**Successful together**

Focusing our business on our customers’ needs has been the not-so-secret recipe of our corporate success over the past 30 years. For us, this means a proactive approach to the way we work, flexibility and handling our tasks with the utmost reliability. This allows our customers to concentrate on their core activities. We are convinced that values such as respect, honesty and speed, both within our company and with our business partners, build the foundation for this. This is the only way to form long-term partnerships, sustainable growth and mutual success – for our customers, suppliers, employees and our environment.

Our business partners are as demanding as their industries. They therefore expect the highest possible standards from us in terms of quality, processes and technology. These expectations are our motivation to give our very best, every day. With the entrepreneurial dynamic of a constantly growing SME, we manage the most complex projects with stable structures while remaining agile. Thus we engage with the individual challenges of our Swiss and international clients. We are proud to be the partner for all your electronics needs: from development to industrialisation and volume production. So you can implement your product ideas rapidly and establish them on the market more quickly.

Christian Kupper, Co-CEO
Our customers

Customers from a broad range of industries and application areas leverage Iftest’s expertise at every stage of electronics development and manufacturing. Although Iftest is most active in the fields of medical technology, metrology and industrial automation, the company has significant experience in energy supply and communications technology and high end consumer applications, such as exclusive smartwatches.

Iftest is a very reliable partner. I am particularly impressed with the personal support from the Customer Service team, which usually answers within half an hour. Iftest has a proactive, solutions-oriented approach to new projects and thinks outside the box.

– Purchasing manager, industrial business
Development

From demanding electronics design via smart IoT solutions and the latest generation of wireless data communications to the development of modules and devices: over the years, Iftest has been refining the relevant processes on an ongoing basis and can draw on an extensive track record in the successful implementation of electronics development projects.

+ **Hardware development**
Iftest has more than 25 years of project experience in hardware development, including microcontroller systems, digital and analogue switches, communications interfaces, wireless data transfer, display and touch, power electronics, and field buses and baseboards. All new products are developed in compliance with the relevant standards of electromagnetic compatibility (EMC) and safety. During product design, the focus is not merely on performance but also on component selection, its long-term availability, price, lifetime and options for second sourcing. The development of a Design for Manufacturing and an optimum test strategy are key deliverables for these projects in order to provide customers with the best possible quality at an optimal cost.

+ **Software development**
Iftest also has many years’ experience in software development with numerous projects successfully completed. For example, solutions have been developed in the field of device and machine control with modern displays and ease of operation. Wireless data communication and encryption systems are particularly important functions here. C/C++, C# and Python are used in the development of embedded software where agile methods are increasingly employed in addition to the common V-model. All development projects offer a continuous software support.
Heart pump project
Iftest developed the electronic hardware and firmware on behalf of a client for an innovative heart pump for use in hospitals. Due to the area of application, it was vital that project management and documentation was in full compliance with CE registration requirements. A critical part was the consideration of the important requirement of first fault safety. This requirement was embodied from the beginning of the product and solution concept and implemented by development of a suitable system architecture.

Fiscal memory for cash registers project
Working together with its subsidiary company Actilog, Iftest developed a fiscal memory to integrate an encryption system for cash registers commissioned by the German government. As all the booking procedures must be disclosed during a tax audit, a large memory capacity is required that allows data to be securely captured over a time period of more than a year. The protection of this sensitive data is guaranteed at all times through data encryption using AES256 and TLS (SSL). The removal or destruction of the memory cards is prevented by a specially developed housing, which reveals manipulation attempts.

Iftest compares favourably with similar German providers in more than just economic terms. The company provides significant added value in terms of development service quality, professionalism, customer interaction and speed.
– CEO of a German security technology business
During the industrialisation phase, Iftest optimises the printed circuit board layout based on Design for Excellence criteria. This is made significantly easier by the close proximity of the development and volume production facilities. This also guarantees rapid prototype manufacturing. Ultimately, this enables customers to perform important verification and validation tests promptly, to incorporate feedback immediately for further product optimisation, and thus achieve a faster market entry.

