you.

The PRAFS service portfolio



Automation

ZEISS ScanBox for fixtureless measurement of your components



Virtual Clamping

VC configuration to the finished measurement result



Programming

Programming ZEISS VMR (virtual measuring room) and PRAFS-EMUSIM



Measurement/Evaluation

Complete, automated measurement and result documentation

You need more information, numbers, data, facts or you want to get a look of PRAFS in action right on site! We are here for you. Feel free to call and let us know what we can do specifically for you.

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