![Fraunhofer IPM logo]

Track & Trace Fingerprint App

Marker-free component traceability via smartphone

Is this tool the one you are looking for? This question can be answered easily using Track & Trace Fingerprint App on your smartphone.

Digitized production and supply chains make it possible to access detailed information about components, goods or tools, anywhere and at any time. Traceability of each individual object is a prerequisite for this. Fraunhofer IPM's Track & Trace Fingerprint App uses a smartphone to identify objects by their surface structure, with no need for marking at all.

![Track & Trace Fingerprint APP logo]

Established in the production line

Reliable traceability of components usually requires individual component marking. Reliable traceability of components usually requires individual component marking. Track & Trace Fingerprint by Fraunhofer IPM makes it possible to identify components solely by their individual surface microstructure, without the need for additional markers. The camera system records a high-resolution image of the component's surface and converts it into a digital fingerprint, which is then linked to an individual object ID. Subsequently, the downstream fingerprint algorithm can identify an individual component among millions of identical components in a matter of seconds.

The Track & Trace Fingerprint Inline camera system is permanently installed in the production line, where it captures automatically positioned components. The system is designed for inline application in industrial production. Track & Trace Fingerprint App, in contrast, is designed for component authentication by means of a regular smartphone, at any location and without any particular technical expertise.

Universal application, independent of location

With the Track & Trace Fingerprint App, components can be easily identified using a smartphone, for example in warehouse or during transport, with no additional costs for sensor technology. Modern smartphone cameras capture pin-sharp, high-resolution images, especially when taking close-ups. The image quality is sufficient for mobile, marker-free authentication of components using the track & trace fingerprint method. By using the Track & Trace Fingerprint App, previously registered components are reliably identified on the basis
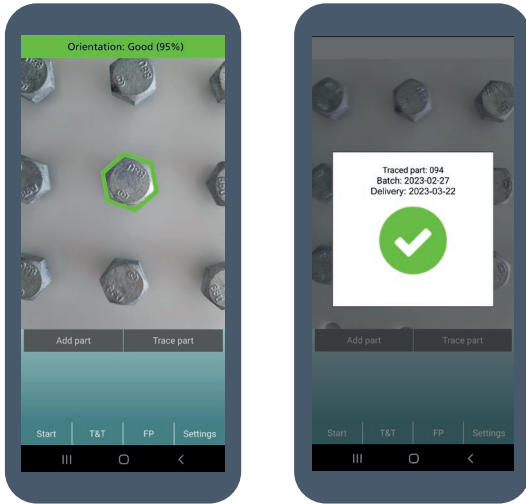
Advantages at a glance

- Component identification, e. g. for authenticity checks, query of product data
- Intuitive handling for quick verification
- No need for data on the smartphone
- Suitable for a broad variety of component geometries and materials

The Track & Trace Fingerprint App's intuitive user guidance enables efficient component authentication. Individual product data is displayed within seconds.

Requirements

Smartphone with Android operating system

Remote server for fingerprint software

Flat object surface with low reflection

Specifications

Registration and authentication within seconds

User guidance for intuitive handling

Discrimination of millions of identical components

Unaffected by local surface damage or contamination

of a photo. The user is guided through an interactive camera mode so that the photo meets the requirements of the fingerprint algorithm, making the sophisticated technology accessible even to laypersons. The smartphone indicates, for example, where and at what distance the component is to be captured, then checks the image and sends it to a central server via a data link. On that server, the fingerprint software generates the individual fingerprint from the image and matches it with all stored entries for authentication. The individual object ID can now either be sent back to the smartphone or used directly on the server, e.g. to display the digital twin of the component to the user.

In the same way, not only can already registered components be identified, but new components can also be added to the fingerprint database: Before capturing the image, the user assigns an individual object ID using an input field. The image together with the object ID is then transmitted to the server, where the individual fingerprint is calculated and stored together with the object ID.

The Track & Trace Fingerprint App offers a straightforward solution for identifying goods, components or tools using conventional smartphones at any location in the world – even if the product packaging is no longer available. This allows distributors, craftsmen or sales personnel to check the authenticity of individual products on site, identify returned products or even call up current installation or product information.

Track & Trace fingerprint technology makes it possible to trace components over their entire life cycle, from manufacture, through their use and possible reprocessing, to recycling. In this way, it also creates the prerequisite for a circular economy, among other things.

Track & Trace Fingerprint systems

Track&Trace FINGERPRINT INLINE
Authentication in the production line
Permanently installed reading system

Track&Trace FINGERPRINT FLEX
Authentication on the production site
Cordless reading system for robust component detection

Track&Trace FINGERPRINT APP
Authentication via smartphone app
Quick and easy to use

Track&Trace FINGERPRINT TEST
Optimum preparation for the use of Track & Trace Fingerprint
Test stand for purchase or rental

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