**Industrialisation**

+ **Printed circuit board design**
  Iftest has more than 100 man-years of experience in printed circuit board design. Comprehensive manufacturing technology expertise is also essential in realising complex layouts. This forms the basis for subsequent cost-effective manufacturing of high quality products.

+ **Prototype manufacturing**
  Rapid prototype manufacturing is an essential element in every industrialisation project. Iftest specialises in rapid and efficient prototyping through its in-house dedicated prototyping manufacturing line and highly qualified team.

+ **Design for Excellence**
  Iftest optimises every product with respect to cost efficiency (Design to Cost), quality through suitable test equipment (Design for Testability) and manufacturability (Design for Manufacturing) by closely following Design for Excellence guidelines.

+ **New Product Introduction process (NPI)**
  Newly developed products are transferred quickly and cost-efficiently to high quality volume production through Iftest’s optimised in-house NPI process. This NPI process includes the development of test procedures, performance of verification tests and customer support for validation testing.
Use case industrialisation of smartwatch electronics

Smartwatch boards manufactured by Iftest can be found in watches made by various well-known Swiss brands. These are based on the successful industrialisation of smartwatch electronics for a leading watch supplier. An important element in this industrialisation project was the development of a manufacturing process that allows ultra-thin printed circuit boards with a thickness of only 300 microns to be manufactured consistently with high quality. A milling process developed in-house ensures maintenance of the mechanical tolerances of less than 50 microns required by the watch-making industry. The latest generation (3D) of an Automated Optical Inspection (AOI) system plays a key role in providing the quality assurance. The optimised manufacturing process delivers a production capacity of more than 10,000 smartwatch boards per day.
In order to guarantee customers maximum flexibility, process safety and cost efficiency, Iftest continually invests in the further development of its printed circuit board assembly. This is at the heart of the company’s Electronics Manufacturing Services (EMS). In order to increase capacity and efficiency, identical processes are operated at both manufacturing locations in Switzerland and Slovakia, wherever this is possible and reasonable.

+ **SMT assembly**
Two SMT lines in Switzerland allow parallel manufacture of prototypes and volume production. Two production lines at the site in Slovakia provide further capacity for SMT assembly. In total, more than 150 million SMD components are processed every year.

**Technical data**
- 01005, µBGA, CSP, QPN, fine pitch 300 µm
- processing of flexible and rigid printed circuit boards
- assembly capacity of up to 55,000 components per hour and line
- reflow soldering under continuous nitrogen atmosphere

+ **THT assembly**
Iftest operates two identical wave soldering machines, purchased in 2017, for THT assembly in Switzerland and Slovakia. The plan is to further extend production capacities in this area. The use of identical machines at both locations generates efficiency gains when transferring products between sites.

**Technical data**
- optionally lead or lead-free processes available
- production lines based on LEAN concept
- soldering process under continuous nitrogen atmosphere

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**Serial production: printed circuit board assembly**
+ **Process control**
For quality control of SMT assembly processes, Iftest carries out 100% inspections using the latest generation (3D) Automated Optical Inspection (AOI) technology. A fully automated handling system enables a cost-efficient quality assurance process.

+ **Precision milling**
Iftest ensures that exposure to mechanical stress during the separation process is kept to a minimum by means of an optimised and highly automated precision milling process. The customised tools required for this are developed in-house and enable a separation accuracy of +/- 50 microns.

We really appreciate the good collaboration, in particular on the engineering side. Iftest is a reliable partner for printed circuit board design, prototype manufacturing and high volume SMT and THT assembly in a difficult market environment. Iftest delivers consistently high quality. Even with huge variations in demand, Iftest is able to respond with a high degree of flexibility to our requirements.

– Commodity manager / Strategic purchaser in sensor technology for pressure and flow measurement
Serial production: cable, module and device assembly

Being able to offer a complete solution from electronic sub-assemblies to assembled modules and devices is an important criterion for many customers when selecting an EMS partner. Iftest meets this market requirement through its comprehensive offering of cable, module and device assembly in addition to printed circuit board assembly.

+ **Cable assembly**
At Jaklovice in Slovakia, Iftest manufactures cable assemblies, including printing, continuity and insulation testing.

**Technical data**
- cable cutting and printing up to diameters of 70 mm
- crimping of contacts from 0.14 mm² to 70 mm²
- processing of optical fibres and flat ribbon cables
- lifetime and insulation testing

+ **Module and device assembly**
Modules and devices can be assembled at both sites. The assembly lines are efficiently designed in accordance with LEAN principles. Electronic sub-assemblies, cables and mechanical components are assembled into complete modules and devices and subsequently tested. Electronic sub-assemblies can optionally be coated or encapsulated and functionally tested in an additional process step.
The 3D AOI system automatically detects missing components, misalignment and rotation, incorrect polarity and soldering errors with extremely high accuracy. An autonomous process operation with minimum handling requirements leads to optimum cost-efficiency in this decisive quality assurance process.

Functional testing
Sub-assemblies, modules and devices can be functionally tested using specific test equipment if required by the customer. These tests can include electrical, optical or acoustic functionality control and verification of wireless communications characteristics.

In-circuit testing
An In-Circuit Test (ICT) procedure – either with a needle adaptor or a flying probe test system – can check the electrical characteristics of individual components or the entire circuit board. Depending on test specifications, this is carried out with random sampling or 100% inspection.

X-ray testing
X-ray testing with a resolution to one micron is used on both golden devices and random sample inspections. In addition, it is also used in error analysis and verification of subsequent corrective actions.

The development of an optimum testing strategy is decisive in achieving defined quality targets with maximum cost efficiency. Due to its origins as an engineering company for the development of testing equipment, Iftest can draw on its comprehensive expertise in this important process step. This expert knowledge in test engineering ensures that highest reliability standards are met.
The aim of Iftest’s Product Lifecycle Management offering is to reduce the load on the customer to the greatest extent possible and provide the associated cost savings. The supporting processes and services ensure that products are handled professionally from initial concept to the end of their lifecycle, and thus are used optimally and as long as possible.

**+ Customer service**
Iftest customers can rely on support in all areas. The customer service team is available for operational matters, while specialist departments provide prompt expert support on matters such as product registration with notified bodies, traceability during quality complaints and product maintenance for hardware and software.

**+ Materials management and logistics**
Iftest’s strategic purchasing department monitors the long-term availability of critical components and ensures optimum procurement pricing through its knowledge of the market. In addition, these services also include development of customer-specific logistics models and optimisation of packaging in terms of quality and price.

**+ Obsolescence management**
Iftest has worldwide access to component databases. In the event that a component is no longer available (obsolescence), Iftest is able to detect this early on. In this case, the search for alternative component suppliers is initiated immediately and customers are informed proactively. If an alternative source cannot be found, Iftest offers to re-engineer the electronic sub-assembly.

**+ Repair service**
Reliable repair services are particularly important for sub-assemblies with high added value, such as complete modules or devices. Iftest is able to cover customised repair service requests in full with a dedicated service team.
Jaklovce, Slovakia

The Jaklovce location operates under the name QESS s.r.o. and is dedicated solely to production. In addition to highly automated manufacturing processes for printed circuit board assembly, cost-effective manual assembly processes are also carried out at this site.

Profile
+ Printed circuit board assembly (SMT and THT)
+ Cable assembly
+ Module and device assembly

QESS s.r.o.
Polná 317
05561 Jaklovce
Slovakia

Wettingen, Switzerland

At the headquarters in Wettingen, the whole spectrum of EMS services, from development through to industrialisation and volume production, takes place under one roof in addition to centralised corporate functions.

Profile
+ Hardware development
+ Software development
+ Printed circuit board design
+ Prototype manufacturing
+ Test engineering
+ Printed circuit board assembly (SMT and THT)
+ Module and device assembly

Iftest AG
Schwimmbadstrasse 43
5430 Wettingen
Switzerland

Jaklovce, Slovakia
Do you have any questions?

As an experienced EMS partner for medical and industrial electronics, we always find a solution.
EMS partner for medical and industrial electronics

Services
- Hardware development
- Software development
- Printed circuit board design
- Prototype manufacturing
- Test engineering
- Printed circuit board assembly (SMT and THT)
- Cable assembly
- Module and device assembly

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